



# CORRIDOR ANALYSIS

**Final**

Prepared by:



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# Acknowledgements

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## Project Management Team (PMT)

Name	Agency	Name	Agency
Kaye Bieniek	Olmsted County	Heather Lukes	MnDOT D6
Ben Johnson	Olmsted County	Greg Paulson	MnDOT D6
Nick Sandford	Olmsted County	Michael Schweyen	MnDOT D6
Dave Pesch	Olmsted County	Charlie Reiter	Olmsted County/ROCOG
Bill Angerman	City of Byron	Bryan Law	Olmsted County/ROCOG
Mary Blair-Hoedt	City of Byron	Guy Kohlnhofer	Dodge County

## Project Advisory Committee (PAC)\*

Name	Agency	Name	Agency
Ben Griffith	Olmsted County/ROCOG	Nancy Zaworski	City of Kasson
Muhammad Khan	Olmsted County/ROCOG	Dillon Dombrovski	City of Rochester
Mark Engel	Olmsted County	Sam Budzyna	City of Rochester
Sandi Goslee	Olmsted County	Drew Moessner	Salem Township
Tom Ricke	City of Byron	Lenny Laures	Cascade Township
Brandon Theobald	City of Kasson	Bob Suchomel	Kalmar Township
Timothy Ibisch	City of Kasson		

\* All PMT members participate on the PAC as well.

## Consultant Team

Name	Agency	Name	Agency
Craig Vaughn	SRF Consulting	Mitch Rasmussen	SRF Consulting
Molly Stewart	SRF Consulting	Collin Schroedder	SRF Consulting
Ben Hobert	SRF Consulting	Phil Kulis	SRF Consulting
Zach Heimer	SRF Consulting	Sue Miller	SRF Consulting

## Executive Summary

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Olmsted County along with its partners Dodge County, the cities of Byron and Kasson, and the Minnesota Department of Transportation (MnDOT) began the US 14 Corridor Analysis Project in 2019. The project included public engagement and agency coordination to facilitate the analysis process. The project was guided by a Project Management Team (PMT), which was comprised of representatives from Olmsted County, MnDOT, the City of Byron, and Dodge County. Additionally, the project engaged a Project Advisory Committee (PAC) that served as a sounding board and provided input and guidance at key project milestones. Members of both the PMT and PAC are identified in the Acknowledgements section of this report.

### Project Goals

The goals developed for the US 14 corridor correlate to the overarching vision of a safer, high mobility roadway, with reasonable accessibility to the communities along it. The goal statements are as follows:

- Improve corridor safety
- Accommodate efficient mobility for east-west travel along the corridor
- Ensure reasonable accessibility to local communities
- Maintain regional connectivity across both state and local systems

### Existing Issues

A comprehensive analysis of the conditions along the US 14 corridor within the project area was completed. The assessment included a review of existing planning documents, preliminary environmental review, analysis of existing and future traffic operations and safety, and review of the multimodal system. The following key issues were identified:

#### OPERATIONS

- Moderate to considerable congestion and high delays under existing conditions at CSAH 3 (85th Avenue), CR 104 (60th Avenue) and 7th Street.
- Queuing issues under existing conditions at CSAH 5 (2nd Avenue), 10th Avenue, and CR 104 (60th Avenue).
- Considerable congestion and high delays under future conditions at 280th Avenue (county line), CSAH 5 (2nd Avenue), 10th Avenue, CSAH 3 (85th Avenue), CR 104 (60th Avenue), and 7th Street.
- Queuing issues under future conditions at CSAH 5 (2nd Avenue), 10th Avenue, CSAH 3 (85th Avenue), and CR 104 (60th Avenue).

## SAFETY

- Moderate safety concerns at 260th Avenue and 280th Avenue.
- Severe safety concerns at CSAH 5 (2nd Avenue), 10th Avenue, CSAH 3 (85th Avenue), and CR 104 (60th Avenue).

## Alternatives Considered

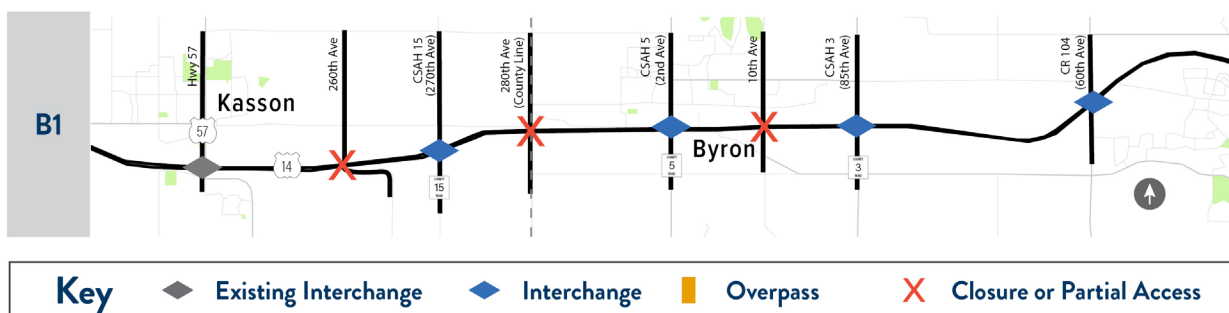
The alternative development process was multifaceted using a range of inputs including the corridor vision, technical data, public comments, design parameters, and guidance from the PMT and PAC. The primary issue areas considered were safety, mobility, accessibility to local communities, and regional connectivity.

A total of nine access alternatives were developed. Each alternative assumed an interchange at CR 104 (60th Avenue), which is expected to be constructed in the short-term (5+ years). Access changes including closure or partial access (e.g. right-in/right-out or restricting movements), an overpass, or an interchange were considered for the existing intersections between Highway 57 and CR 104 (60th Avenue). Section 3.1 contains the figures showing the access alternatives developed.

The alternatives were evaluated based on a qualitative estimate of each alternative's ability to address the evaluation factors. The evaluation of the nine access alternatives resulted in four of them rising to the top. These four leading alternatives include A3, A4, B1 and B2. The public was given the opportunity to share their ranking of the four leading alternatives in an online survey facilitated as part of a virtual open house on June 10, 2020.

Following the virtual open house on June 10, 2020, additional discussion with the PMT occurred to further vet the four leading alternatives. Public input and the technical evaluation were again reviewed to arrive upon a select long-term access alternative. Public input and technical evaluation data each arrived at alternatives A3 and B1 as leading alternatives. Continued discussion with the PMT, including additional input from staff at each agency, yielded consensus for alternative B1 as the selected long-term vision for the US 14 corridor (see [Figure E-1](#) below).

Figure E- 1. Selected Long-Term Vision



## Implementation Strategies

It is anticipated that the full implementation of the US 14 corridor long-term vision will take 20 years or longer to come to fruition. Additional detailed analysis and design and significant environmental review, as required by the National Environmental Policy Act (NEPA), will need to be conducted in the future to determine specific implementation strategies along the US 14 corridor.

Currently, none of the US 14 corridor improvements are fully funded or programmed in the capital improvement plans of the agency partners. However, there is momentum around certain improvement areas with funding having been allocated to date for the design of the CR 104 (60th Avenue) interchange area. Due to serious safety concerns, partial funding has been secured through the Highway Safety Improvement Program (HSIP) for fiscal year 2024 for interim improvements at the CSAH 3 (85th Avenue) intersection.

Through discussion with the project partners it was determined that two implementation strategies were appropriate for the selected corridor vision. This was based on the potential for interchange construction to occur at either CSAH 3 (85th Avenue) or CSAH 5 (2nd Avenue) first. Each has its merit and supplemental improvement needs.

- A. Implementation Strategy #1 – Assumes the construction of an interchange at CSAH 3 (85th Avenue) occurs first followed by the construction of the interchange at CSAH 5 (2nd Avenue), then the construction of the interchange at CSAH 15 (270th Avenue).
- B. Implementation Strategy #2 – Assumes the construction of an interchange at CSAH 5 (2nd Avenue) occurs first followed by the construction of the interchange at CSAH 3 (85th Avenue), then the construction of the interchange at CSAH 15 (270th Avenue).

The selection of either strategy will depend on future available funding and will take commitment and collaboration from all project partners to fully implement.

## Conceptual Interchange Alternatives

Conceptual interchange alternatives were developed for the three interchange locations identified in the long-term corridor vision. This was done to understand the feasibility of implementing interchanges at these locations. Additional access and local roadway improvements are represented as necessary (i.e., residential driveway access and local roadway connections) in each conceptual alternative. Section 4.2 contains these images and [Appendix D](#) includes additional detail regarding these concepts.



## Next Steps

The following next steps can be identified moving forward following this US 14 Corridor Analysis project.

- Dodge and Olmsted County will finalize the official mapping process for potential projects at the CSAH 15 (270th Avenue), CSAH 5 (2nd Avenue), and CSAH 3 (85th Avenue) intersection locations with US 14.
- Complete significant environmental review, as required by the National Environmental Policy Act (NEPA), to fully analyze the conceptual alternatives and implementation strategies. Through this environmental process, interchange design and implementation will be determined. The environmental review process also includes additional opportunities for public input. Following the environmental review, the project would move into preliminary and final design.
- Continue project partner coordination to identify funding, develop designs, and implement the selected long-term vision for the US 14 Corridor.

# Chapter 1 – Background and Corridor Vision

Olmsted County along with its partners Dodge County, the cities of Byron and Kasson, and the Minnesota Department of Transportation (MnDOT) began the US 14 Corridor Analysis Project in 2019. This project is a continuation of planning efforts that started over twenty years ago. **Table 1** provides a summary of the past planning efforts including key findings from each. Each of the studies included detailed analysis of existing and future conditions, alternatives development and analysis and comprehensive engagement with stakeholders. Progress was made in each effort, however consensus amongst partners on the long-term vision for the US 14 Corridor was never reached. For this reason, the US 14 Corridor Analysis Project was started.

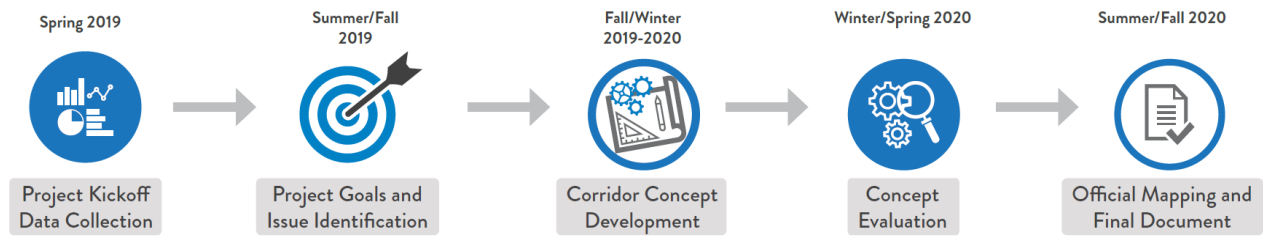
**Table 1. Summary of Past Planning Efforts**

Past Planning Efforts	Year Published	Key Findings
US Highway 14 Access Management Plan	1997	<ul style="list-style-type: none"> <li>Plan established a long-term vision for the corridor that included the highway becoming fully access controlled in the long-term.</li> <li>Conflict over location of grade-separated interchange in Byron. City was supportive of 10th Avenue, County and MnDOT expressed concern with regional road connectivity.</li> <li>Study concluded with the recommendation to revisit in the future.</li> </ul>
Byron Local Circulation Study	1998	<ul style="list-style-type: none"> <li>Follow up to the Access Management Plan.</li> <li>Study primarily focused on two alternatives, access at 10th Avenue or CSAH 5 (2nd Avenue).</li> <li>The study resulted in no clear recommendation for location of grade-separation.</li> </ul>
Interregional Corridor Study	1999	<ul style="list-style-type: none"> <li>The purpose of this study was to identify the main corridors connecting Minnesota's regional centers and develop a plan to maintain safe, timely and efficient transportation along these roadways.</li> <li>The study recommended the development of Corridor Management Plans to determine the ultimate vision for each of the interregional corridors.</li> <li>The continued development of the region led to a discussion in 2002 about revisiting the 1997 Access Management Plan.</li> </ul>
Trunk Highway 14 West Subarea Study	2004	<ul style="list-style-type: none"> <li>Consensus amongst the partners that the long-term vision for the corridor is a grade-separated freeway.</li> <li>Alternatives from 1997 study were reviewed and incorporated into the development of a set of five alternatives that were evaluated including recommendations for local road connectivity.</li> <li>No consensus on a long-term vision for the Highway 14 corridor was reached at the end of the study.</li> <li>Study recommended future discussion amongst partners continue to occur.</li> </ul>

The US 14 Corridor Analysis Project took approximately 18 months to complete and followed the schedule (see **Figure 1**) shown below. Key elements of the project that are included in this document are: **Project Overview, Corridor Issues Identification, Alternatives Development and Evaluation, and Selected Long-Term Vision.**

The project included significant public engagement, including three open houses and a pop-up event, and agency coordination to effectively facilitate the analysis process. The project was guided by the Project Management Team (PMT), which was comprised of representatives from Olmsted County, MnDOT, the City of Byron, and Dodge County. The PMT played an integral part in the project by providing oversight and input on technical analyses, alternatives development and evaluation and the public engagement process. Additionally, the project included a Project Advisory Committee (PAC) that served as a sounding board and provided input and guidance at key project milestones. Members of both the PMT and PAC are identified in the Acknowledgements section of this report.

**Figure 1. Project Schedule**

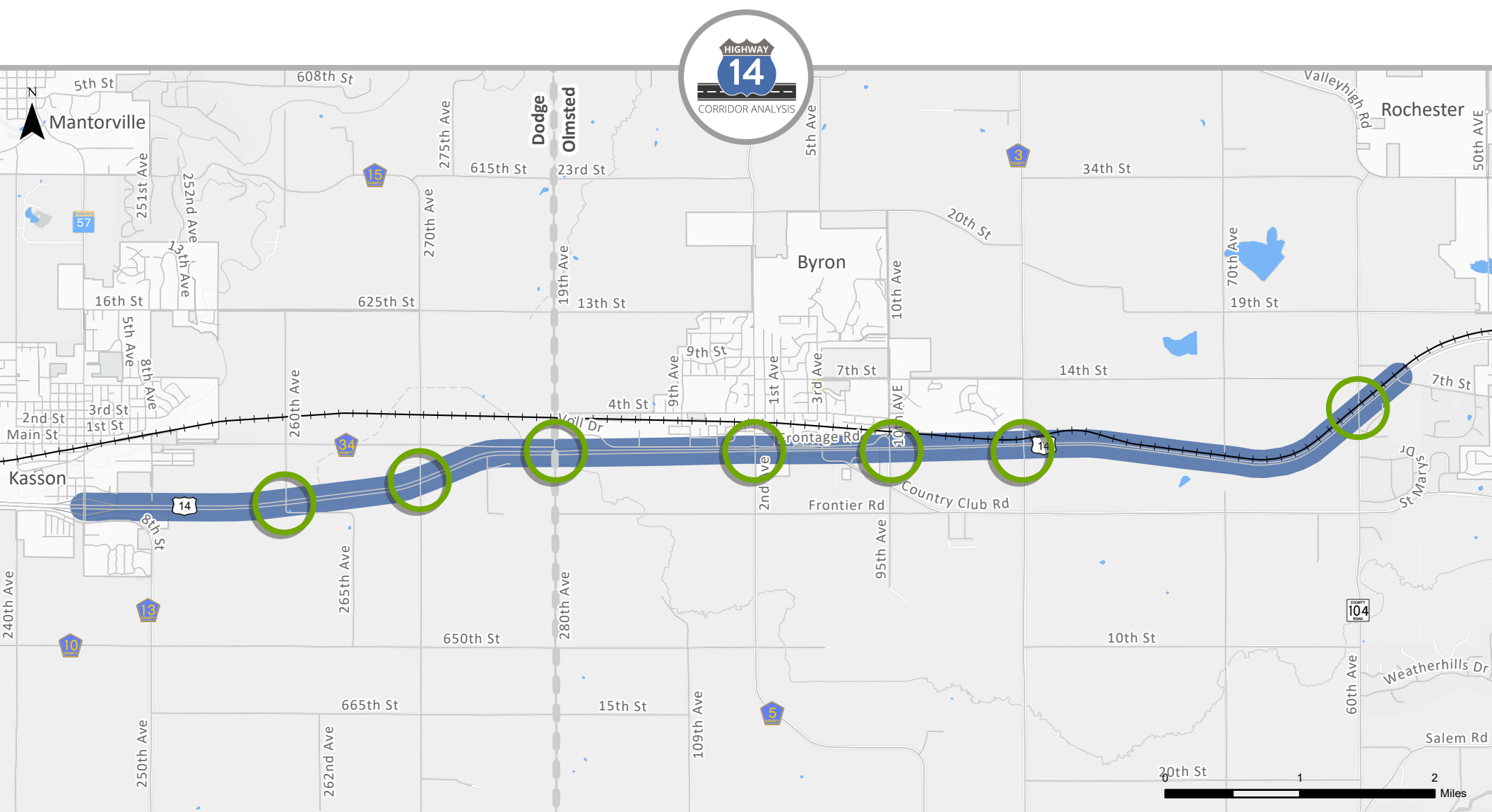


## 1.1 – Project Area

The project limits extend approximately ten miles from Highway 57 in Kasson to County Road (CR) 104 (60th Avenue) just east of Byron (see **Figure 2**). It should be noted since the project began; Olmsted County changed the designation of CR 104 (60th Avenue) to County State Aid Highway (CSAH) 44. To maintain consistency in this document, the roadway will be referred to as CR 104 (60th Avenue).

US 14 is a principal arterial and configured as a four-lane, divided rural expressway. The corridor is an important east-west connection for local trips between Kasson and Byron to/from Rochester and regional trips between Dodge and Olmsted Counties, as well as a priority corridor for freight movement in southeast Minnesota. The key intersections along US 14 within the project area include:

- 260th Avenue
- CSAH 15 (270th Avenue)
- 280th Avenue (county line)
- CSAH 5 (2nd Avenue)
- 10th Avenue
- CSAH 3 (85th Avenue)
- CR 104 (60th Avenue)



## US 14 Corridor Analysis

Figure 2. Project Area

- US 14 Analysis Limits
- Municipal Boundaries
- Railroad
- Lakes and Rivers
- Key Intersections
- Roads
- County Borders

## 1.2- Project Vision

The vision for this project is to evaluate the existing at-grade intersections along the corridor and determine appropriate access alternatives that improve corridor safety; enhance the mobility of US 14 between Rochester, Byron, and Kasson; ensure reasonable accessibility to local communities; and maintain regional connectivity across both state and local systems consistent with the function of US 14 as part of the designated National Highway System.

The long-term vision for the US 14 corridor is to create a freeway segment with no at-grade, full-access intersections. The outcome of this analysis and evaluation will be a singular US 14 long-term vision which identifies future interchange locations in order to guide future development. This vision can then be analyzed and implemented as part of future National Environmental Policy Act (NEPA) environmental documentation.

The project analysis completed included evaluation of existing and future conditions, including:

- Intersection operations
- Access management
- Safety
- Bicycle and pedestrian connectivity
- Local roadway connections
- Alternative intersection designs, including grade-separation

## 1.3 - Project Goals & Objectives

The goals developed for the US 14 corridor correlate to the overarching vision of a safer, high mobility roadway, with reasonable accessibility to the communities along it. The goal statements are as follows:

- Improve corridor safety
- Accommodate efficient mobility for east-west travel along the corridor
- Ensure reasonable accessibility to local communities
- Maintain regional connectivity across both state and local systems

In coordination with these broad goals, key focus areas leading to objectives include:

- **Safety:** Improve safety for the traveling public, addressing key areas of concern along the corridor that experience higher than average crash rates.
- **Capacity:** Manage corridor capacity for vehicles, freight, and other users to accommodate anticipated residential and employment growth in Byron and Kasson.
- **System Deficiencies:** Address peak hour congestion on US 14 between Rochester, Byron, and Kasson.
- **Local Linkages:** Consider an intuitive and comprehensive local street network that provides connectivity to or across US 14, as well as near the corridor.
- **Multimodal Connectivity:** Enhance multimodal connectivity across and adjacent to the corridor to create a network between existing or planned local and regional facilities.

## Chapter 2 – Understanding the Corridor

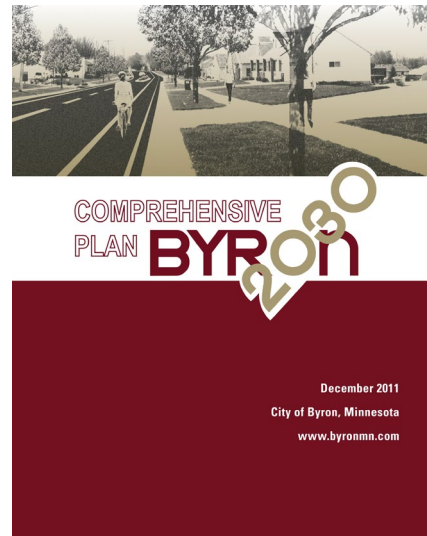
This chapter includes a comprehensive analysis of the conditions along the US 14 corridor within the project area. The assessment includes a review of existing planning documents, preliminary environmental review, analysis of existing and future traffic operations and safety, and review of the multimodal system. This chapter will analyze how US 14 operates and define the transportation needs of the corridor including issues, constraints, and areas of opportunity.

### 2.1 – Land Use

Land use and transportation are directly linked, such that travel behavior is determined by the location of where people live in relation to where they work, shop, and recreate. Trip generation varies by land use type and is an important consideration when evaluating the transportation system. Existing land uses surrounding the US 14 corridor predominately consist of agricultural land or natural areas in a rural context and developed, urban areas within the cities of Kasson and Byron (see [Figure 3](#)). Typical land uses found in the urban areas include suburban style retail or commercial, low-density residential, and industrial or office uses.

