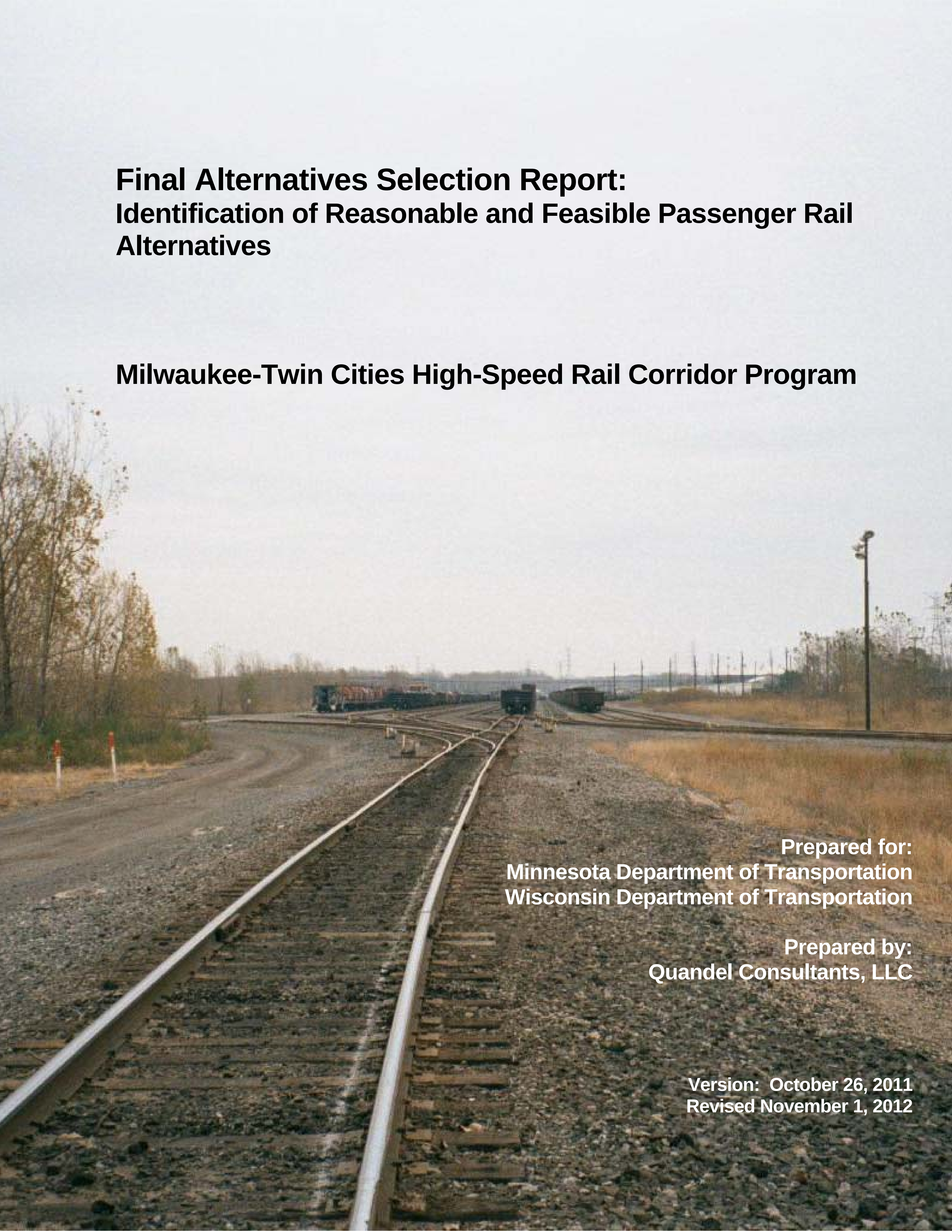
Final Alternatives Selection Report:
Identification of Reasonable and Feasible Passenger Rail Alternatives

Milwaukee-Twin Cities High-Speed Rail Corridor Program



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Wisconsin Department of Transportation

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Executive Summary

Purpose

The Alternatives Selection Report identified the one reasonable and feasible passenger rail alternative within the Milwaukee-Twin Cities High-Speed Rail Corridor Program. This report will clearly indicate the following:

1. why and how the particular range of project route alternatives (potential passenger rail alternatives) was developed,
2. how the results of the scoping process and other public and agency input was used in the alternatives analysis, and
3. the process used to evaluate and eliminate the route alternatives to arrive at the reasonable and feasible passenger rail alternative

The Alternatives Selection Report will be presented to the Federal Railroad Administration, agencies, and the public for review and comment prior to the analysis leading to the identification of the preferred passenger rail alternative.

Background of the MWRRI

In 1996, nine Midwest states, including Wisconsin and Minnesota, and Amtrak formed the Midwest Regional Rail Initiative (MWRRI). The planned MWRRI elements include:

- Operation of a hub and spoke passenger rail system centered on Chicago
- Use of 3,000 miles of existing rail right of way to connect rural and urban areas
- Track and signal improvements and introduction of modern trains operating at speeds up to 110 mph
- Provision of multi-modal connections to improve system access
- Improvement in frequency, reliability, speed, and on-time performance

The work of this initiative (MWRRI) has resulted in a well coordinated and integrated 110-mph rail Business Plan that defines the way in which the rail system should be implemented. This Business Plan consists of various documents that were prepared - an Executive Summary (2004), MWRRI Project Notebook (2004), Appendices (2004), and Benefit Cost and Economic Analysis (2006).