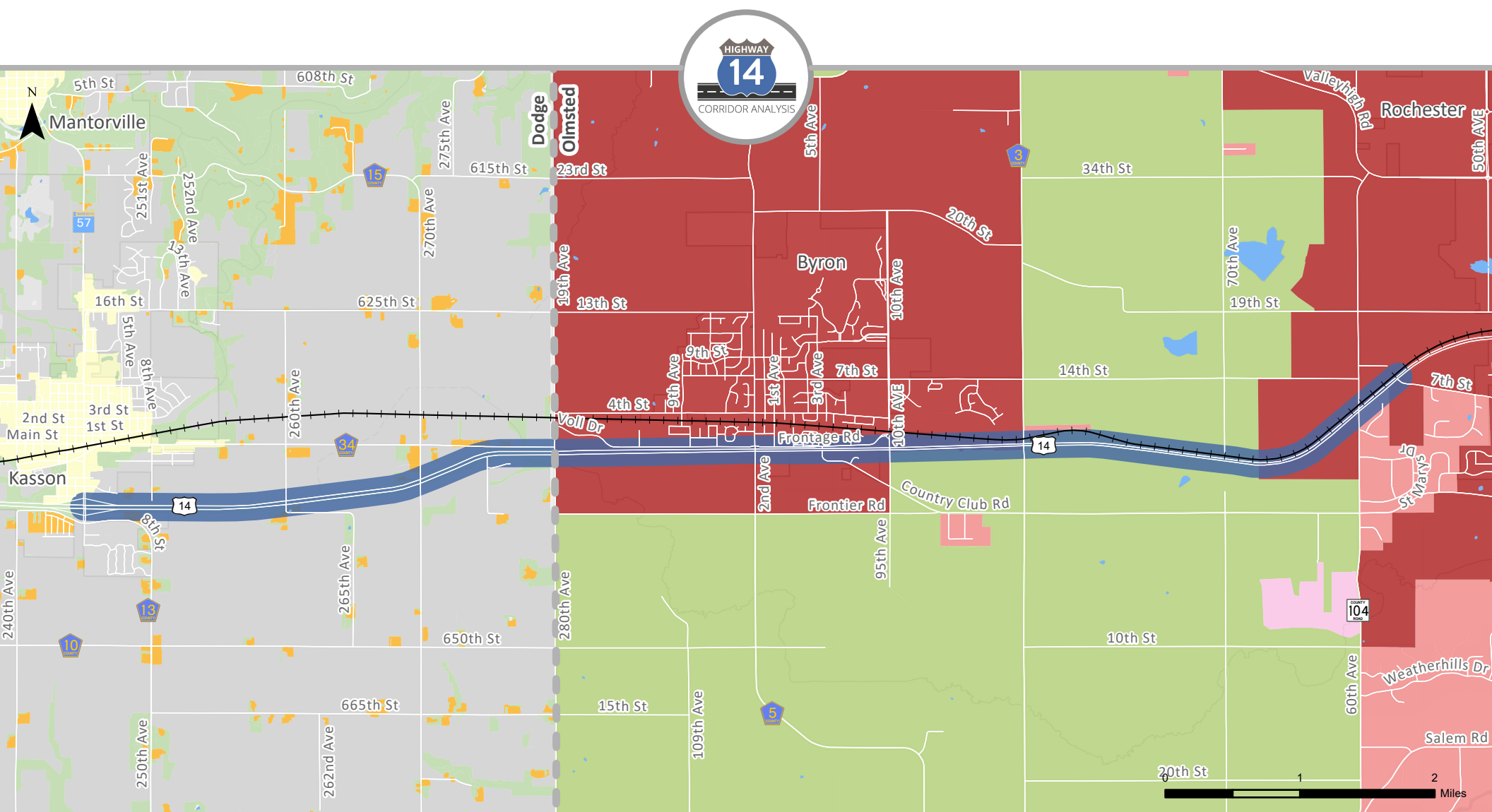
The planned growth of both communities will increase the mobility and safety needs of the corridor. [Figure 4](#) highlights anticipated development in both cities. Below are a few key items to note:

- Future development is projected between Highway 57 and CSAH 15 (270th Avenue) per the City of Kasson’s 2040 Comprehensive Plan (2018) which envisions primarily office and industrial uses near US 14 and residential growth north and east of CSAH 34.
- Substantial residential development is planned surrounding Byron north of US 14 per the city’s 2030 Comprehensive Plan (2011)<sup>1</sup>. Most of the existing or planned development is located north of US 14.
- Development is planned to stretch west of Rochester to the vicinity of 70th Avenue in the long-term, with the remaining land to CSAH 3 (85th Avenue) undeveloped.
- Both Kasson and Byron anticipate substantial residential and employment growth by 2040. Their Comprehensive Plans estimate an additional 5,500 residents and thousands of jobs in the long-term between the two jurisdictions.














Additionally, the ROCOG 2045 Long Range Transportation Plan completed in 2020 was reviewed. The ROCOG planning boundary extends to the city limits in Byron. Information presented in this document was considered during development of traffic forecasts.

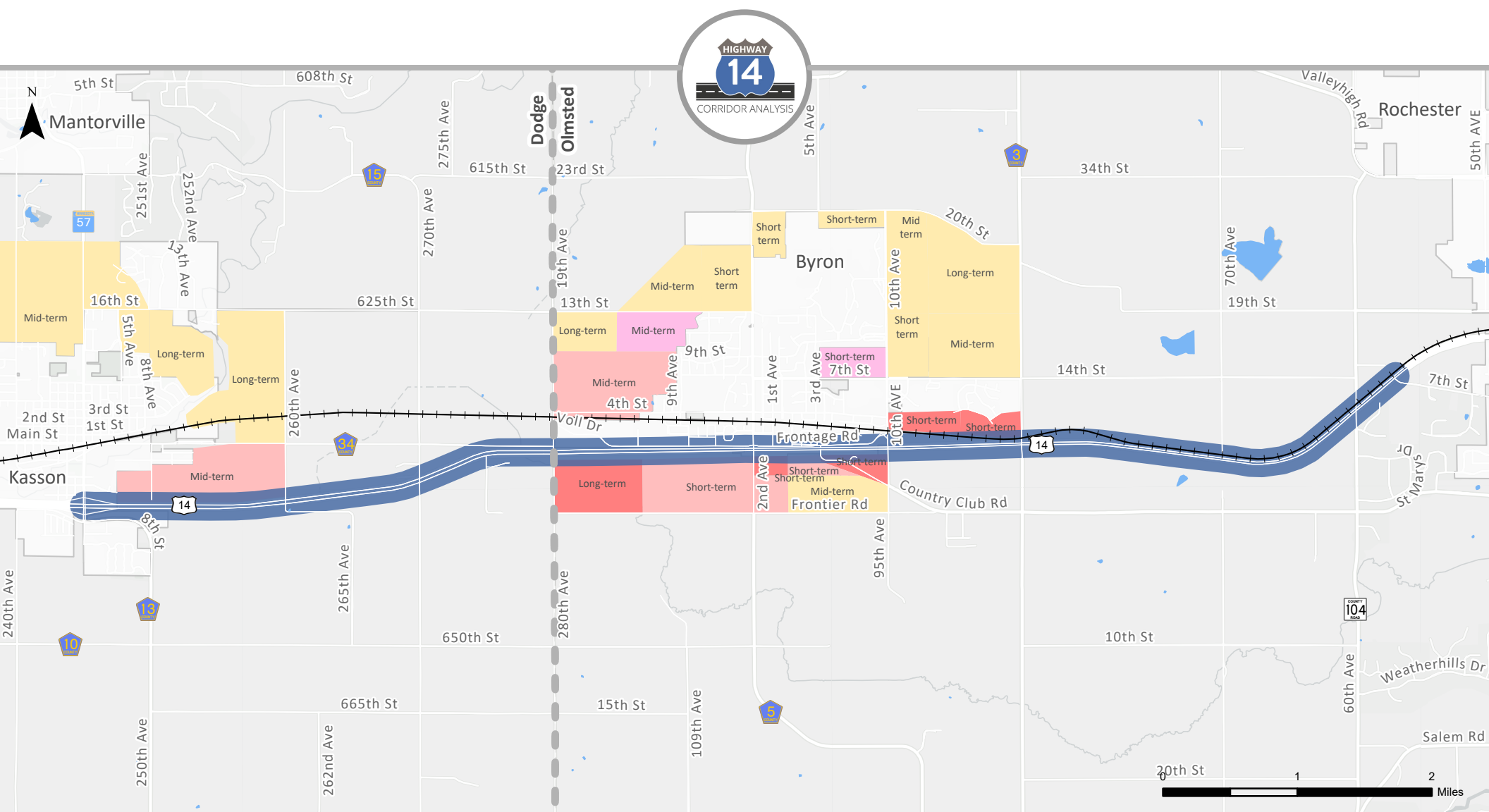
<sup>1</sup> <https://www.byronmn.com/comprehensiveplan>



**US 14 Corridor Analysis**  
 Figure 3. Existing Land Use

- |  |  |   |   |
|--|--|---|---|
|  Rural Mixed Use      |  Suburban Development |  Cultivated Land           |  Resource Protection   |
|  Urban and Industrial |  Suburban Mixed Use   |  Grass, Forest, and Shrubs |  US 14 Analysis Limits |
|  Potential Suburban   |  Urban Service Area   |  Mining                    |   |

Source: Dodge County, Olmsted County



## US 14 Corridor Analysis

Figure 4. Future Development

Timeframes identified on map are as follows:

Short-term (5+ years)

Mid-term (10+ years)

Long-term (20+ years)

Low Density Residential

Medium Density Residential

US 14 Analysis Limits

Office/Industrial

Retail/Commercial



## 2.2– Environmental and Cultural Constraints

This section documents potential environmental and cultural constraints along the US 14 corridor. An in-depth social, economic and environmental resource analysis was not conducted as part of this effort. The purpose of this evaluation was to perform a preliminary inventory and assessment of potential impacts to guide the development of future alternative concepts. This impact assessment was generally based on environmental factors addressed in the environmental review process for highway projects and utilized available desktop resources including aerial photography, geographic information systems (GIS), local and regional planning documents, and other available resources.

It is important to note that this analysis does not attempt to quantify specific project impacts. Additional social, economic and environmental analyses, including quantifying environmental impacts where necessary, will be completed for any proposed improvements reviewed under the National Environmental Policy Act (NEPA) and/or Minnesota Environmental Policy Act (MEPA).

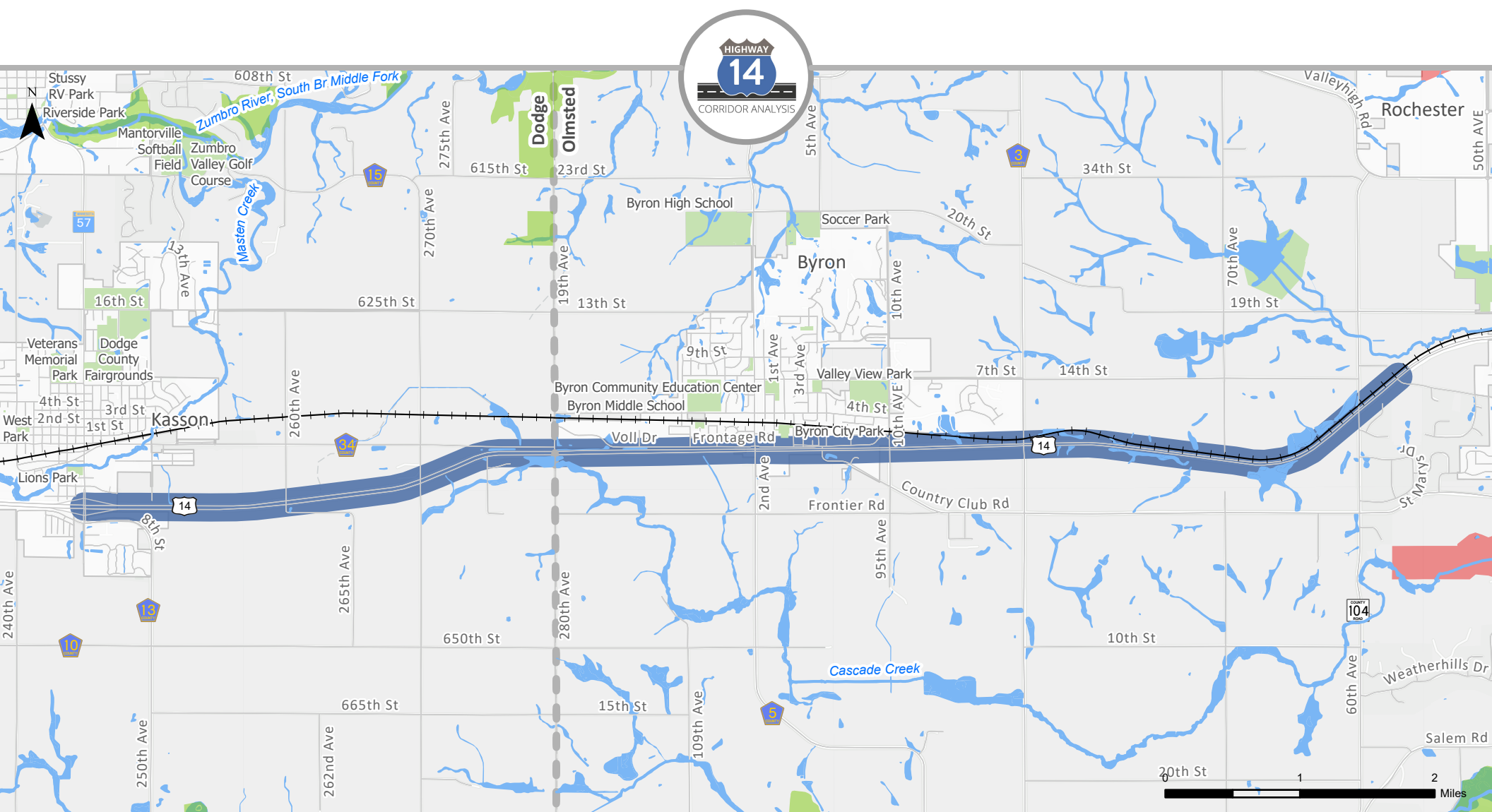
**Figure 5** displays the natural, historical and cultural resources located within the project area. The following is important to note:

- The Section 4(f) legislation provides protection for publicly owned parks, recreation areas, historic sites, wildlife and waterfowl refuges, and historic sites (in public and private ownership). Old Towne Park, which is owned by the City of Byron, is in the northeast quadrant of the US 14 and CSAH 5 (2nd Avenue) intersection.
- The Section 6(f) legislation of the Land and Water Conservation Act (LAWCON) requires that any land acquired or developed with LAWCON funds be retained and used for outdoor recreational purposes into perpetuity. Currently there are no Section 6(f) parcels in the project area.
- Per the National Register of Historic Places (NRHP), there are no known historic properties in the project area.
- There are no State or Federal threatened or endangered species in the project area.
- Per the National Wetland Inventory (NWI) there are several wetlands within the project area. Additionally, the Cascade Creek runs southeast from the 280th Avenue (county line) intersection.

## 2.3- Minority Populations and Median Household Income







Digital data from the American Community Survey (ACS) published by the U.S. Census Bureau in 2018 was evaluated to identify areas of proportionally higher low-income and minority populations. **Figure 6** and **Figure 7** illustrate the breakdown of median household income and minority populations, respectively, by block groups within the project area. Considering the entire county population, the median household income in Dodge County is \$71,660 and in Olmsted County is \$74,800.

As part of any future environmental review process, a formal environmental justice analysis will be required to identify potential adverse and disproportionate impacts to low-income and minority populations as required by NEPA and MEPA.

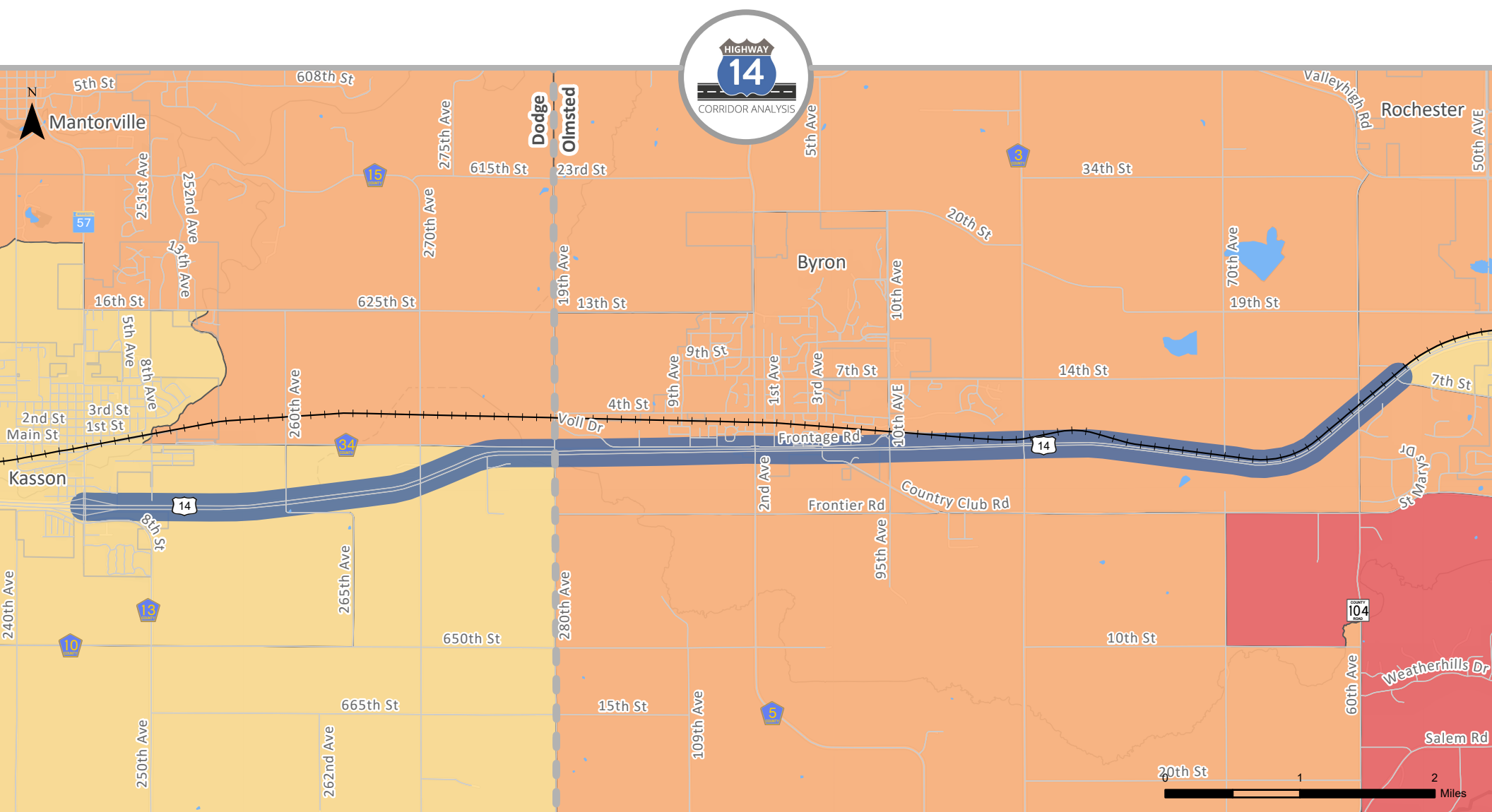


## US 14 Corridor Analysis

Figure 5. Natural, Historical and Cultural Resources

-  DNR Public Watercourses
-  National Wetland Inventory
-  High or Very High DWSMA\* Vulnerability
-  Native Plant Communities
-  Parks
-  US 14 Analysis Limits

\*Drinking Water Supply Management Area



## US 14 Corridor Analysis

Figure 6. Median Household Income



Source: ACS 5-Year Estimates 2018



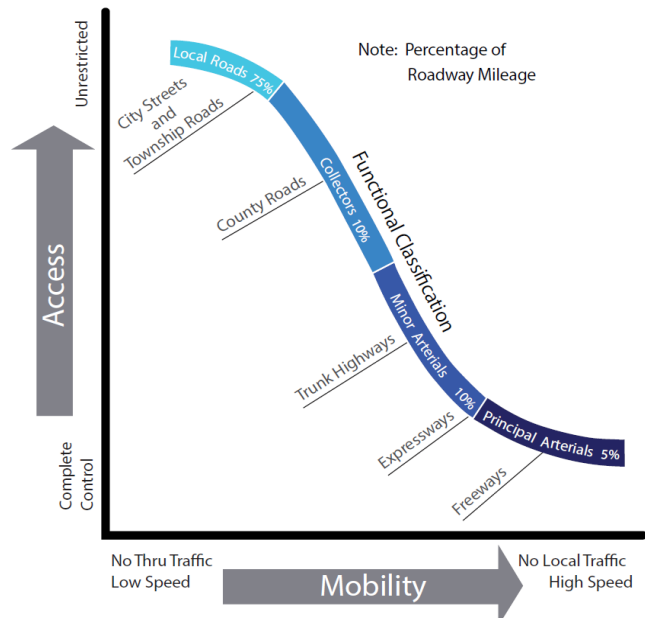
## 2.4 – Roadway Network

### FUNCTIONAL CLASSIFICATION

The functional classification system defines both the function and role of a roadway within the hierarchy of an overall roadway system. This is used to create a roadway network that collects and distributes traffic from neighborhoods and ultimately to the state or interstate highway system. Functional classification planning works to manage mobility, access, and alignment of routes. It also seeks to align designations that match current and future land use with the roadway’s purpose. A roadway’s functional classification is based on several factors, including:

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

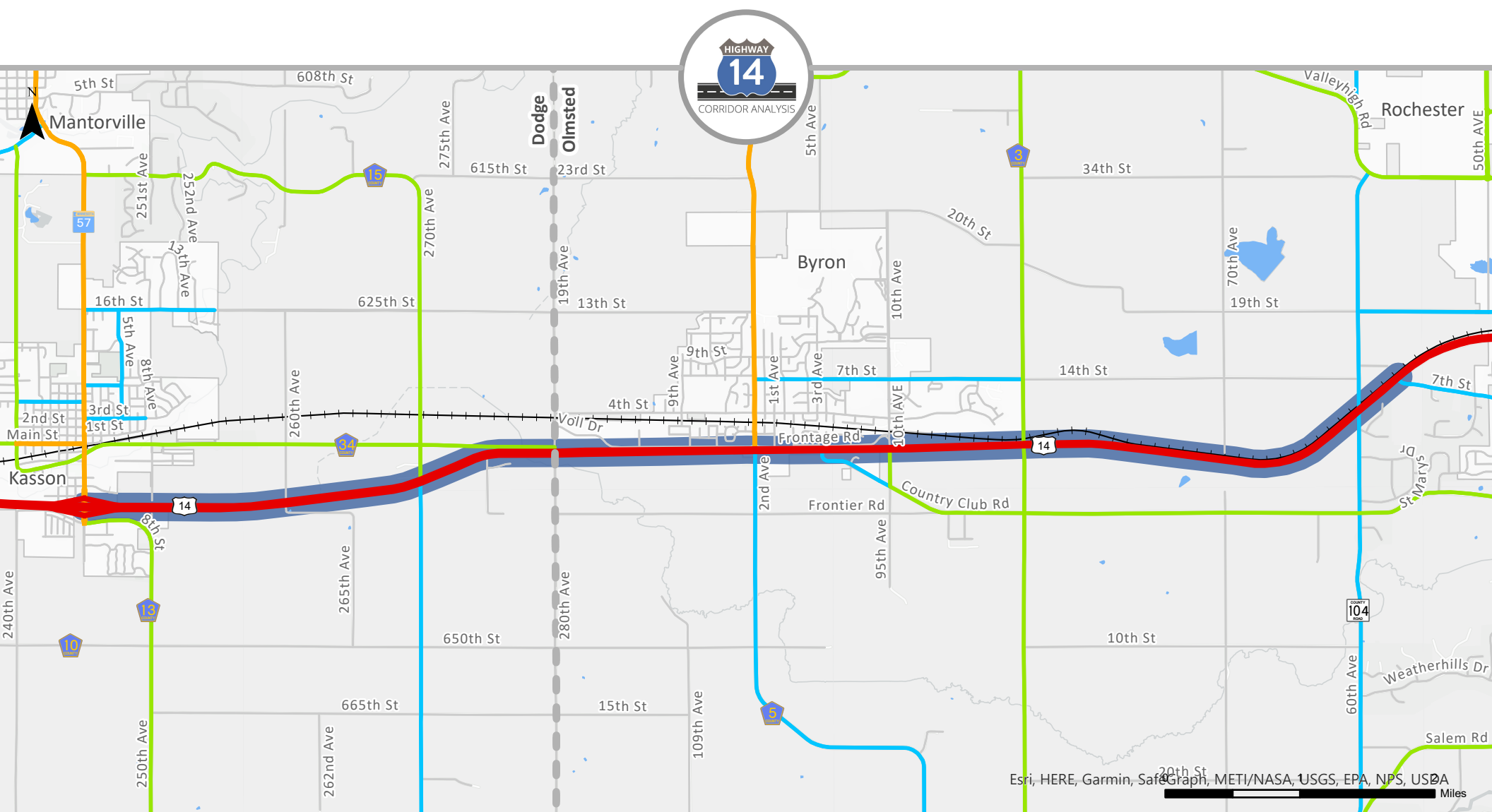
Figure 8. Access and Mobility Relationship



The functional classification system is divided into five major categories: principal arterials, minor arterials, major collectors, minor collectors, and local roadways. Figure 9 displays the existing functional classification system as defined by the Federal Highway Administration (FHWA) of the roadways within the project area. As shown in the figure, US 14 is classified as a principal arterial within the project area.

### JURISDICTIONAL CLASSIFICATION

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, US highways, and state trunk highways), while intermediate volume corridors with more limited travelsheds (e.g. County State Aid Highways (CSAHs) and county roads (CRs)) are maintained by the counties. Roadways serving local traffic (e.g. Municipal State Aid Streets (MSASs), city streets, and townships roads) are maintained by the municipalities or townships. US 14 is a state highway that MnDOT owns and operates in coordination with the surrounding counties, cities, and townships who oversee the intersecting roadways. Figure 10 shows the existing jurisdictional roadway classifications within the project area.

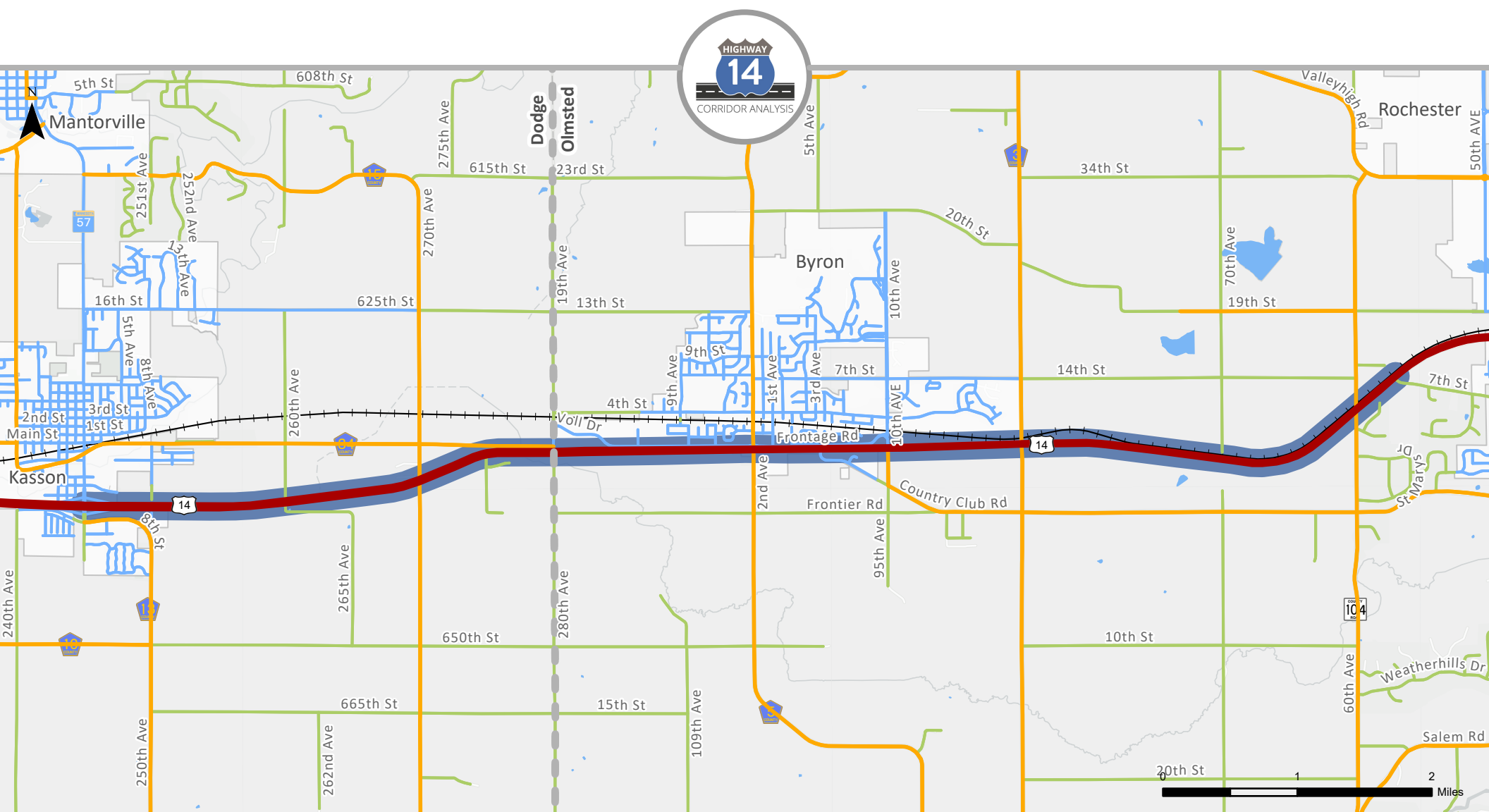


## US 14 Corridor Analysis

Figure 9. Existing Roadway FHWA Functional Classification

- |   |  |   |
|---|--|---|
| <span style="color: red;">█</span> Principal Arterial | <span style="color: green;">█</span> Major Collector     | <span style="color: grey;">█</span> Local                 |
| <span style="color: orange;">█</span> Minor Arterial  | <span style="color: lightblue;">█</span> Minor Collector | <span style="color: blue;">█</span> US 14 Analysis Limits |

Source: MnDOT 2019



## US 14 Corridor Analysis

Figure 10. Existing Roadway Jurisdiction

- State
- County
- Township
- City
- US 14 Analysis Limits

## ACCESS

Proper access spacing along roadways promotes better traffic flow and safety. Research documented in the *National Cooperative Highway Research Program (NCHRP) Report 420: Impacts of Access Management Techniques* found that on average, each access point along a corridor increases crash potential by four percent and decreases corridor travel speeds by 0.25 miles per hour. Since operational and safety benefits are associated with proper access control, MnDOT has developed and published access spacing recommendations for routes in their system.

In the project area, US 14 is classified as a principal arterial and categorized as a rural facility.

**Figure 11** shows the existing access points and the type of access for each per this classification.

MnDOT recommends the following street spacing for the US 14 corridor:

- Category 2AF – Non-Interstate Freeway
  - Interchange Access Only
  - If at-grade intersections and interchanges are present, at-grade intersections should be considered interim. The desirable spacing between an at-grade intersection and the merge point of the closest ramp should be a minimum of one-half mile.
  - The spacing between two at-grade, full-movement intersections should be one mile.
  - Driveway Spacing: Where reasonably convenient and suitable alternative access is not available, an interim driveway may be permitted, and if possible, it should be designed so that traffic can be redirected to another road when the facility becomes fully access-controlled.

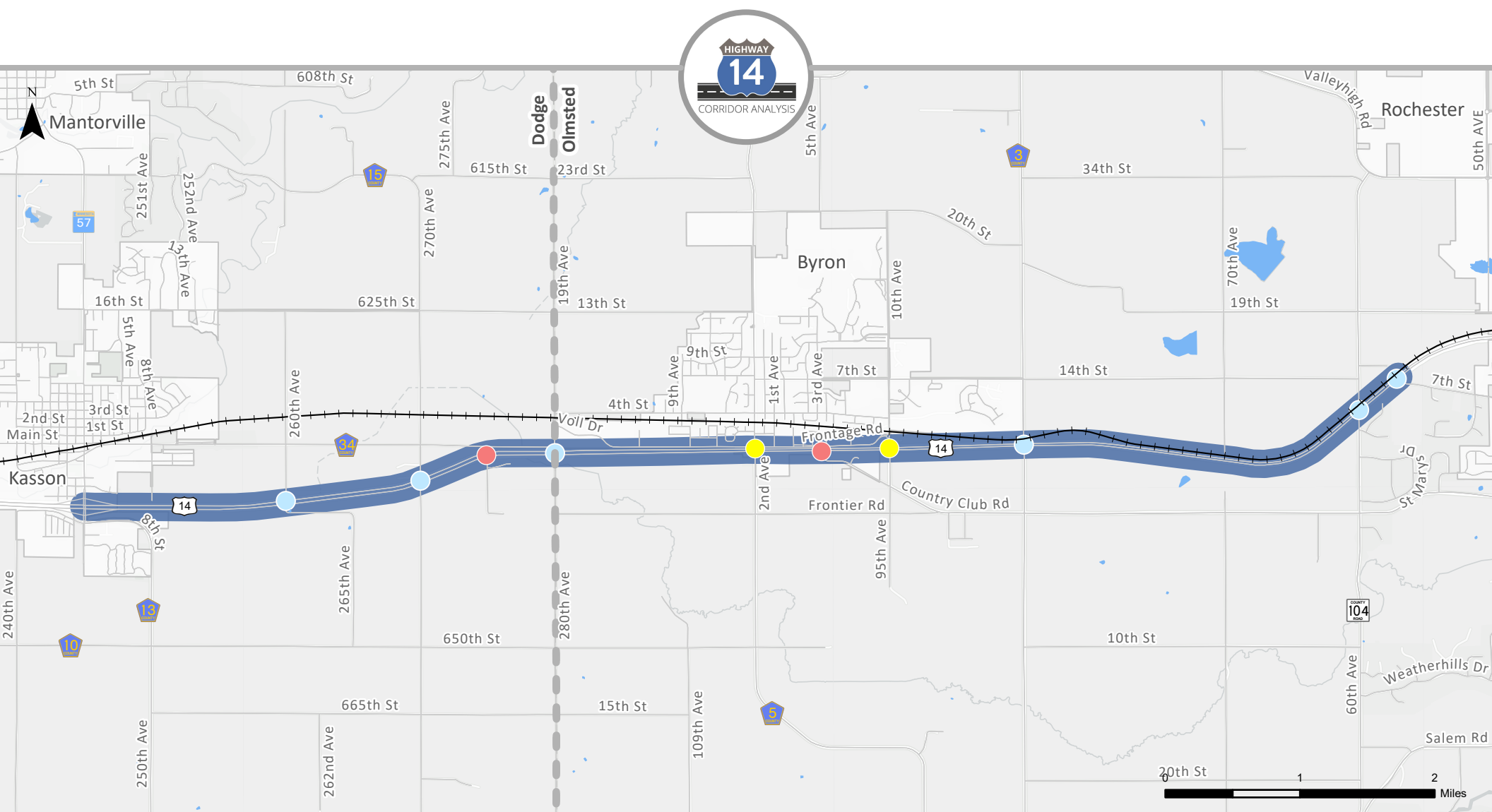
**Table 2** organizes a summary of the existing access spacing per segment and identifies compliance with MnDOT’s guidance for a type 2AF facility. Most segments are compliant as an interim condition only. The MnDOT access spacing guidelines recommend interchange access only, and at-grade intersections should be considered an interim condition. Therefore, access changes on US 14 within the project area should be considered for the long-term vision of the corridor.

**Table 2. US 14 Existing Access Spacing Summary**

Segment	Distance (mi)	Access Points		Rate per mile	Compliant?
		Primary	Secondary		
Highway 57 to 260th Avenue	1.5	2	0	1.33	Yes
260th Avenue to CSAH 15 (270th Avenue)	1	2	0	2	Yes
CSAH 15 (270th Avenue) to 280th Avenue (county line)	1	2	1	3	No
280th Avenue to CSAH 5 (2nd Avenue)	1.5	2	0	1.33	Yes
CSAH 5 (2nd Avenue) to 10th Avenue	1	2	1	3	No
10th Avenue to CSAH 3 (85th Avenue)	1	2	0	2	Yes
CSAH 3 (85th Avenue) to CR 104 (60th Avenue)	2.5	2	0	0.8	Yes

Source: SRF Consulting Group, 2019





## US 14 Corridor Analysis

Figure 11. Existing Access

- Public Full Access, Sidestreet Stop
- Public Full Access, Signal
- Public Right-in/Right-Out, Sidestreet Stop
- US 14 Analysis Limits

## ORIGIN-DESTINATION

An origin-destination (O-D) analysis was conducted for the corridor within the project limits. The main purpose of the analysis was to understand if the corridor is mostly used for regional (through trips) or local trips (from one segment to the next *or* from an external node to somewhere along the corridor). StreetLight data<sup>2</sup> was used to assess the origins and destinations of travelers along the corridor. StreetLight processes navigation-GPS data that is obtained from connected cars and trucks, navigation guidance applications, cell phone GPS location data, and commercial fleet management data which creates a substantially larger data sample size than traditional O-D analysis methods, such as license plate surveys. Data was gathered from January 2018 through December 2018 during the weekdays within the project area. The data for personal vehicles and heavy commercial vehicles was analyzed to gain insight into the travel patterns within the network.



The corridor and areas adjacent to it were divided into zones to understand if the trips were local versus regional. At a detailed level – “Middle Filters” in StreetLight (more commonly referred to as select link analysis) were applied to three locations, one per segment, along the corridor to determine travel pattern variations throughout the corridor. The trips were categorized into the following four groups:

- Local to Local: The trip originated along (or adjacent to the corridor) and was destined for another zone along the corridor.
- Local to Regional: The trip originated along (or adjacent to) the corridor but finished outside of the corridor zones.
- Regional to Local: The trip originated outside of the corridor zones but was destined for somewhere along (or adjacent to) the corridor (within one of the zones).
- Regional to Regional: The trip originated and is destined for somewhere outside of the corridor. This is more commonly referred to as a pass-through trip.

Based on the O-D analysis, most of the trips using the corridor are one of the three types: Regional to Regional, Local to Regional, or Regional to Local, with a low percentage of trips being true Local to Local trips. This suggests that efficient access onto US 14 that maintains mobility is important. This is most effectively accomplished with interchanges instead of at-grade intersections which aligns with the future long-term vision of the corridor. Figures illustrating the analysis results can be found in [Appendix A](#).

<sup>2</sup> [www.streetlightdata.com](http://www.streetlightdata.com)

## 2.5 – Roadway Operations

An analysis of peak hour turning movement counts per intersection, as well as average daily traffic per roadway segment was completed for existing and year 2040 time periods. A description of findings for each is included in the following sections. Additional details can be found in [Appendix B](#).

### EXISTING ROADWAY CAPACITY

A volume to capacity analysis was completed for the US 14 corridor to identify the existing level of congestion. Congestion on an existing roadway system is judged to exist when the ratio of traffic volume to roadway capacity approaches or exceeds 1.0. The ratio of volume to capacity (V/C) provides a measure of congestion for a roadway that can help determine if roadway improvements, access management, or travel demand management strategies are necessary. Existing average daily traffic (AADT) volumes and average daily heavy vehicle counts (HCAADT) per MnDOT’s annual traffic counts are shown on [Figure 12](#). The existing AADT on US 14 is 26,000 vehicles per day (vpd) at its most congested point in the project area. The typical planning level capacity for a four-lane divided rural roadway is 35,000 to 38,000 vpd. These volume ranges are based on guidance from the Highway Capacity Manual and professional engineering judgement. The existing volume to capacity ratio (V/C) on US 14 ranges from 0.68 to 0.74. The ratio of volume-to-capacity provides a measure of congestion along a stretch of roadway and can help determine where roadway improvements, access management, transit services or demand management strategies need to be implemented. It does not, however, provide a basis for determining the need for specific intersection improvements. This is better determined through a more detailed peak hour intersection capacity analysis as discussed below.

### EXISTING INTERSECTION CAPACITY

Traffic operations were analyzed for the following intersections for existing and year 2040 time periods. Unless noted, all intersections are full movement and side-street, stop-controlled.

- 260th Avenue
- CSAH 15 (270th Avenue)
- 280th Avenue (county line)
- CSAH 5 (2nd Avenue) – signalized
- 10th Avenue – signalized
- CSAH 3 (85th Avenue)
- CR 104 (60th Avenue)
- 7th Street

Existing traffic data was collected at each intersection on Wednesday, May 29, 2019 during the a.m. and p.m. peak periods (6:45 – 9:00 a.m. and 4:00 – 6:00 p.m.). All traffic volumes were balanced between intersections along the corridor for the operations analysis. The a.m. peak hour occurred 7:00 – 8:00 a.m. and the p.m. peak hour occurred 4:30 p.m. – 5:30 p.m.

During the a.m. peak hour, the following was observed:

- 10th Avenue has the highest number of turning movements with 83 percent of southbound vehicles turning left to head eastbound toward Rochester (approximately 430 vehicles per hour). Dual left-turn lanes exist for southbound vehicles.
- CSAH 5 (2nd Avenue) also has a high volume of left-turning vehicles, with an additional 300 southbound vehicles per hour turning left onto US 14.

- A total of nearly 1,300 peak hour southbound vehicles turn left from Byron between 280th Avenue (county line) and CSAH 3 (85th Avenue) to head toward Rochester, compared to 130 vehicles turning right to head westbound during the same time period.
- Eastbound US 14 through traffic is over 1,800 vehicles per hour by the time it reaches CR 104 (60th Avenue).

During the p.m. peak hour, the following was observed:

- Turning volumes are more balanced between eastbound and westbound movements for the side-streets along US 14.
- Westbound mainline volumes are approximately 1,700 vehicles at CSAH 3 (85th Avenue), reducing to 1,300 vehicles west of Byron.
- Approximately 500 vehicles turn right to head northbound via CSAH 5 (2nd Avenue) or 10th Avenue and are about evenly split between those two intersections.

Peak hour traffic volumes were used to perform a.m. and p.m. peak hour capacity analysis at each intersection using the Synchro 10/SimTraffic software. Capacity analysis was performed based upon the intersection Level of Service (LOS) methodology from the *Highway Capacity Manual*. LOS characterizes the operational conditions of an intersection’s traffic flows, ranging from LOS A which indicates traffic conditions with little or no delay, to LOS F which represents traffic conditions that result in long queues and significant delays (see **Table 3**). The system grade represents driver perspectives and indicate the comfort and convenience associated with driving. MnDOT’s standard threshold for acceptable operations is LOS D or better.

**Table 3. Level of Service (LOS) Thresholds**

LOS	Signalized Intersection Average Delay/Vehicle (seconds) <sup>1</sup>	Unsignalized Intersection Average Delay/Vehicle (seconds) <sup>2</sup>
A	≤10	≤10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Source: Transportation Research Board, *Highway Capacity Manual*

<sup>1</sup> Average vehicular delay of all approaches at the intersection. <sup>2</sup> Delay associated with the worst approach

**Table 4** summarizes the LOS and delay results per intersection under existing traffic conditions. This information is also displayed on **Figure 13** and **Figure 14** for the existing a.m. and p.m. operational conditions, respectively. For intersections that are side-street stop-controlled, the delay and LOS for the worst approach is reported.

It is typical of unsignalized intersections with higher mainline traffic volumes to experience high level of delay (poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions. This is highlighted with the significant side-street delays observed at CSAH 3 (85th Avenue) and CR 104 (60th Avenue). The delay is likely due to the high through volumes on US 14 of over 1,800 vehicles during both peak periods in the heaviest direction. This creates a limited number of gaps for vehicles at the side-street approaches to safely turn onto US 14 or proceed across the corridor. Such high delays and limited gaps can create unsafe conditions as motorists get impatient and may attempt dangerous driving maneuvers.

**Table 4. Existing Level of Service Summary**

Intersection	Control <sup>1</sup>	A.M. Peak Hour		P.M. Peak Hour	
		LOS <sup>2</sup>	Delay <sup>2</sup> (sec)	LOS <sup>2</sup>	Delay <sup>2</sup> (sec)
260th Avenue	SSSC	A/B	2/13	A/C	4/19
CSAH 15 (270th Avenue)	SSSC	A/C	5/16	A/C	5/21
280th Avenue (county line)	SSSC	A/B	6/14	A/D	6/25
CSAH 5 (2nd Avenue)	Signal	C	30	D	39
10th Avenue	Signal	D	44	D	39
CSAH 3 (85th Avenue)	SSSC	A/ <b>E</b>	7/ <b>37</b>	B/D	13/33
CR 104 (60th Avenue)	SSSC	B/D	14/30	<b>C/F</b>	16/ <b>&gt;3 min</b>
7th Street	SSSC	A/D	3/26	A/ <b>E</b>	4/ <b>37</b>

**Bold** denotes unacceptable conditions.

<sup>1</sup> Traffic control device per intersection. SSSC = side-street, stop-controlled, Signal = traffic signal

<sup>2</sup> Signal delay and LOS is for the overall intersection and SSSC delay and LOS is shown with the overall/worst intersection approach

Peak hour vehicle 95th percentile queuing at each intersection was quantified using the traffic simulation software, SimTraffic. Three intersections were identified where queuing is especially long during the peak periods. Queue spillback includes instances would suggest when turning vehicles exceed the available turn lane length or when through lane queues block access to adjacent turn lanes. Queue spillback can degrade the safety of the intersection by increasing the potential for rear-end crashes and the increased delays associated with the congestion. **Table 5** summarizes existing queuing issues, unless noted, 95th percentile queue lengths do not exceed available storage or block adjacent turn lanes.

Table 5. Existing Queuing Issues

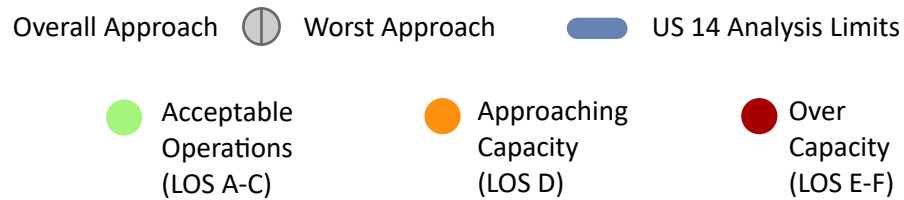
Intersection	Time Period	Movement	95th Percentile Queue (ft)	Storage (ft)	Issue
CSAH 5 (2nd Avenue)	a.m./p.m.	SB	820/ 350	50	Queue spills through frontage road
	p.m.	WB	600	450	WB-through vehicles queue past turning storage lanes blocking turning traffic access
10th Avenue	a.m.	EB	680	500	EB through vehicles block the right and left-turn storage lanes
	p.m.	WB	600	525	WB through vehicles block the right and left-turn storage lanes
	a.m./p.m.	NB	180/ 210	80	NB vehicles block the right-turn storage lane
	a.m.	SB	235	180	SB vehicles block the right-turn, left-turn and through/left-turn storage lanes
CR 104 (60th Avenue)	p.m.	SB	360	~20	SB vehicles queue past the railroad tracks





## US 14 Corridor Analysis

Figure 13. Existing A.M. Peak Hour Intersection Operations

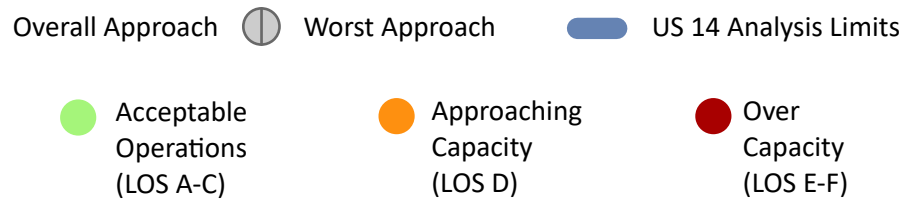






## US 14 Corridor Analysis

Figure 14. Existing P.M. Peak Hour Intersection Operations



## FUTURE (YEAR 2040) TRAFFIC FORECAST

Traffic forecasts were prepared using a “historic growth analysis” methodology for the US 14 corridor, versus developing a travel demand forecast model. The historic growth analysis utilized AADT volumes for the years 1992 through 2015 for all MnDOT count locations. Growth rates were reviewed and analyzed to identify short-term and long-term trends. To eliminate irregular growth trends, outliers and anomalies were identified and removed to produce a more representative historical growth rate.

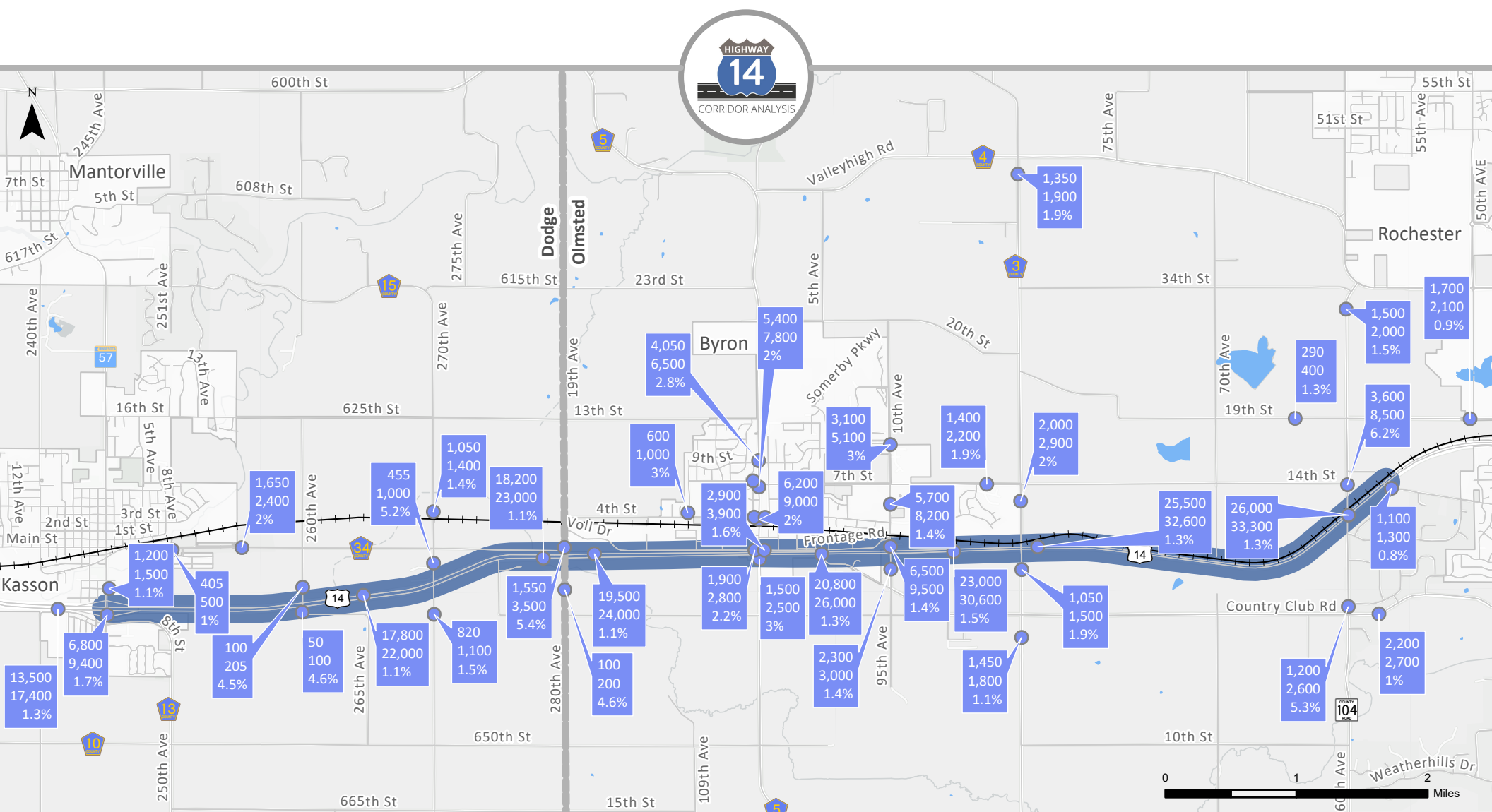
In addition to historic growth trends, the forecasted growth factors developed also use demographic data and current trends (land use growth, employment, etc.), as well as data from previously completed studies and information from anticipated developments and economic development plans, to gain a greater understanding of local traffic trends. As noted previously, both Kasson and Byron anticipate substantial residential and employment growth by 2040. Their Comprehensive Plans estimate an additional 5,500 residents and thousands of jobs in the long-term between the two jurisdictions. Current travel patterns as determined by the Origin-Destination analysis completed was also considered when developing traffic forecasts. Traffic forecasts developed as part of the ROCOG 2040 Long Range Plan were also reviewed to ensure consistency.

Discussions with representatives from the Cities of Kasson and Byron and the PMT also took place to further refine the forecasted traffic volumes using their local knowledge. **Figure 15** displays the projected future traffic volumes and growth rates for the US 14 corridor project area.

Peak hour turning movements for year 2040 a.m. and p.m. peak hour conditions were estimated based on daily traffic projections using the method described in *NCHRP Report 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design*. Some post-processing adjustments were made using engineering judgement to better balance volumes between intersections.

## FUTURE (YEAR 2040) ROADWAY CAPACITY

A volume to capacity analysis was completed for the US 14 corridor to identify the future year 2040 level of congestion. Future year 2040 AADT volumes are shown on **Figure 15** and estimated to be 33,300 vehicles per day (vpd) on US 14 at its most congested point in the project area. The typical planning level capacity for a four-lane divided rural roadway is 35,000 to 38,000 vpd. These volume ranges are based on guidance from the Highway Capacity Manual and professional engineering judgement. The future year 2040 volume to capacity ratio (V/C) on US 14 is expected to range from 0.88 to 0.95. The ratio of volume-to-capacity provides a measure of congestion along a stretch of roadway and can help determine where roadway improvements, access management, transit services or demand management strategies need to be implemented. It does not, however, provide a basis for determining the need for specific intersection improvements. This is better determined through a more detailed peak hour intersection capacity analysis as discussed below.



## US 14 Corridor Analysis

Figure 15. Projected Future (Year 2040) Traffic Volumes

Current AADT Traffic Volume  
 Projected Future (Year 2040) AADT Traffic Volumes  
 Growth Rate

US 14 Analysis Limits

## FUTURE (YEAR 2040) INTERSECTION CAPACITY

Future forecasted peak hour traffic volumes were used to perform year 2040 projected a.m. and p.m. peak hour capacity analysis at each intersection for the no build condition which assumes no changes at any intersection on US 14. Capacity analysis was performed based upon the intersection LOS methodology from the *Highway Capacity Manual*. The intersection LOS for this plan was based upon the amount of delay (in seconds) experienced at each intersection. Delay and LOS was calculated using Synchro 10/SimTraffic software.

**Table 6** summarizes the LOS and delay results per intersection under year 2040 traffic conditions. Most intersections do not operate within MnDOT’s acceptable threshold (LOS D or better).

**Figure 16** and **Figure 17** show the year 2040 a.m. and p.m. operational conditions per intersection, respectively. Future delays are caused by the same issues identified under existing conditions; however, are amplified due to the increase in volume on US 14. The volumes on US 14 reach over 2,200 vehicles during the peak periods in the heaviest direction.

**Table 6. Future Level of Service Summary**

Intersection	Control <sup>1</sup>	A.M. Peak Hour		P.M. Peak Hour	
		LOS	Delay <sup>2</sup> (sec)	LOS	Delay (sec)
260th Avenue	SSSC	A/C	3/19	A/D	4/25
CSAH 15 (270th Avenue)	SSSC	A/D	7/26	A/D	7/32
280th Avenue (county line)	SSSC	B/ <b>F</b>	12/51	B/ <b>F</b>	12/ <b>55</b>
CSAH 5 (2nd Avenue)	Signal	<b>E</b>	<b>55</b>	<b>E</b>	<b>73</b>
10th Avenue	Signal	<b>F</b>	<b>&gt;2 min</b>	<b>E</b>	<b>68</b>
CSAH 3 (85th Avenue)	SSSC	D/ <b>F</b>	30/ <b>&gt;5 min</b>	D/ <b>F</b>	29/ <b>&gt;6 min</b>
CR 104 (60th Avenue)	SSSC	<b>F/F</b>	<b>59/&gt;8 min</b>	<b>F/F</b>	<b>&gt;3 min/&gt;30 min</b>
7th Street	SSSC	A/ <b>F</b>	9/ <b>&gt;2 min</b>	B/ <b>F</b>	12/ <b>&gt;3 min</b>

**Bold** denotes unacceptable conditions.

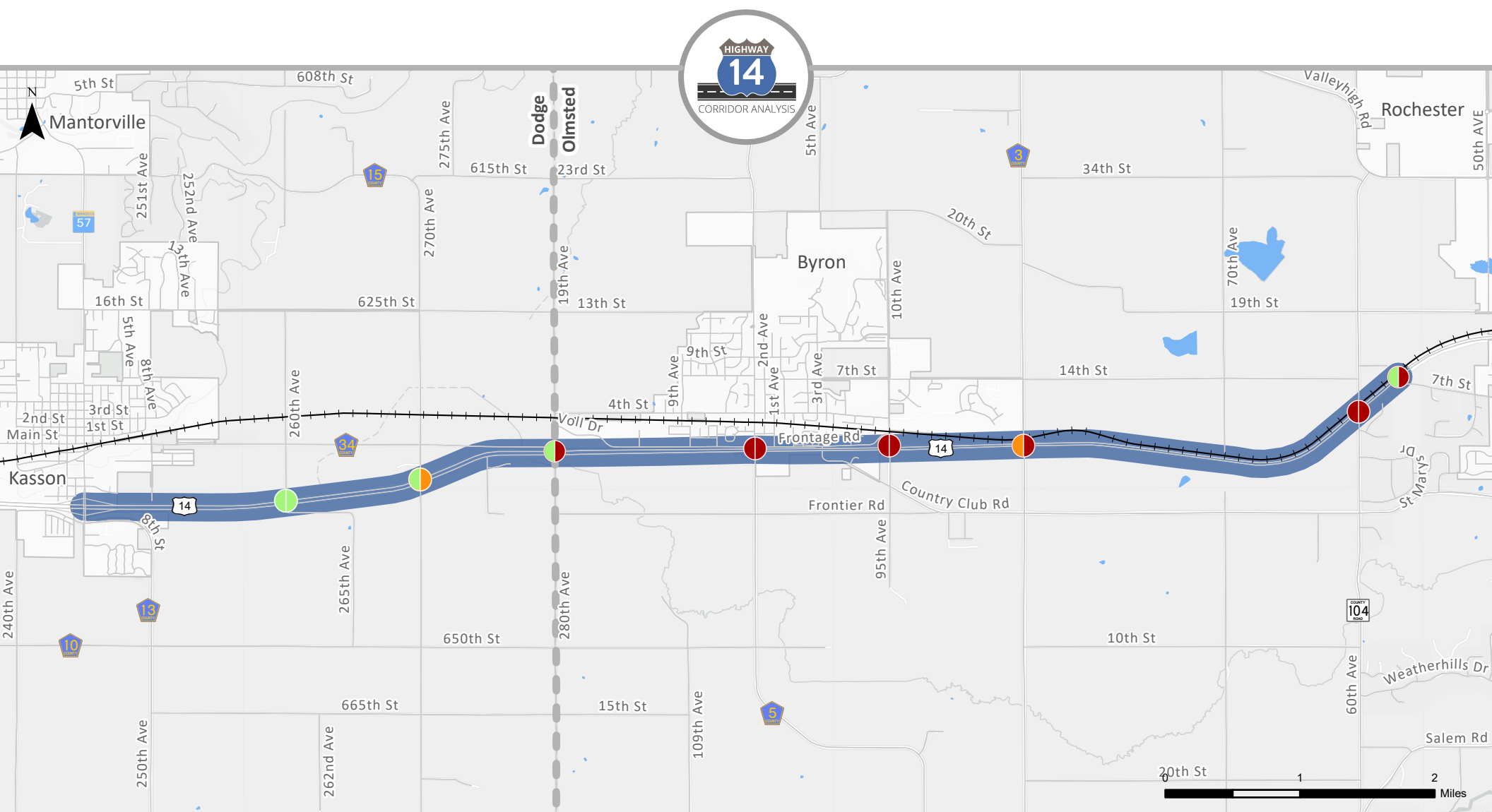
<sup>1</sup> Traffic control device per intersection. SSSC = side-street, stop-controlled, Signal = traffic signal

<sup>2</sup> Signal delay is for the overall intersection and SSSC delay is shown with the overall/worst intersection approach

Queue spillback includes instances when turning vehicles exceed the available turn lane length or when through lane queues block access to adjacent turn lanes. Queue spillback can degrade the safety of the intersection by increasing the potential for rear-end crashes and the increased delays associated with the congestion. **Table 7** summarizes anticipated future queuing issues, unless noted, the 95th percentile queue lengths do not exceed available storage or block adjacent turn lanes.



**Table 7. Future Queuing Issues**


Intersection	Time Period	Movement	95th Percentile Queue (ft)	Storage (ft)	Issue
CSAH 5 (2nd Avenue)	a.m.	EB	650	475	EB-through vehicles queue past storage lanes blocking turning traffic from accessing that lane
	a.m./p.m.	WB	470/1,140	450	WB-through vehicles queue past storage lanes blocking turning traffic from accessing that lane
	a.m./p.m.	NB	190/240	100	NB vehicles queue past storage lanes blocking turning traffic from accessing that lane
	a.m./p.m.	SB	970/1,170	None	Queue spills past frontage road blocking that intersection
10th Avenue	a.m./p.m.	EB	2,480/570	500	EB through vehicles queue past storage lanes blocking turning traffic from accessing that lane
	p.m.	WB	1,320	525	WB through vehicles queue past storage lanes blocking turning traffic from accessing that lane
	a.m./p.m.	NB	370/450	75	NB vehicles queue past storage lanes blocking turning traffic from accessing that lane
	a.m./p.m.	SB	1,480/430	180	SB vehicles queue past storage lanes blocking turning traffic from accessing that lane
CSAH 3 (85th Avenue)	a.m.	NB	790	None	Excessive queues
	a.m./p.m.	SB	760/650	None	Excessive queues
CR 104 (60th Avenue)	a.m./p.m.	SB	1,490/1,600	~20	SB vehicles queue past the railroad tracks with no existing storage lanes





## US 14 Corridor Analysis

Figure 16. 2040 A.M. Peak Hour Intersection Operations

Overall Approach  Worst Approach  US 14 Analysis Limits

 Acceptable Operations (LOS A-C)



 Approaching Capacity (LOS D)


 Over Capacity (LOS E-F)





## US 14 Corridor Analysis

Figure 17. 2040 P.M. Peak Hour Intersection Operations

Overall Approach  Worst Approach  US 14 Analysis Limits

 Acceptable Operations (LOS A-C)

 Approaching Capacity (LOS D)

 Over Capacity (LOS E-F)

## 2.6 – Safety

Five-years of crash history was analyzed to identify locations and traffic safety trends along US 14. The data from January 1, 2014 through December 31, 2018 (the most recent five years of data available at the time the analysis was conducted) was obtained from MnDOT’s Minnesota Crash Mapping Analysis Tool (MnCMAT). Overall, there were a total of 319 crashes within the corridor project limits during the five-year analysis period, of which two involved fatalities, 87 resulted in personal injury, and 230 involved property damage. **Figure 18** shows the crash locations by severity.

### CRITICAL CRASH RATE

MnDOT uses a comparison of the crash rate and the critical rate when determining whether there is a safety issue at an intersection or along a roadway segment. The crash rate or severity for an intersection is the number of crashes per million entering vehicles (MEV) and the crash rate or severity rate for a segment is the number of crashes per million vehicle miles (MVM) travelled. The critical crash rate is a statistical comparison based on similar intersections or segments statewide. An observed crash rate or severity rate greater than the critical crash rate indicates that the intersection or segment operates outside of the expected, normal range. The critical index reports the magnitude of this difference. **Table 8** and **Table 9** document the results of the analysis of each intersection and segment, respectively. Key points grouped by intersection versus segment are summarized below.

#### Intersection

- Data reviewed indicates 182 crashes occurred within 100-feet of intersections along US 14.
- **CSAH 5 (2nd Avenue):** 58 percent of crashes were rear end and 32 percent were angle crashes (majority involved traffic entering or exiting the north approach of the intersection).
- **10th Avenue:** 85 percent of crashes were rear ends.
- **CSAH 3 (85th Avenue):** 63 percent of crashes were angle crashes (nine (9) southbound and four (4) northbound). Two fatalities occurred involving southbound vehicles entering US 14 in front of eastbound vehicles.
- **CR 104 (60th Avenue):** 52 percent of crashes were angle and 32 percent were rear ends.

#### Highway Segment

- **Highway 57 to 260th Avenue:** 46 percent of segment crashes resulted in a rollover (majority were due to icy road conditions).
- **CSAH 5 (2nd Avenue) to 10th Avenue:** All of the segment crashes involved eastbound vehicles and 50 percent were rear ends. The rear end crashes are likely due to the traffic signals at CSAH 5 (2nd Avenue) and 10th Avenue.
- **10th Avenue to CSAH 3 (85th Avenue):** 45 percent of segment crashes were rear ends, two-thirds involving westbound vehicles.
- **CSAH 3 (85th Avenue) to CR 104 (60th Avenue):** 40 percent of segment crashes involved motorists striking objects other than a vehicle (i.e. guardrail, median, signpost, etc.)





Table 8. Intersection Crashes from 2014 to 2018

Intersection	Crash Severity					Total	Crash Rate	Statewide Avg. Crash Rate	Severity Rate	Statewide Avg Severity Rate	Critical Index	Severity Index
	Fatal	A	B	C	PDO							
260th Avenue	0	1	0	0	0	1	0.03	0.25	2.98	1.05	0.06	0.62
CSAH 15 (270th Avenue)	0	0	2	2	3	7	0.2	0.25	0	1.05	0.41	0
280th Avenue (county line)	0	0	2	3	5	10	0.27	0.25	0	1.05	0.56	0
CSAH 5 (2nd Avenue)	0	0	7	9	44	60	1.41	0.45	0	0.48	1.93	0
10th Avenue	0	1	3	4	33	41	0.81	0.45	1.98	0.48	1.16	0.73
CSAH 3 (85th Avenue)	2	0	2	6	9	19	0.42	0.25	4.45	1.05	0.91	1.08
CR 104 (60th Avenue)	0	0	7	13	24	44	0.93	0.25	0	1.05	2.07	0
Total	2	2	23	37	118	182	-	-	-	-	-	-

SRF Consulting Group, Inc., 2019

Key: **Rate over statewide average** **Rate over critical threshold**

Table 9. Roadway Segment Crashes from 2014 to 2018

Segment (from/to)	Crash Severity					Total	Crash Rate	Statewide Avg. Crash Rate	Severity Rate	Statewide Avg Severity Rate	Critical Index	Severity Index
	Fatal	A	B	C	PDO							
Highway 57 to 260th Avenue	0	1	1	2	24	28	0.56	0.34	2.01	0.70	1.0	0.62
260th Avenue to CSAH 15	0	0	0	1	6	7	0.21	0.34	0	0.70	0.34	0
CSAH 15 to 280th Avenue	0	0	0	0	5	5	0.15	0.34	0	0.70	0.24	0
280th Avenue to CSAH 5	0	0	1	1	8	10	0.20	0.50	0	0.61	0.26	0
CSAH 5 to 10th Avenue	0	0	1	0	9	10	0.26	0.50	0	0.61	0.32	0
10th Avenue to CSAH 3	0	0	1	1	9	11	0.29	0.34	0	0.70	0.48	0
CSAH 3 to CR 104	0	0	5	4	23	32	0.26	0.34	0	0.70	0.54	0
Total	0	1	9	9	84	103	-	-	-	-	-	-

Source: SRF Consulting Group, Inc., 2019

Key: **Index over statewide average** **Index over critical threshold**

## 2.7- Multimodal Operations

### PEDESTRIANS & BICYCLISTS

Several multiuse trails exist within the project area. **Figure 19** shows the existing off-street trail network, as well as snowmobile trails.

There are three separate trail classifications used in Minnesota: state, regional, and local. State trails are governed by the Minnesota Department of Natural Resources (MnDNR) and have been legislatively established for the following functions:

- Provide a recreational travel route that connects to other units of the state or national recreation system.
- Provide access to areas of significant value.
- Reestablish or permit travel along a historic route.
- Provide commuter transportation.

Regional trails are typically managed by the county agency they fall within. The primary purpose of these trails is to provide direct connections to other regional or state trails or provide destination-based service to a regional population. Finally, local trails are managed by city or townships agencies. The purpose of these trails is to support local pedestrian/bicycle activity in populated areas by providing access to parks, schools, commercial areas, regional trails, and other destinations.



Photo credit: Olmsted County Public Works Website

Local trail connections exist within the vicinity of the corridor in Kasson and Byron; however, none currently cross US 14. The Comprehensive Plans for each city envision a future trail network that cross US 14 at Highway 57 in Kasson and at CSAH 5 (2nd Avenue) in Byron. Grade-separated crossings are envisioned in Byron’s Comprehensive Plan due to the speed and design of the roadway, while the trail crossing at Highway 57 would utilize the existing grade-separated interchange. Additionally, there is a local trail along the frontage road north of US 14 from CSAH 5 (2nd Avenue) to 10th Avenue and planned to eventually extend to 280th Avenue (county line).

Two regional trail connections, the Sunrise and Sunset Trails, currently exist between Kasson and Mantorville, and are managed by Dodge County. These trails provide 4.5 miles of north-south connectivity from Mantorville and the Zumbro River to both the east and west sides of Kasson. Both trails terminate within one mile or less of US 14.

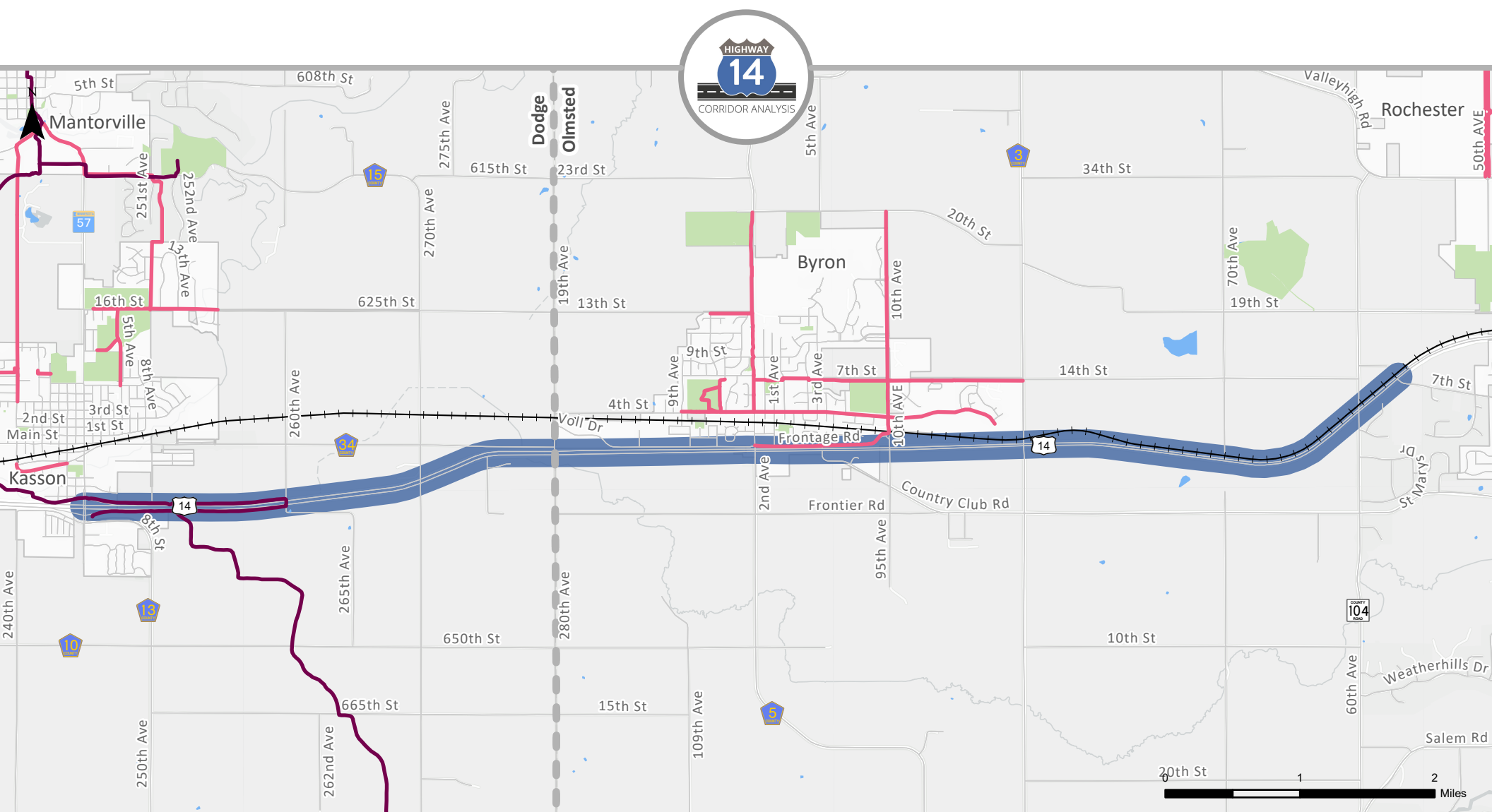
MnDOT completed the District 6 Bicycle Plan<sup>3</sup> in March 2019. The purpose of the plan was to support local bicycle routes and prioritize bicycle investments. Within the project area, the plan identifies the following routes to guide future bicycle and trail investments:

- County Road 34 (Country Club Road) from Rochester to 10th Avenue in Byron
- 10th Avenue from County Road 34 (Country Club Road) to 7th Street
- 7th Street from 10th Avenue to CSAH 5 (2nd Avenue)
- CSAH 5 (2nd Avenue) from 7th Street to 13th Street
- 13th Street/625th Street/16th Street from CSAH 5 (2nd Avenue) to Highway 57. A portion of this route in the City of Kasson is an existing trail.

The DNR is also planning a state trail segment along the Zumbro River that would connect Owatonna and Rochester, while passing through Mantorville immediately north of Kasson and Byron. Named the Stagecoach Trail, it would provide an east west, paved off-street facility approximately two to three miles north of the US 14 corridor. There is currently no timeline for implementation; however, the DNR’s Stagecoach State Trail Master Plan (2012) details potential alignments and their feasibility. Both Kasson and Byron plan to connect their local trail system to the future Stagecoach Trail upon completion.

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<sup>3</sup> <http://www.dot.state.mn.us/bike/district-bicycle-plans.html>



## US 14 Corridor Analysis

Figure 19. Existing Trail Network

● Multiuse Trail    ● Snowmobile Trail

▬ US 14 Analysis Limits

## TRANSIT

Rochester City Lines (RCL) operates regional commuter bus service connecting nearby towns and cities in southeast Minnesota with the City of Rochester. One of the routes operated by RCL travels along US 14 between Kasson, Byron, and Rochester. The two park and ride lots are located at the southwest corner of the Highway 57 and US 14 interchange in Kasson, and the northwest corner of the 10th Avenue and US 14 intersection in Byron. A total of four eastbound and four westbound trips are offered during the morning and afternoon commuting periods, respectively. The buses have two stops in Rochester at the Saint Mary’s Hospital Campus and in downtown, which provide residents of the two cities access to Rochester’s major employment centers.

## FREIGHT

The statewide freight policy established in the Minnesota Go Statewide Freight System Plan (2016) is to, “provide an integrated system of freight transportation in Minnesota – highway, rail, water, air cargo, and intermodal terminals – that offers safe, reliable, and competitive access to statewide, national, and international markets.” According to MnDOT, within the project area US 14 is designated as an Oversize-Overweight (OSOW) corridor meaning vehicles that exceed one or more of the height, length, or weight limits designated by the agency. The US 14 corridor is also a part of the National Truck Network, which is a network of approved routes for commercial trucks.

The existing volume of heavy commercial vehicles in the project area is shown on [Figure 12](#). The HCAADT ranges 1,350 to 1,600 which equates to 6.2 to 7.5 percent of the daily traffic.



Photo credit: Google Maps

## 2.8 – Public Engagement #1

To complement the corridor issues identification analysis, the project team facilitated a variety of public engagement activities. Additional details on these are discussed below.

Initial public engagement included the development of a project website, development of a public survey, and facilitation of a pop-up event at the Byron Good Neighbor Days on July 16, 2019. A handout introducing the project was available at the pop-up. A project survey was also available for attendees to complete in digital or hardcopy format. The survey was then available via the project website until after the first open house. The project survey focused on gathering input on how the public interacts with the US 14 corridor. Questions included the following:

- How often do you use US 14 within the limits shown in red on the image above?
- What intersections do you use to access US 14 and/or the City of Byron?
- What intersections do you currently use to cross US 14 as a pedestrian or bicyclist?
- What intersections would you like to cross in the future as a pedestrian or bicyclist?
- What are the issues you experience when using the US 14 corridor?
- Do you agree with the need to convert US 14 into a freeway with grade separated intersections?

There was a total of 668 responses to the survey with the following key takeaways noted:

- 84 percent of respondents were strongly supportive of grade-separation of the corridor.
- 80 percent of respondents travel on the US 14 corridor two or more times a week and 60 percent of respondents travel the corridor daily.
- Top issues experienced when using the US 14 corridor include: safety while driving, high speeds, congestion, and access to US 14.
- The intersections that are used most often to access US 14 are CSAH 5 (2nd Avenue) and 10th Avenue.

The project team also facilitated an in-person open house on October 10, 2019. The open house provided an introduction of the project. The project team gave a formal presentation and informational boards were available to allow attendees the opportunity to provide input and ask questions. The open house was promoted via traditional media (i.e. print and radio) and project partner's social media accounts with more than 100 people attending the open house. The project survey was available for attendees to complete in digital or hardcopy format during the meeting. Local print and television media outlets attended the meeting and provided the project with an earned media recap of the open house.



Key themes from the public comments received at the open house include:

- Strong desire for short, mid-, and long-term safety improvements on US 14.
- Concerns about north – south connections if US 14 is grade separated.
- Agricultural access impacted if grade separation changes current access at CSAH 15 (270th Avenue).
- US 14 corridor experiences high speeds, aggressive driving, with a need for additional law enforcement.
- Mixed opinions regarding the effectiveness of stoplights along US 14.
- Opportunity to reduce congestion on US 14 with improvements on other roadways in the regional network.
- Pedestrian and bicyclist safety concerns traveling along US 14 and crossing US 14, opportunities to create safe routes for pedestrians and bicyclists.

Survey results and information presented during the project’s first open house and pop-up event are provided in [Appendix C](#).



Public Open House #1 on October 10, 2019

## Chapter 3 – Laying out the Alternatives

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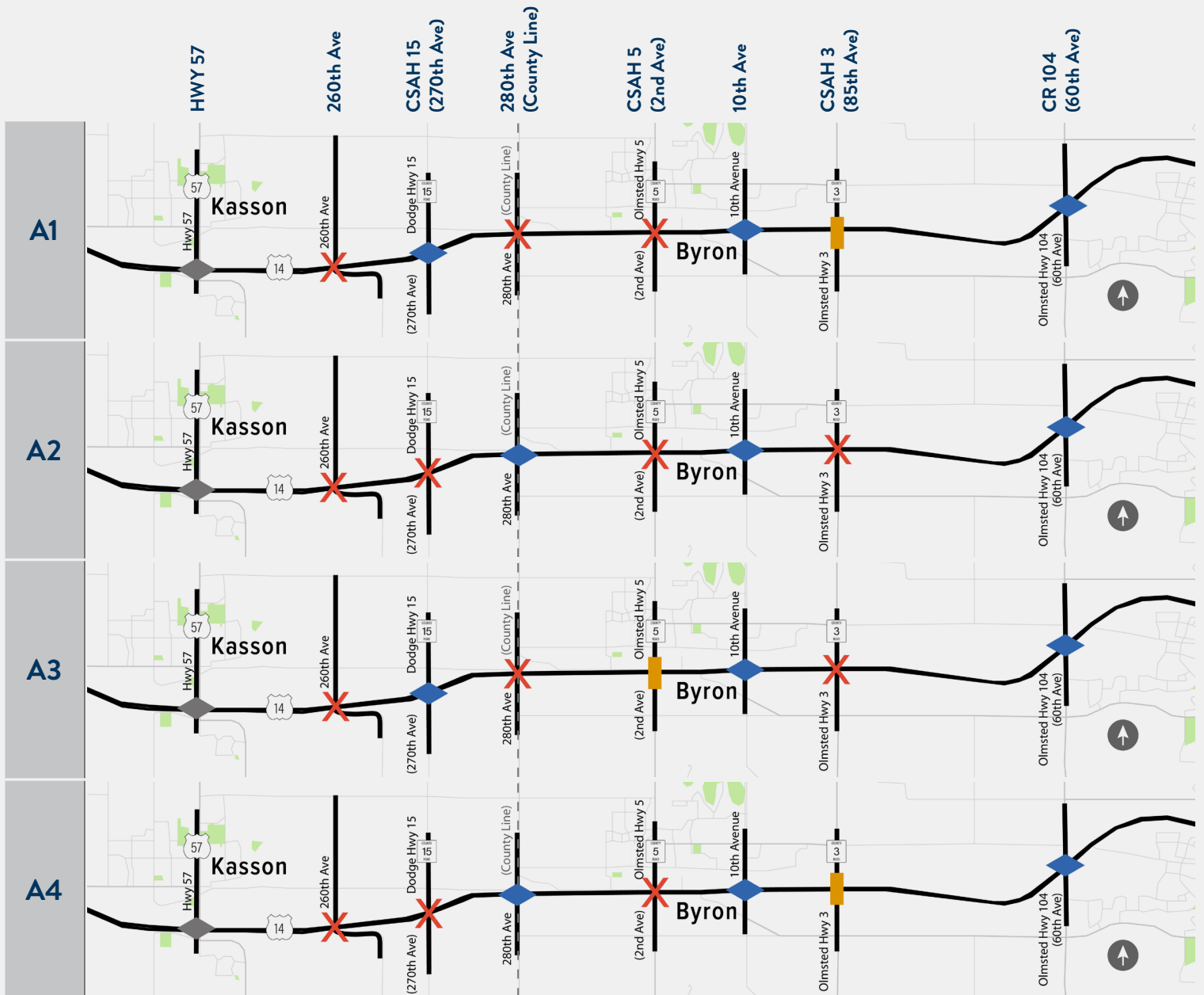
The next step in the process was to establish feasible long-term access alternatives for the US 14 corridor taking into consideration the technical analysis and input received from the public and stakeholders. To accomplish this, a range of conceptual corridor access alternatives were developed. These concept alternatives can then be carried forward for further analysis in future environmental processes.

### 3.1 – Alternatives Development Process

The alternative development process was multifaceted using a range of inputs including the corridor vision, technical data, public comments, design parameters, and guidance from the PMT and PAC. The primary issue areas considered were safety, mobility, accessibility to local communities, and regional connectivity.

The project team facilitated a PAC meeting at which the committee members identified eight initial access alternatives for the corridor. This meeting was a brainstorming session meant to consider various options and potential solutions. Each access alternative assumed an interchange at CR 104 (60th Avenue), which is expected to be constructed in the short-term (5+ years). Access changes including closure or partial access (e.g. right-in/right-out or restricting movements), an overpass, or an interchange were considered for the existing intersections between Highway 57 and CR 104 (60th Avenue).

**Figure 20** and **Figure 21** display the access alternatives developed. After review and basic refinement with the PMT and PAC, these access alternatives were presented to the public at the second open house in June 2020 (see **Appendix C**).

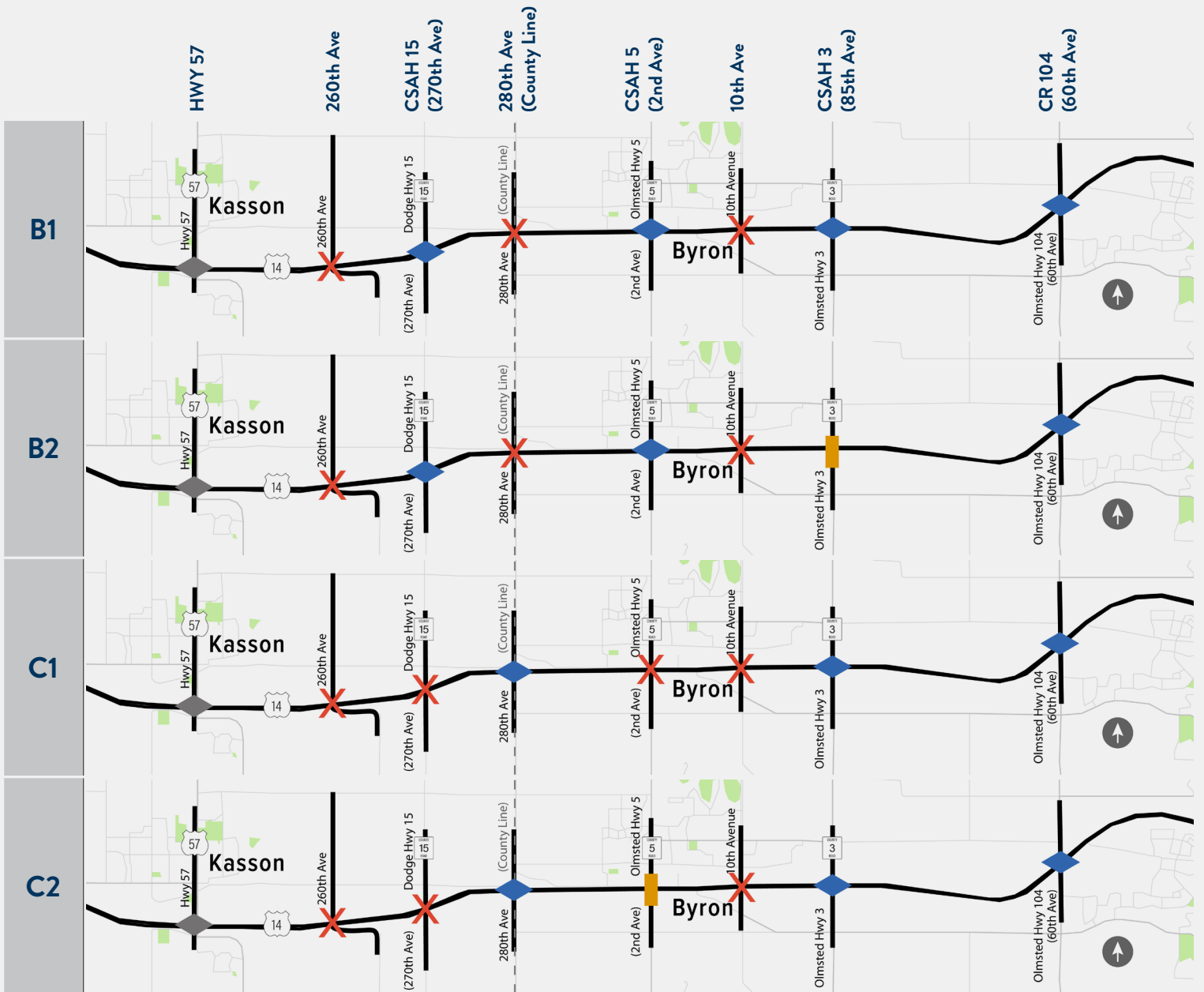


### US 14 Corridor Analysis

Figure 20. Preliminary Access Alternatives (A1-A4)

- Key**
- ◆ Existing Interchange
  - ◆ Interchange
  - Overpass
  - X Closure or Partial Access





### US 14 Corridor Analysis

Figure 21. Preliminary Access Alternatives (B1-C2)

- Key**    Existing Interchange    Interchange    Overpass    Closure or Partial Access








## 3.2 – Preliminary Evaluation

Evaluation criteria were developed based on input from the PMT. The screening criteria included:

- Implement improvements to reduce crashes at critical crash risk locations
- Compliant with access spacing guidelines
- Improves safety for pedestrian and bicyclists
- Reduces congestion along US 14
- Improves mobility for pedestrians and bicyclists
- Provides reasonable access to and from local communities
- Minimizes property impacts
- Encourages economic development
- Minimizes system connectivity disruptions
- Maintains freight movement
- Reduces impacts to agricultural movement

\* *Evaluation criteria metrics are shown in [Figure 22](#).*

The alternatives were evaluated based on a qualitative estimate of each alternative’s ability to address the evaluation factors. Each alternative was assigned a rating relative to its ability to meet the criteria. The rating system was as follows:

-  Good; meets criteria well
-  Acceptable; but relatively less than good
-  Moderate; no distinguishing characteristics
-  Less desirable; considering criteria
-  Poor; fails to meet criteria

A multifaceted review process by the PMT vetted the evaluation criteria and iterations of the evaluation matrices. SRF also made multiple revisions to ensure that criteria, documented impacts, and rankings were accurate before it was presented to the public for review. The results of the preliminary evaluation are shown in [Figure 22](#).

Figure 22. Preliminary Evaluation Summary

Criteria	Safety			Mobility		Accessibility to Local Communities			Regional Connectivity		
	Implement improvements to reduce crashes at critical crash risk locations	Compliant with access spacing guidelines	Improves safety for pedestrians and bicyclists	Reduces congestion along US 14	Improves mobility for pedestrians and bicyclists	Provides reasonable access to and from local communities	Minimizes property impacts	Encourages economic development	Minimizes system connectivity disruptions	Maintain freight movement	Reduces impacts to agricultural movement
Evaluation Metric	Total conflict points	Access spacing guidelines: - Interchange spacing 2-3 miles - Overpass spacing 1.5-2 miles	Provides a grade separated crossing of US 14	Reduces congestion with the reduction in at-grade access points	Provides crossing accommodations (at-grade or grade separated) of US 14	Based on interchange location and number of interchanges	Reduces the total number of full or partial property acquisitions	Alignment with the City's Comprehensive Plan	Total mileage to be transferred or reconstructed	Connectivity of north/south County Roads (e.g. CSAH 15, CSAH 5, and CSAH 3)	Evenly spaced grade-separated north/south routes
A1											
A2											
A3											
A4											
B1											
B2											
C1											
C2											

Good; meets criteria well 
 Acceptable; but relatively less than good 
 Moderate; no distinguishing characteristics 
 Less desirable; considering criteria 
 Poor; fails to meet criteria

### 3.3 – Secondary Evaluation

The evaluation of the nine access alternatives resulted in four of them rising to the top. These four leading alternatives include A3, A4, B1 and B2. The project team completed a secondary evaluation of these alternatives considering additional evaluation criteria:

- System enhancement and changes
- Maximizes efficiency of the local system
- Minimizes right of way acquisition
- Estimated construction cost

The alternatives were evaluated based on the same qualitative rating system detailed above and were vetted by the PMT. Results of the secondary evaluation are shown in [Figure 23](#).

[Figure 23](#) notes “System Enhancements and Changes” for each of the four alternatives. The items identified, which are graphically depicted on [Figure 24](#), were primarily driven by the projected shifts in traffic patterns due to proposed access modifications in each alternative. This traffic shift was added to the forecasted 2040 traffic volumes and then compared to the planning-level capacities shown below (see [Table 10](#)) to understand potential impacts of each alternative. A more detailed discussion of this process is available in [Appendix D](#). Recommendations from this analysis were then discussed and refined with the PMT.

**Table 10. Planning-Level Roadway Capacities**

Cross-Section	Maximum Daily Planning-Level Capacity	Approaching Capacity (85 percent of Daily)
Two-Lane Undivided Urban	10,000	8,500
Two-Lane Undivided Rural	15,000	12,750
Two-Lane Divided Urban (Three-Lane)	17,000	14,450
Four-Lane Undivided Urban	22,000	18,700
Four-Lane Undivided Rural	28,000	23,000
Four-Lane Divided Urban (Five-Lane)	32,000	27,200

Conceptual interchange and overpass layouts were developed for the four leading alternatives. The development process took into consideration concepts from past planning studies. Concepts were discussed and refined with the PMT. Input received from this group led to the development of several non-traditional concepts (e.g. Button Hook Interchange at 10th Avenue or the Triple Bridge Interchange at CSAH 5 (2nd Avenue)). Throughout the process, the PMT encouraged “outside the box thinking” to consider all options to help the project succeed and work toward consensus. While these concepts are not definitive layouts that will be implemented exactly as shown, they provide a perspective of feasibility. Many of the interchange concepts developed were presented along with the detailed evaluation results for the four leading alternatives to the public at the second open house on June 10, 2020 (see [Appendix C](#)).

Figure 23. Secondary Evaluation Summary

Criteria	System Enhancements and Changes	Accessibility to Local Communities	Other Considerations	
	Notes	Maximizes efficiency of the local system	Minimize right of way acquisition	Estimated Construction Cost
A3	<ul style="list-style-type: none"> <li>Alternative requires improvement of local roadway system to support traffic diversion due to access modification</li> <li>Improve E/W Frontage Rd, 4th Street, and/or 7th Street from CSAH 5 to 10th Avenue</li> <li>Improve E/W 14th Street from gravel road to paved roadway from CSAH 3 to CR 104 (CSAH 3 designation added to this segment)</li> </ul>	●	●	\$\$\$
A4	<ul style="list-style-type: none"> <li>Alternative requires improvement of local roadway system to support traffic diversion due to access modification</li> <li>Improve E/W Frontage Rd, 4th Street, and/or 7th Street from CSAH 5 to 10th Avenue</li> <li>Improve E/W 14th Street from gravel road to paved roadway from CSAH 3 to CR 104</li> <li>CSAH 15 realignment necessary to accommodate regional system connectivity</li> <li>CSAH 5 realignment necessary to accommodate regional system connectivity</li> </ul>	●	◐	\$\$\$\$
B1	<ul style="list-style-type: none"> <li>No local roadway improvements necessary to support alternative</li> </ul>	●	●	\$\$\$\$
B2	<ul style="list-style-type: none"> <li>Alternative requires improvement of local roadway system to support traffic diversion due to access modification</li> <li>Improve E/W 4th Street and/or 7th Street from CSAH 5 to 10th Avenue</li> <li>Improve E/W 14th Street from gravel road to paved roadway from CSAH 3 to CR 104 (CSAH 3 designation added to this segment)</li> </ul>	●	●	\$\$\$

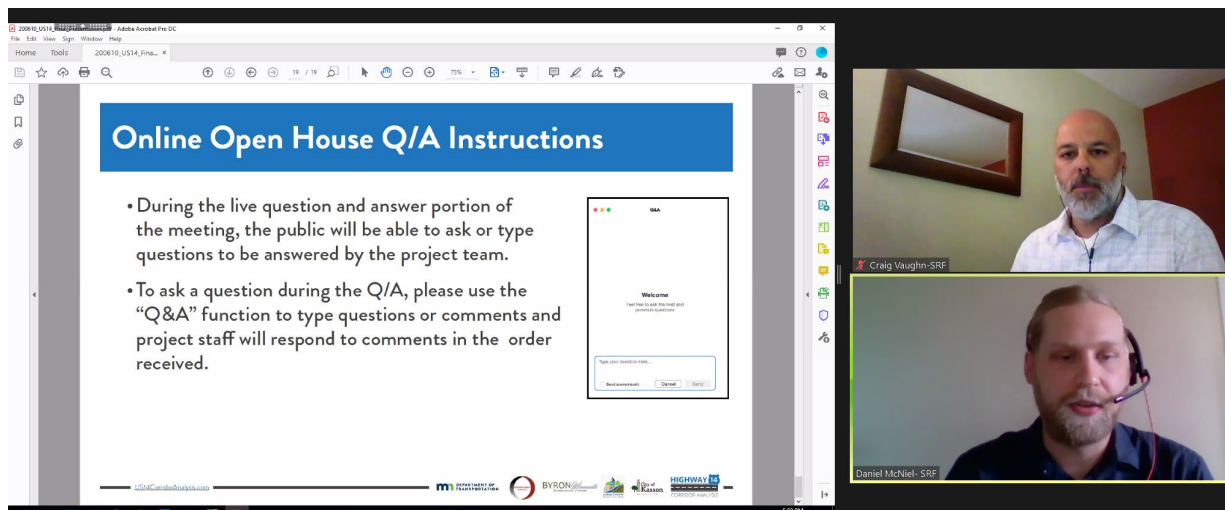
Good; meets criteria well
  Acceptable; but relatively less than good
  Moderate; no distinguishing characteristics
  Less desirable; considering criteria
  Poor; fails to meet criteria





### 3.4– Public Engagement #2

The project team facilitated a live virtual open house on June 10, 2020. The open house provided the public the opportunity to hear updates on the project, review potential corridor access alternatives, and learn about next steps. The second open house was originally planned to be held in-person, but due to the COVID-19 pandemic, and following guidance from the Minnesota Department of Health, the meeting was successfully transitioned to a virtual format. Like the first open house, project partners promoted the community meeting using a press release in traditional media outlets and advertising on project partners respective social media pages. The project team gave a live presentation that was followed by a question and answer session. More than 90 devices, some of which likely included more than one person, were online for the virtual open house.



Virtual Open House #2 on June 10, 2020

The public was also given the opportunity to share their ranking of the four leading alternatives in an online survey that was available from June 10 through June 28, 2020. There was a total of 359 responses to the survey and the two leading alternatives based on public input were A3 and B1.

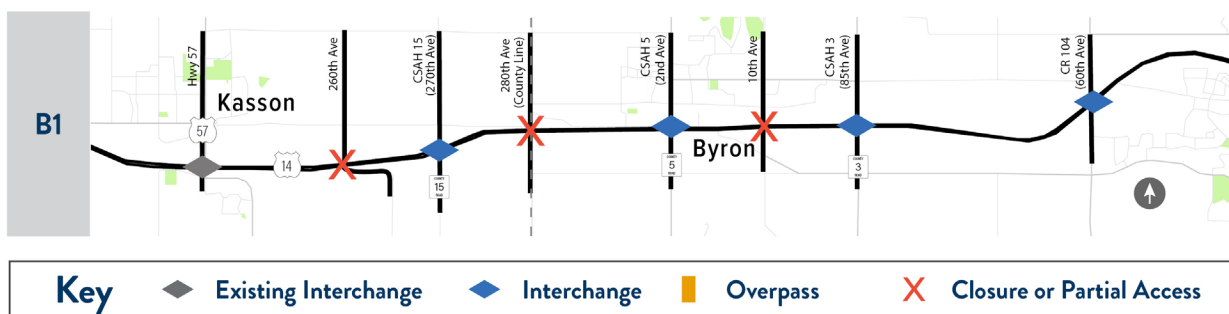
The information received during the open house was taken into consideration as the project team worked through the final stages of the analysis process. The survey responses were analyzed using SRF Data Sciences tool Machine Learning + Engagement (ML+E). ML+E improves the comment analysis of surveys through detailed analysis of public comments and interactive visualizations to help interpret survey results. Using two separate machine learning algorithms (Amazon topic analysis and Google Brain sentiment analysis) SRF conducted survey comment analysis for the US 14 Corridor Analysis open house #2 community survey. After conducting an analysis, the SRF Data Sciences team developed a dashboard to allow project partners to easily sort comments and extra useful information based on demographic information, public sentiment or key words.

All information presented during the project’s second open house including survey results, public comments, and presentation materials is available in [Appendix C](#).

## Chapter 4 – The Corridor Looking Forward

Following the second Public Open house, additional discussion with the PMT occurred to further vet the four leading alternatives. Public input and the technical evaluation were again reviewed to arrive upon a select long-term access alternative to advance. Public input and technical evaluation data each arrived at alternatives A3 and B1 as leading alternatives. Continued discussion with the PMT, including additional input from staff at each agency, yielded consensus for alternative B1 as the selected long-term vision for the US 14 corridor (see [Figure 25](#)). Alternative B1 includes interchanges at CSAH 15 (270th Avenue), CSAH 5 (2nd Avenue), and CSAH 3 (85th Avenue) plus access modifications at the other at-grade intersections. This consensus marked a huge milestone in the more than 20-year analysis history of the corridor.

Figure 25. Selected Long-Term Vision



### 4.1 - Implementation Strategies

It is anticipated that the full implementation of the US 14 corridor long-term vision will take 20 years or longer to come to fruition. Additional detailed analysis and design and significant environmental review, as required by the National Environmental Policy Act (NEPA), will need to be conducted in the future to determine specific implementation strategies along the US 14 corridor. Additionally, the strategies and timeframes identified below are preliminary and may change over time as the ultimate corridor vision is implemented (depending on safety, traffic growth, development, funding, etc.).

Currently, none of the US 14 corridor improvements are fully funded or programmed in the capital improvement plans of the agency partners. However, there is momentum around certain improvement areas with funding having been allocated to date for the design of the CR 104 (60th Avenue) interchange area. Due to serious safety concerns, partial funding has been secured through the Highway Safety Improvement Program (HSIP) for fiscal year 2024 for interim improvements at the CSAH 3 (85th Avenue) intersection. This will be discussed further as we progress through the implementation strategies section. Implementation of the long-term vision will take commitment and collaboration from all project partners.

Through discussion with the project partners it was determined that two implementation strategies were appropriate for the selected corridor vision. This was based on the potential for interchange construction to occur at either CSAH 3 (85th Avenue) or CSAH 5 (2nd Avenue) first. Each has its merit and supplemental improvement needs.

- C. Implementation Strategy #1 – Assumes the construction of an interchange at CSAH 3 (85th Avenue) occurs first followed by the construction of the interchange at CSAH 5 (2nd Avenue), then the construction of the interchange at CSAH 15 (270th Avenue).
- D. Implementation Strategy #2 – Assumes the construction of an interchange at CSAH 5 (2nd Avenue) occurs first followed by the construction of the interchange at CSAH 3 (85th Avenue), then the construction of the interchange at CSAH 15 (270th Avenue).

The implementation strategies were broken into the following three timeframes, and in some cases included different stages within each timeframe. Planning-level cost estimates were also prepared for each timeframe and stage. Cost estimates were based on planning-level costs and do not include costs for right-of-way acquisition or engineering design. Improvements identified for each timeframe advance towards the ultimate vision of US 14 becoming a freeway over time.

- Short-term (5+ years)
- Mid-term (10+ years)
- Long-term (20+ years)

The implementation strategies considered interim improvements at some of the intersections including right-in/right-out access modifications or conversion to a Reduced Conflict Intersection (RCI). The intent of the interim improvements is to address existing issues (e.g. safety or congestion) and/or prepare the corridor for the fully implemented long-term vision. A summary of the implementation strategies is provided below.

Project costs were developed for the roadway improvements outlined in the implementation plans below. Project costs were developed using planning-level construction cost estimates and are displayed in 2020 dollars. The cost for right-of-way acquisition was not included in any project cost estimates. Additionally, the cost to construct the interchange at CR 104 (60th Avenue) was also not included in the estimates shown below.

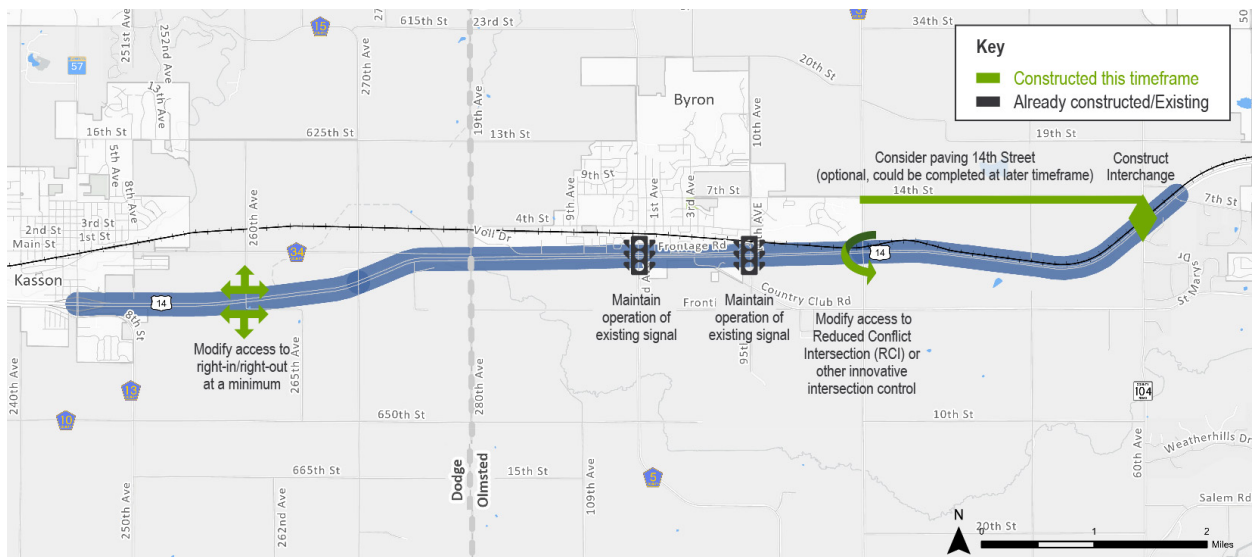
### A. IMPLEMENTATION PLAN #1 – CSAH 3 CONSTRUCTED FIRST

This implementation strategy is described below and graphically depicted on **Figure 26** through **Figure 30**.

#### Short-Term (5+ years) - \$5.9 million

- Construct interchange at CR 104 (60th Avenue). As of December 2020, the interchange at CR 104 (60th Avenue) is currently in the preliminary design phase and project partners are in the process of securing funding for construction.
- Potentially replace gravel pavement on existing township road (14th Street) with asphalt. It is anticipated that traffic will utilize this roadway to access the interchange at CR 104 (60th Avenue). This is likely to increase once access changes are made at CSAH 3 (85th Avenue) and during construction of the interchange at this location. Traffic patterns should be monitored once the CR 104 (60th Avenue) interchange is fully functional and open to the public for use to determine if paving of 14th Street is necessary.
- Modify access at CSAH 3 (85th Avenue) to either right-in/right-out or RCI. There is an immediate need for an access change at this intersection due to the existing safety concerns.
- Modify access at 260th Avenue to right-in/right-out at a minimum.
- Maintain operation of existing signals at CSAH 5 (2nd Avenue) and 10th Avenue to facilitate access to US 14 from Byron. Optimize timing plans as necessary.

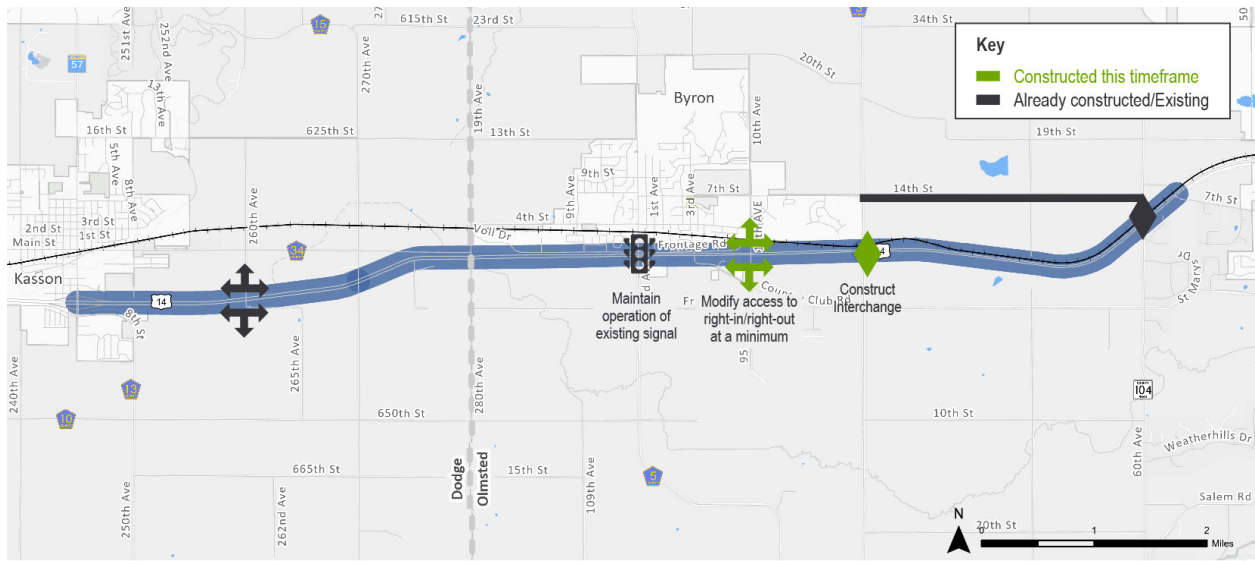
Figure 26. Implementation Plan CSAH 3 Constructed First – Short-Term



#### Mid-Term, Stage 1 (10+ years) - \$24.2 million

- Construct interchange at CSAH 3 (85th Avenue).
- Maintain operation of existing signals at CSAH 5 (2nd Avenue) to facilitate access to US 14 from Byron. Optimize timing plan as necessary.
- Modify access at 10th Avenue to right-in/right-out at a minimum.

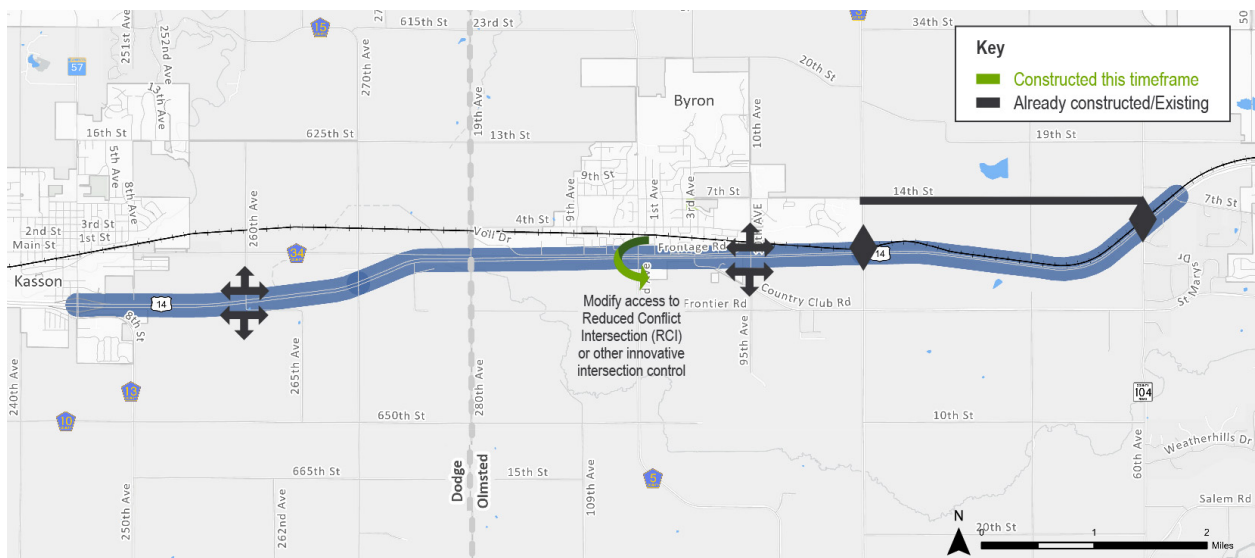
Figure 27. Implementation Plan CSAH 3 Constructed First – Mid-Term, Stage 1



**Mid-Term, Stage 2 (10+ years) - \$800,000**

- Once the interchange at CSAH 3 (85th Avenue) is fully functional and open to the public for use, then implementation strategies identified below can proceed. This stage would likely occur at the same time as Stage 1 or immediately following.
- Modify access at CSAH 5 (2nd Avenue) to RCI or other innovative intersection control to provide access but improve mainline mobility and intersection safety. This will address safety issues at the intersection by eliminating the southbound left-turn and north/south through movements.

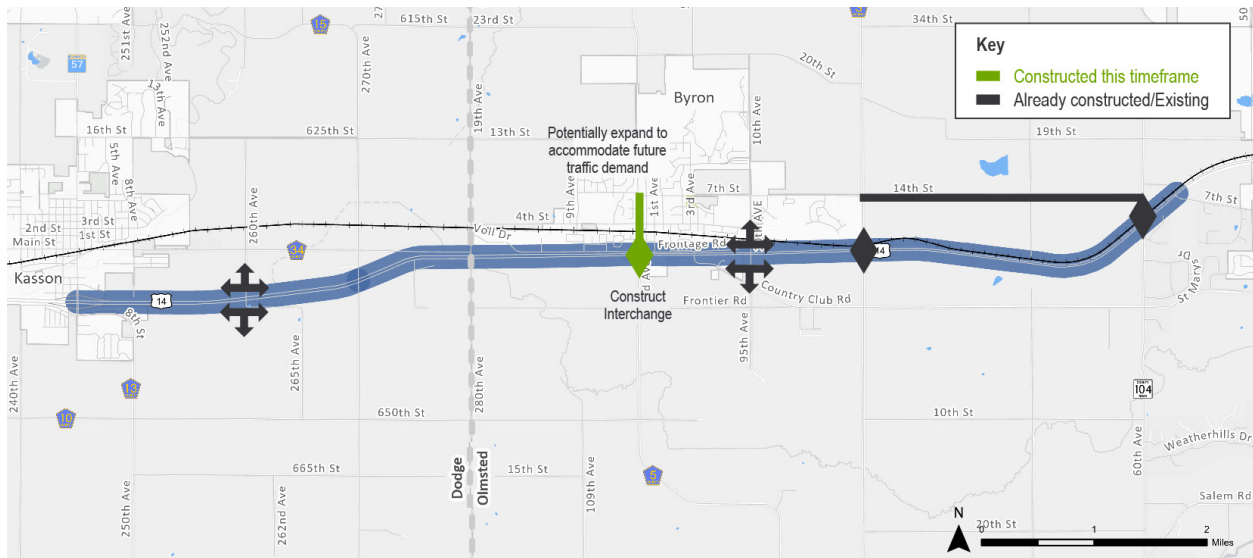
Figure 28. Implementation Plan CSAH 3 Constructed First – Mid-Term, Stage 2



### Long-Term, Stage 1 (20+ years) - \$44 million

- Construct interchange at CSAH 5 (2nd Avenue).
- Potentially expand CSAH 5 (2nd Avenue) from a two-lane to four-lane roadway between US 14 and 7th Street to accommodate future traffic demand. Traffic patterns should be monitored once the CSAH 5 (2nd Avenue) interchange is fully functional and open to the public for use to determine if expansion or other changes, such as additional turn lanes, are necessary.

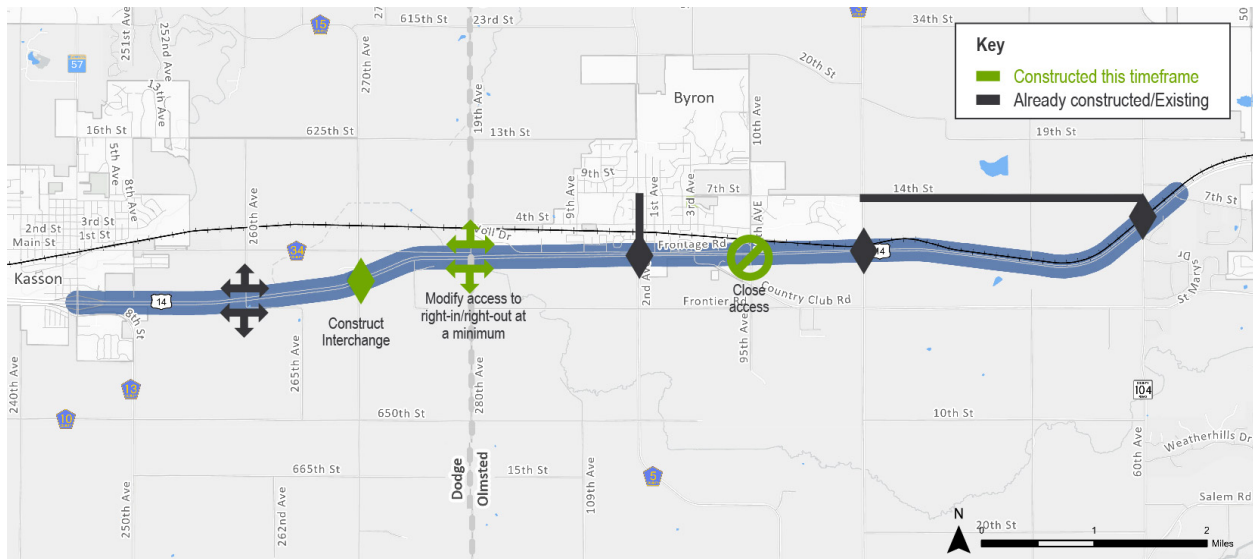
Figure 29. Implementation Plan CSAH 3 Constructed First – Long-Term, Stage 1



### Long-Term, Stage 2 (20+ years) - \$18.3 million

- This stage occurs after the interchange at CSAH 5 (2nd Avenue) is fully functional and open to the public for use. This stage would likely occur at the same time as Stage 1 or immediately following.
- Close access at 10th Avenue.
- Construct interchange at CSAH 15 (270th Avenue).
- Once interchange at CSAH 15 (270th Avenue) is fully functional and open to the public for use, modify access at 280th Avenue (county line) to right-in/right-out at a minimum.

Figure 30. Implementation Plan CSAH 3 Constructed First – Long-Term, Stage 2



## B. IMPLEMENTATION PLAN #2 – CSAH 5 CONSTRUCTED FIRST

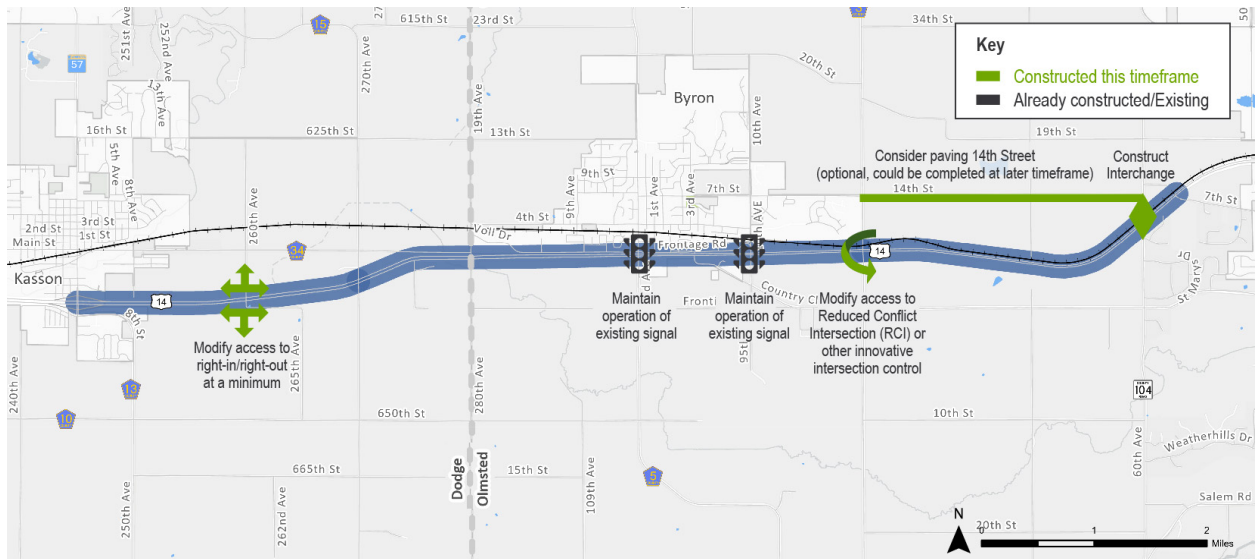
This implementation plan is described below and graphically depicted on [Figure 31](#) through [Figure 35](#).

### Short-Term (5+ years) - \$5.9 million

- Construct interchange at CR 104 (60th Avenue). As of December 2020, the interchange at CR 104 (60th Avenue) is currently in the preliminary design phase and project partners are in the process of securing funding for construction.
- Potentially replace gravel pavement on existing township road (14th Street) with asphalt. It is anticipated that traffic will utilize this roadway to access the interchange at CR 104 (60th Avenue). This is likely to increase once access changes are made at CSAH 3 (85th Avenue) and during construction of the interchange at this location. Traffic patterns should be monitored once the CR 104 (60th Avenue) interchange is fully functional and open to the public for use to determine if paving of 14th Street is necessary.
- Modify access at CSAH 3 (85th Avenue) to either right-in/right-out, RCI, or other innovative intersection traffic control. There is an immediate need for an access change at this intersection due to the existing safety concerns.
- Modify access at 260th Avenue to right-in/right-out at a minimum.
- Maintain operation of existing signals at CSAH 5 (2nd Avenue) and 10th Avenue to facilitate access to US 14 from Byron. Optimize timing plans as necessary.



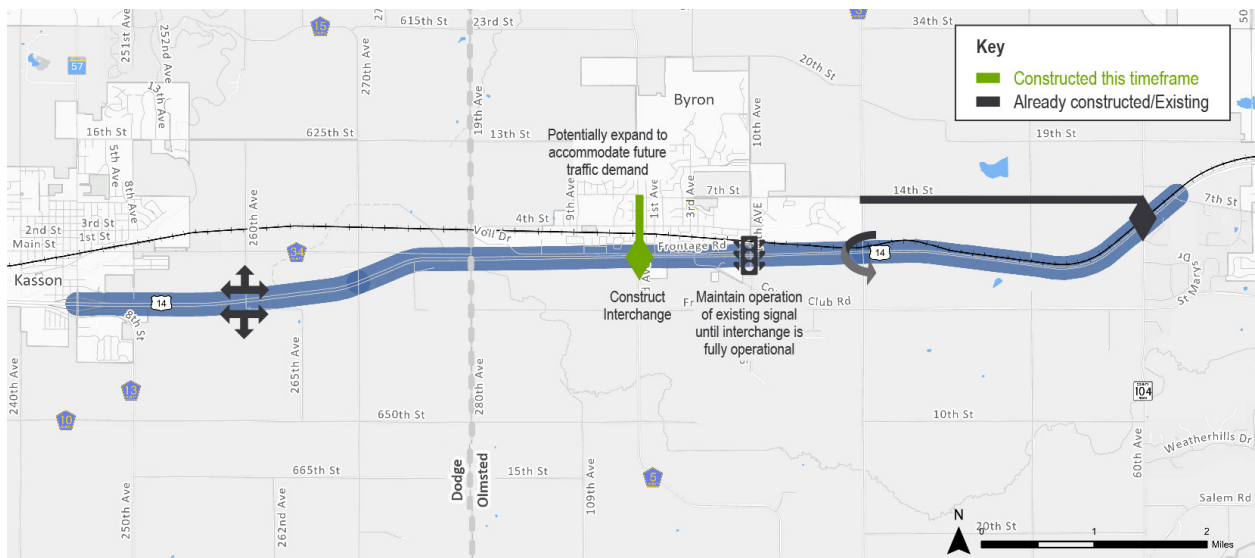
Figure 31. Implementation Plan CSAH 5 Constructed First – Short-Term



**Mid-Term, Stage 1 (10+ years) - \$44 million**

- Construct interchange at CSAH 5 (2nd Avenue).
- Potentially expand CSAH 5 (2nd Avenue) from a two-lane to four-lane roadway between US 14 and 7th Street to accommodate future traffic demand. Traffic patterns should be monitored once the CSAH 5 (2nd Avenue) interchange is fully functional and open to the public for use to determine if expansion or other changes, such as additional turn lanes, are necessary.
- Maintain operation of existing signal at 10th Avenue to facilitate access to US 14 from Byron. Optimize timing plans, as necessary.

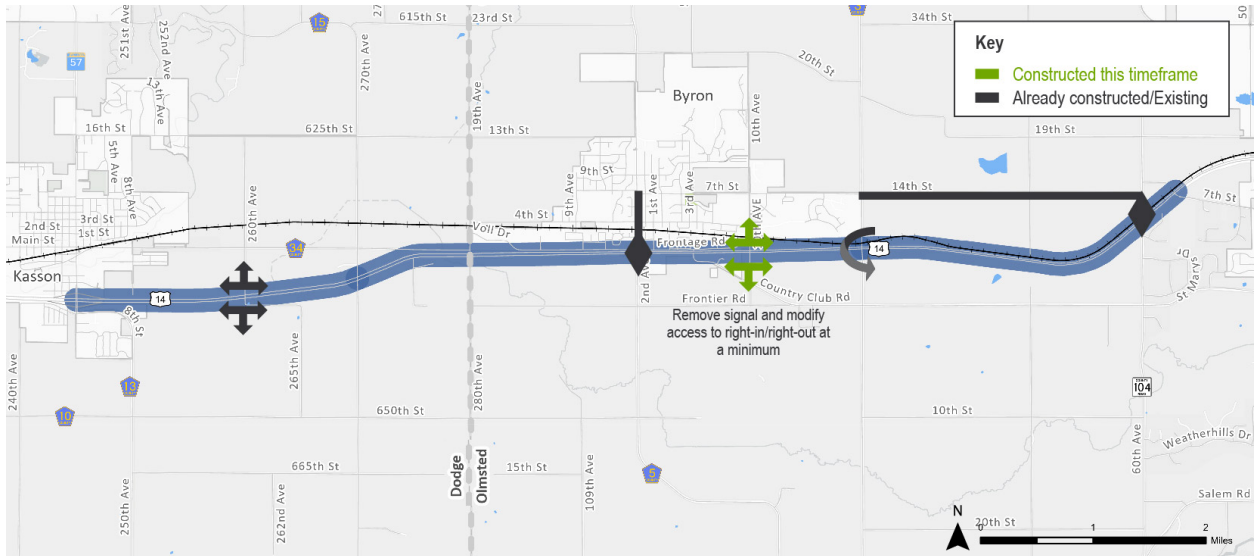
Figure 32. Implementation Plan CSAH 5 Constructed First – Mid-Term, Stage 1



### Mid-Term, Stage 2 (10+ years) - \$120,000

- Once the interchange at CSAH 5 (2nd Avenue) is fully functional and open to the public for use, then implementation strategies identified below can proceed. This stage would likely occur at the same time as Stage 1 or immediately following.
- Remove signal and modify access at 10th Avenue to right-in/right-out at a minimum.

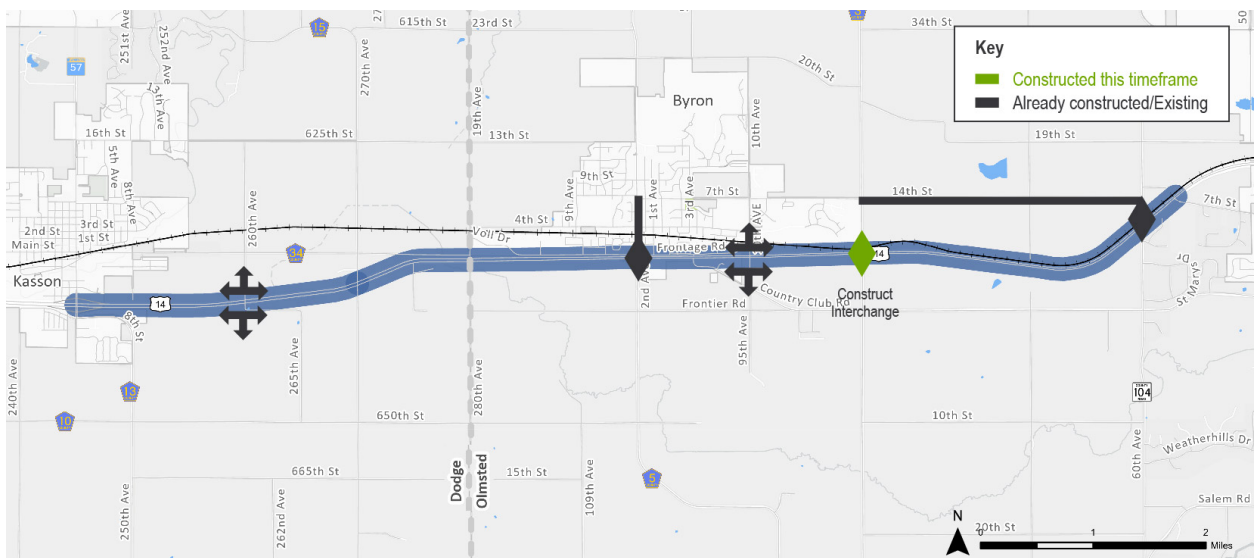
Figure 33. Implementation Plan CSAH 5 Constructed First – Mid-Term, Stage 2



### Long-Term, Stage 1 (20+ years) - \$24 million

- Construct interchange at CSAH 3 (85th Avenue).

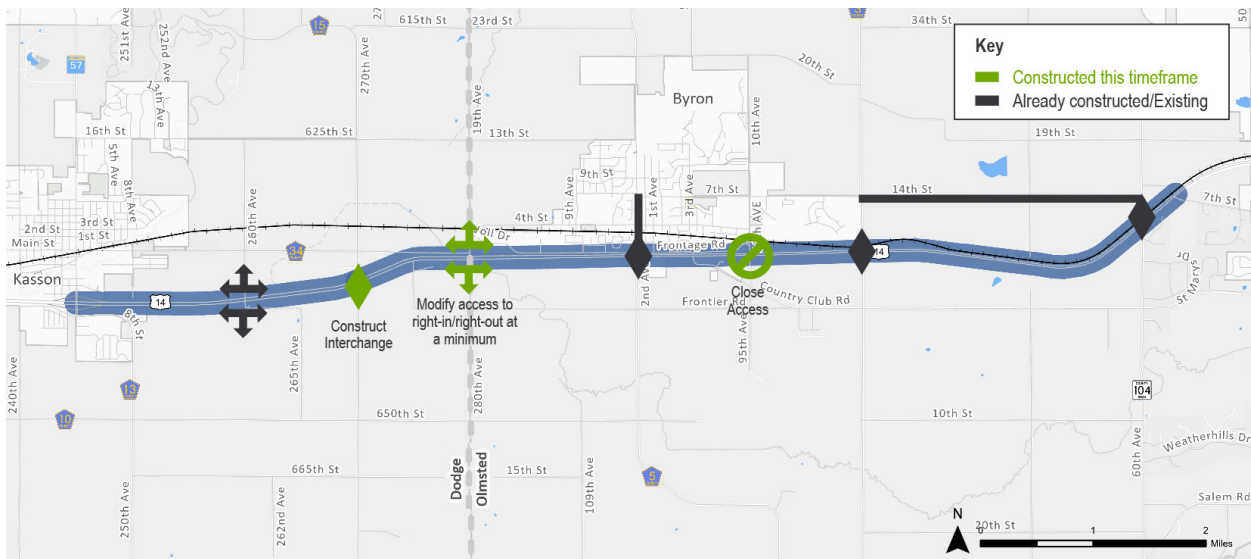
Figure 34. Implementation Plan CSAH 5 Constructed First – Long-Term, Stage 1



**Long-Term, Stage 2 (20+ years) - \$18.3 million**

- This stage occurs after the interchange at CSAH 3 (85th Avenue) is fully functional and open to the public for use. This stage would likely occur at the same time as Stage 1 or soon thereafter.
- Close access at 10th Avenue.
- Construct interchange at CSAH 15 (270th Avenue).
- Once interchange at CSAH 15 (270th Avenue) is fully functional and open to the public for use, modify access at 280th Avenue (county line) to right-in/right-out at a minimum.

**Figure 35. Implementation Plan CSAH 5 Constructed First – Long-Term, Stage 2**



**4.2- Conceptual Interchange Alternatives**

Conceptual interchange alternatives were developed for the three interchange locations identified in the long-term corridor vision. This was done to understand the feasibility of implementing interchanges at these locations. Additional access and local roadway improvements were shown as necessary (i.e., residential driveway access and local roadway connections) in each conceptual alternative. Additionally, traffic analysis was completed for each conceptual interchange alternative to understand feasibility under year 2040 traffic conditions (see [Appendix D](#) for further detail).

Further, the project partners intend to officially map the interchange locations so that right-of-way needs can be documented and communicated to property owners. [Figure 36](#) to [Figure 39](#) depict the interchange concepts that are conceived at this time. These concepts do not constitute a design that will be implemented but rather a potential footprint that can be used to understand potential property impacts or needs. The official mapping process is discussed further later in this document.

Significant environmental review, as required by the National Environmental Policy Act (NEPA), will be necessary to fully analyze these conceptual alternatives. Through this environmental process, a detailed purpose and need statement describing the reason for the project will be defined and interchange design and implementation will be determined. The environmental review process also includes additional opportunities for public input.

**CSAH 15 (270TH AVENUE) CONCEPTUAL INTERCHANGE ALTERNATIVE**

Several interchange concepts were reviewed at the intersection of US 14 and CSAH 15 (270th Avenue). A detailed interchange analysis was not completed as part of this project; however, the potential for interchange impacts and opportunities for minimization of impacts were identified. Several elements were considered during the review of the conceptual interchange alternatives:

- Year 2040 traffic conditions (see **Table 11** and **Appendix D** for further detail).
- Potential right-of-way needs.
- Maintenance of access to surrounding properties.

**Table 11. Future Level of Service Summary for CSAH 15 Interchange Alternatives**

Alternative	Intersection	Control <sup>1</sup>	A.M. Peak Hour		P.M. Peak Hour	
			LOS	Delay <sup>2</sup> (sec)	LOS	Delay (sec) <sup>2</sup>
Folded Diamond	WB Ramps	SSSC	A/C	4/15	A/C	7/17
Folded Diamond	EB Ramps	SSSC	A/B	7/13	A/B	7/13
Partial Folded Diamond	WB Ramps	SSSC	A/C	4/15	A/C	7/17
Partial Folded Diamond	EB Ramps	Signal	B	14	B	13

**Bold** denotes unacceptable conditions. **Green** denotes concept alternative shown below.  
<sup>1</sup> Traffic control device per intersection. SSSC = side-street, stop-controlled, Signal = traffic signal  
<sup>2</sup> Signal delay is for the overall intersection and SSSC delay is shown with the overall/worst intersection approach

Based on the feasibility review conducted, **Figure 36** depicts a conceptual interchange alternative that is being documented as a placeholder for future consideration. This concept does not indicate a directive or design that must be implemented, but rather a reasonable alternative that helps to set the vision for future access at this location. Additional detailed analysis, review, and environmental consideration will need to be conducted in the future to determine specific design options for this and all locations along US 14. As noted later herein, the project partners have chosen to officially map this and other access alternatives to assist in future land use planning in the area.

Figure 36. CSAH 15 Conceptual Interchange Alternative



\*CSAH 15 (270th Avenue) conceptual interchange alternative is subject to change.

### CSAH 5 (2ND AVENUE) CONCEPTUAL INTERCHANGE ALTERNATIVE

Several interchange alternatives were evaluated for the intersection of US 14 and CSAH 5 (2nd Avenue). A detailed interchange analysis was not completed as part of this project; however, the potential for interchange impacts and opportunities for minimization of impacts were identified. It was assumed that the area surrounding the future interchange would be predominately urban, identified in coordination with the City of Byron. Several elements were considered during the review of the conceptual interchange alternatives:

- Year 2040 traffic conditions (see [Table 12](#) and [Appendix D](#) for further detail).
- Potential right-of-way needs.
- Maintenance of access to surrounding properties.
- East-west frontage road (north of US 14) connectivity.
- Impacts to the US 14 alignment.

Table 12. Future Level of Service Summary for CSAH 5 Interchange Alternatives

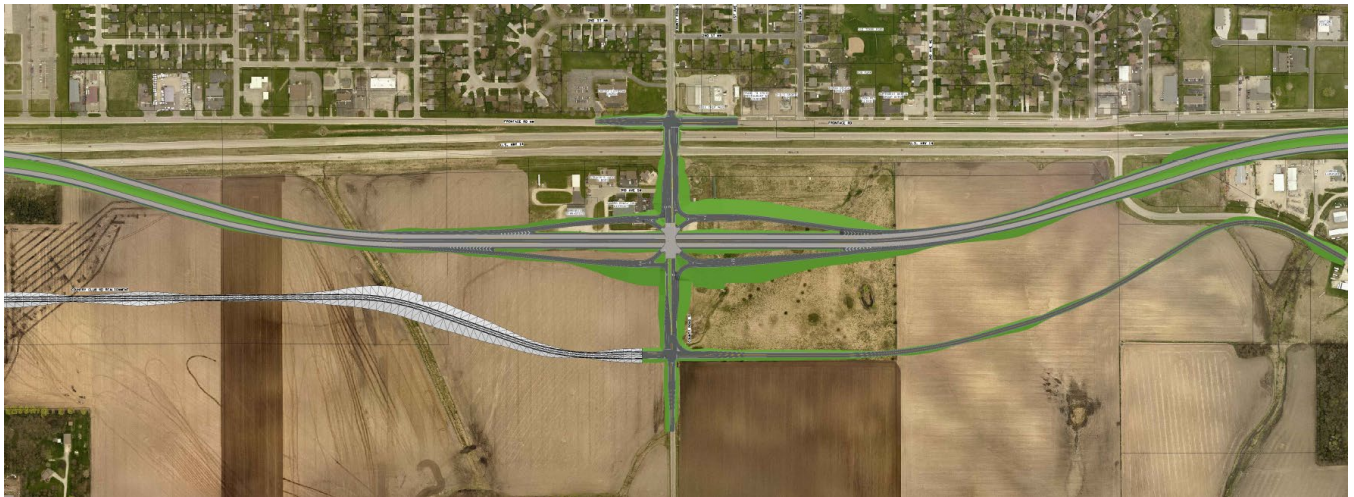
Alternative	Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
			LOS	Delay <sup>1</sup> (sec)	LOS	Delay (sec) <sup>1</sup>
Folded Diamond	WB Ramps	Signal	C	23	C	30
Folded Diamond	EB Ramps	Signal	C	27	C	23
Single Point	Both Ramps	Signal	C	34	C	32
Dual Roundabouts	WB Ramps	Roundabout	A	7.6	B	13.9
Dual Roundabouts	EB Ramps	Roundabout	B	10.9	A	7.7

**Bold** denotes unacceptable conditions. **Green** denotes concept alternative shown below.

<sup>1</sup> Signal delay is for the overall intersection

Based on the feasibility review conducted, **Figure 37** and **Figure 38** depict conceptual interchange alternatives that are being documented as a placeholder for future consideration. These concepts do not indicate a directive or design that must be implemented, but rather reasonable alternatives that help to set the vision for future access at this location. Additional detailed analysis, review, and environmental consideration will need to be conducted to determine specific design options for this and all locations along US 14. As noted later herein, the project partners have chosen to officially map these and other access alternatives to assist in future land use planning in the area. Just a note, the east-west frontage road west of CSAH 5 (2nd Avenue) that is shown in white on **Figure 37** and **Figure 38** was not officially mapped.

Figure 37. CSAH 5 Conceptual Interchange Alternative – Single Point



\*CSAH 5 (2nd Avenue) conceptual interchange alternative is subject to change.

Figure 38. CSAH 5 Conceptual Interchange Alternative – Dual Roundabouts



\*CSAH 5 (2nd Avenue) conceptual interchange alternative is subject to change.

### East-West Frontage Road

The City of Byron is planning to construct the east-west frontage road between CSAH 5 (2nd Avenue) and Country Club Road likely in the short-term (5+ years). This roadway is identified in the City's comprehensive plan as important connection to facilitate local road connectivity for future development in this area.

As shown in the implementation strategies, the existing access point at US 14 and 10th Avenue, which is also County Road 34 south of US 14, will be closed or modified to right-in/right-out access. To facility better county road connectivity, the City and County have discussed the following jurisdictional changes:

- Transfer Frontier Road between CSAH 5 (2nd Avenue) Country Club Road to County jurisdiction. This segment would be the continuation of County Road 34 which extends east towards Rochester.
- Transfer 10th Avenue/Country Club Road (County Road 34) to City jurisdiction.

### CSAH 3 (85TH AVENUE) CONCEPTUAL INTERCHANGE ALTERNATIVE

Several interchange alternatives were evaluated for the intersection of US 14 and CSAH 3 (85th Avenue). A detailed interchange analysis was not completed as part of this project; however, the potential for interchange impacts and opportunities for minimization of impacts were identified. It was assumed that the area surrounding the future interchange would be predominately urban, identified in coordination with the City of Byron. Several elements were considered during the review of the conceptual interchange alternatives:

- Year 2040 traffic conditions (see [Table 13](#) and [Appendix D](#) for further detail).
- Potential right-of-way needs.
- Maintenance of access to surrounding properties.

Table 13. Future Level of Service Summary for CSAH 3 Interchange Alternatives

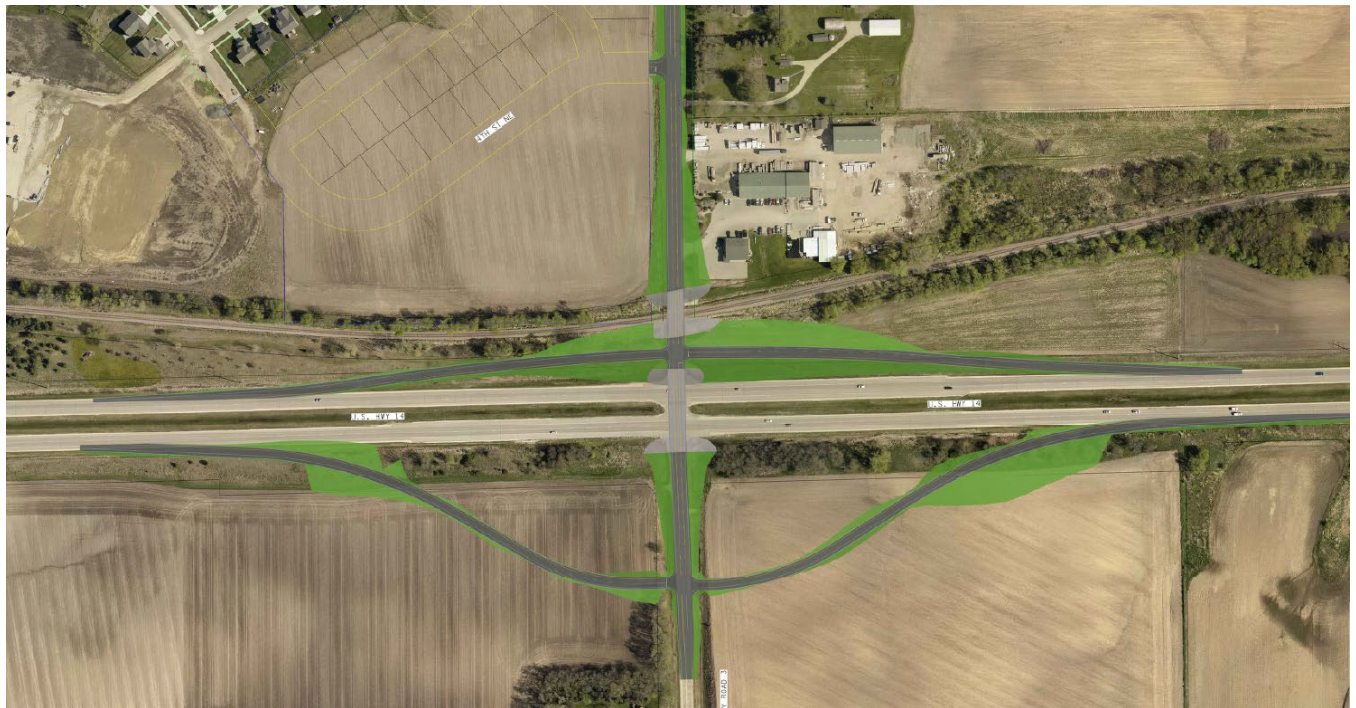
Alternative	Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
			LOS	Delay <sup>1</sup> (sec)	LOS	Delay (sec) <sup>1</sup>
Partial Folded Diamond	WB Ramps	Signal	C	23	D	38
Partial Folded Diamond	EB Ramps	Signal	C	21	B	17
Diamond	WB Ramps	Signal	C	24	D	39
Diamond	EB Ramps	Signal	B	12	B	13

**Bold** denotes unacceptable conditions. **Green** denotes concept alternative shown below.

<sup>1</sup> Signal delay is for the overall intersection

Based on the feasibility review conducted, **Figure 39** depicts a conceptual interchange alternative that is being documented as a placeholder for future consideration. This concept does not indicate a directive or design that must be implemented, but rather a reasonable alternative that helps to set the vision for future access at this location. A significant concern, or challenge, here is the near proximity of the railroad. Extra design challenges and associated higher costs are expected. Additional detailed analysis, review, and environmental consideration will need to be conducted to determine specific design options for this and all locations along US 14. As noted later herein, the project partners have chosen to officially map this and other access alternatives to assist in future land use planning in the area.

Figure 39. CSAH 3 Conceptual Interchange Alternative



\*CSAH 3 (85th Avenue) conceptual interchange alternative is subject to change.



### 4.3– Official Mapping Process

The project partners have decided to prepare an Official Map for the select long-term corridor access alternative to establish the anticipated right-of-way needs and access restrictions for the future transportation infrastructure projects. The following are details of the official mapping process:

- Establishes the potential right-of-way acquisition needed for future transportation infrastructure projects.
- Prepared by a licensed land surveyor and adopted by local jurisdictions with zoning authority such as counties, cities, or townships.
- Filed with the County Recorder who notes the presence of the official map on all affected property titles.
- Establishes no right of ownership by the road authority (e.g. the County) and property, or an easement, must be acquired through an acquisition process.

An Official Map will be prepared for the interchange concepts presented; Dodge County and Olmsted County have agreed to process and facilitate the Official Maps for their respective county roads.

### 4.4- Potential Funding Opportunities and Next Steps

The critical next step for this project is to complete significant environmental review, as required by the National Environmental Policy Act (NEPA), to fully analyze these conceptual alternatives and implementation strategies. Through this environmental process, interchange design and implementation will be determined. The environmental review process also includes additional opportunities for public input. Following the environmental review, the project would move into preliminary and final design.

As noted previously, the City of Byron is planning to construct the east-west frontage road between CSAH 5 (2nd Avenue) and Country Club Road in the short-term (5+ years). The project partners have chosen to officially map this to assist in future land use planning in the area as part of this project. In addition to this, the City will need to complete further detailed analysis and environmental review to determine a specific design option for this roadway.

The vision for this project was to determine the long-term vision for the US 14 corridor that improves corridor safety, enhances the mobility, ensures reasonable accessibility to local communities; and maintains regional connectivity across both state and local systems. Implementation of the long-term vision will take commitment and collaboration from all project partners. The Cities, Counties, Townships and MnDOT will need to continue to collaborate to determine next steps such as environmental review, preliminary and final design, and agency cost sharing and coordination.

## FUNDING OPPORTUNITIES

Funding from many sources will be needed to fully implement the selected long-term vision for the US 14 corridor. **Table 14** provides a summary of the potential funding sources identified for the US 14 corridor. The funding sources identified are based on existing data and may change in the future. The ones highlighted in light green were identified as the most suitable options. Some of these will require legislative action (e.g. state aid funds or state bonding), some will require external funding (e.g. a request to MnDOT for Highway Safety Improvement Program (HSIP) funds), but all others (e.g. taxes and bonding) can be implemented by the County Commission or City Council, at their discretion. Cost-sharing between agencies will also need to occur as the project moves forward.

Currently, none of the US 14 corridor improvements are fully funded or programmed in the capital improvement plans of the agency partners. However, there is momentum around certain improvement areas with funding having been allocated to date for the design of the CR 104 (60th Avenue) interchange area. Further, due to serious safety concerns partial funding has been secured, through the Highway Safety Improvement Program (HSIP) for fiscal year 2024, for interim improvements at the CSAH 3 (85th Avenue) intersection. MnDOT in coordination with Olmsted County are currently in the process of determining project details. Outside of this, there is no other funding available for implementation of the selected long-term vision for the US 14 corridor. Project partners should continue to monitor funding and determine next steps for implementation of the long-term vision as opportunities arise.

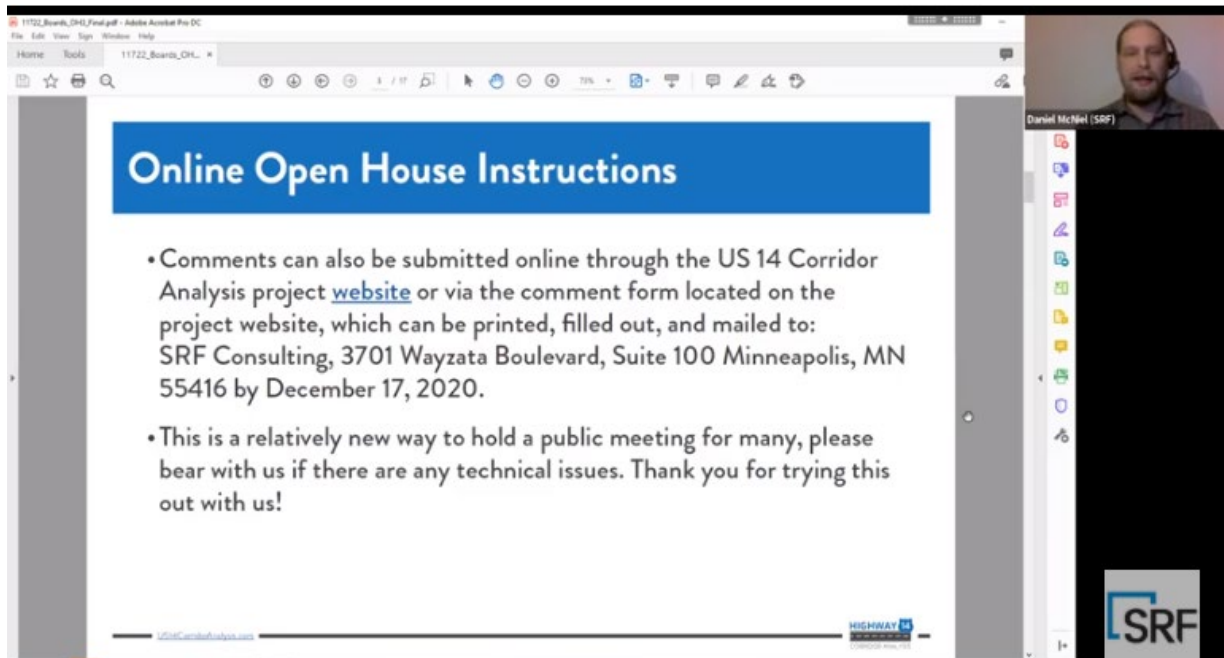
Table 14. Potential Funding Options

Funding Source	Construction or Expansion	Reconstruction	Rehabilitation or Maintenance	Repayment Required	Match Required	Applicability to Preservation or Construction Needs
<b>External Sources</b>						
Better Utilizing Investments to Leverage Development (BUILD) <sup>1</sup>	Yes	Yes	Yes	No	Yes	Very Low
Corridors of Commerce <sup>2</sup>	Yes	Yes	Yes	No	Yes	Very Low
Highway Safety Improvement Program (HSIP) <sup>2</sup>	No	Yes	Yes	No	Yes (10% min)	Medium
Minnesota Highway Freight Program (MHFP) <sup>2</sup>	Yes	Yes	Yes	No	Yes (20% min)	High
High Priority Projects (HPP) <sup>2</sup>	Yes	Yes	No	No	Yes	Medium
Transportation Economic Development (TED) <sup>2</sup>	Yes	Yes	Yes	No	Yes	Very Low
Surface Transportation Program (STP) (road/bridge alternatives) <sup>2</sup>	Yes	Yes	Yes	No	Yes (20% min)	High
State Bonding <sup>2</sup>	Yes	Yes	Yes	No	No	High
Local Road Improvement Program (LRIP) <sup>2</sup>	Yes	Yes	Yes	No	Sometimes	High
Local Bridge Replacement <sup>2</sup>	No	Yes	Yes	No	Sometimes	Medium
Local Partnership Program (LPP) <sup>2</sup>	Yes	Yes	Yes	No	No	High
State Aid Funds <sup>2</sup>	Yes	Yes	Yes	No	No	High
Legacy Grants <sup>2</sup>	Yes	Yes	Yes	No	Yes	Medium
<b>Internal Sources (Taxing Tools)</b>						
County Wheelage Tax	Yes	Yes	Yes	No	No	High
Dedicated Sales/Use Tax	Yes	Yes	Yes	No	No	High
Gravel Tax	Yes	Yes	Yes	No	No	Medium
Ad Valorem Tax Levy	Yes	Yes	Yes	No	No	High
Tax Increment Financing (TIF)	Yes	Yes	Yes	No	No	Low
Tax Abatement	Yes	Yes	Yes	No	No	Low
Special Tax Levy for Transportation	Yes	Yes	Yes	No	No	Medium
<b>Internal Sources (Bonding Tools)</b>						
Local Bonds (GO Bonds)	Yes	Yes	Yes	Yes	No	High
Special Reconstruction Bonds	Yes	Yes	Yes	Yes	No	High
Special Assessment/Special Assessment Bonds	Yes	Yes	Yes	Yes	No	Low
<b>Internal Sources (Agreement)</b>						
Negotiated Developer Fees for Specific Development	Yes	Yes	Yes	No	No	Medium
Third Party Agreements	Yes	Yes	Yes	No	No	Medium
Cooperative/Cost Sharing Agreements	Yes	Yes	Yes	No	Yes	High

<sup>1</sup> Federal Funding Source    <sup>2</sup> State Funding Source

## 4.5 – Public Engagement #3

The project team facilitated a live virtual open house on December 3, 2020. The open house provided the public the opportunity to hear updates on the project progress; review the selected long-term access alternative, conceptual interchange alternatives and implementation plan; and learn about next steps. The project team gave a live presentation that was followed by a question and answer session. More than 120 devices, some of which likely included more than one person, were online for the virtual open house.



Virtual Open House #3 on December 3, 2020

Comments regarding meeting materials and the final project documentation were accepted through December 17, 2020. **Appendix C** summarizes this information, provides all materials presented during the open house, and includes a detailed public comment log of all comments received through the duration of the project.

# Appendices

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