Background of the Milwaukee-Twin Cities High-Speed Rail Corridor Program

On June 23, 2009, the FRA issued a Notice of Funding Availability (NOFA) for the High-Speed Intercity Passenger Rail (HSIPR) Program in the Federal Register. In response, Mn/DOT submitted an application to develop a Tier 1 EIS document for new passenger rail service on the Milwaukee-Twin Cities corridor, a segment of the Chicago to Twin Cities high-speed rail corridor. The FRA reviewed Mn/DOT's application for eligibility and ranking with the criteria outlined in the NOFA. Based upon this evaluation, the FRA selected the State of Minnesota for an award of $600,000 for this project, through a cooperative agreement between FRA and Mn/DOT (the Grantee).

Mn/DOT entered into a cooperative agreement with FRA to develop the Tier 1 EIS document for the Milwaukee-Twin Cities Corridor. Funding for the project has been committed through Minnesota and Wisconsin state funds and FRA's HSIPR Program described in the previous paragraph. In addition to funding the project cooperatively, Mn/DOT and WisDOT have been working together on public involvement throughout both states.

The project team was assembled specifically for the Milwaukee-Twin Cities High-Speed Rail Corridor Program. The team is comprised of Mn/DOT, WisDOT, Amtrak, and Quandel Consultants staff members that have the technical expertise and experience in high-speed rail planning to produce a successful project. The following persons are part of the project team:

- Mn/DOT
  - David Christianson – Freight Planning and Development, Minnesota Department of Transportation
  - Dan Krom – Director, Passenger Rail office, Minnesota Department of Transportation
  - Frank Pafko – Director, Office of Environmental Services, Minnesota Department of Transportation
  - Praveena Pidaparthi – Planning Director, Minnesota Department of Transportation
- WisDOT
  - Jeff Abboud – Urban and Regional Planner, Wisconsin Department of Transportation
  - Ron Adams – Chief, Railroads and Harbor Section, Wisconsin Department of Transportation
  - Tom Beekman – Regional Systems Planning and Programming Chief, Wisconsin Department of Transportation
  - Donna Brown – Passenger Rail implementation Manager, Wisconsin Department of Transportation
  - Carrie Cooper – Urban Regional Planner, Wisconsin Department of Transportation
  - Crystal DuPont – Urban and Regional Planner, Wisconsin Department of Transportation
  - Ethan Johnson – Program and Planning Analyst, Wisconsin Department

of Transportation

- Alyssa Macy – Program Planning Analyst, Wisconsin Department of Transportation
- Arun Rao – Urban and Regional Planner, Wisconsin Department of Transportation

- Amtrak
  - Walter Lander – Principal Officer, Corridor Planning, Amtrak
- Quandel Consultants
  - Charlie Quandel, P.E. – President & CEO
  - Melanie Johnson, P.E. – Project Engineer

Purpose and Need

The draft Purpose and Need Statement was prepared by Mn/DOT and WisDOT in consultation with FRA to identify the purpose (desired outcomes) and needs (problems that are in need of a solution) of the project. The route alternatives analysis links the measures of effectiveness to the purpose and need to ensure continuity throughout the project.

The Purpose and Need document addresses the purpose and need for the proposed action. Need is driven by the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities.

The purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

In addition, the project will:

- Improve overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans
- Provide accessibility to major population centers,
- Improve freight rail mobility, and

- Minimize environmental impacts.

The need for the proposed action exists because:

- **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure
- **Competitive and attractive alternative** modes of travel do not exist in the corridor
- As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes ;
- **Intermodal connectivity** among existing transportation systems is limited.

Route Alternatives Analysis Methodology

The States, in consultation with FRA, prepared a route alternative analysis methodology for use in developing, evaluating, and comparing route alternatives that is completed in three levels of increasing specificity. For each level of analysis, criteria will be analyzed to both quantitatively and qualitatively describe the benefits and impacts and narrow the range of route alternatives based on the Project Purpose and Need. As a result, the analysis will focus on progressively fewer route alternatives with higher levels of scrutiny.

The route alternative analysis will result in the preparation of a Tier 1 Environmental Impact Statement (EIS) that will identify preferred passenger rail alternatives and areas of the route or the entirety of the route designated for Project NEPA. In general, the screening will be completed as follows:

- Level 1 analysis identifies the universe of route alternatives within the project study area. Routes within the universe are pre-screened against the draft Purpose and Need including physical constraints along the alternatives, route distance and route population. Routes that are obviously not suitable for passenger service are eliminated from further study.
- Level 2 analyses utilize qualitative and quantitative measures to evaluate engineering, travel market and environmental criteria. Route alternatives that are shown to have impacts that are extraordinary in nature will be eliminated. The result of the Level 2 analyses is the identification of the Reasonable and Feasible Passenger Rail Alternatives.
- Level 3 analyses compare route alternatives to the No Build Alternative and to each other. The range of route alternatives will be further reduced to those that perform well, minimize or avoid impacts and are more cost effective by comparison. The result of the Level 3 analyses will be reported in a Tier 1 EIS document, after which the study team will identify the Preferred Passenger Rail Alternative for the corridor.

The alternatives analysis evaluates **route alternatives** and not **service alternatives**. For one route alternative that has been identified as reasonable and feasible, there may be several service alternatives, each reflecting a different combination of service characteristics such as maximum speed, frequencies, stopping patterns, and fare structure. The service alternatives will be evaluated in the Tier 1 EIS document.

Public Involvement

Public Involvement is a key activity within the NEPA process. The goals of public involvement are to engage the public in a meaningful and transparent way and build community consensus around recommendations.

Following the publication of the Notice of Intent in the Federal Register, six public involvement meetings and two agency scoping meetings were held in Minnesota and Wisconsin in November and December 2010, to inform the public and agencies about the Milwaukee-Twin Cities High-Speed Rail Corridor Program. Representatives of Minnesota Department of Transportation, Wisconsin Department of Transportation, and Quandel Consultants presented to the public in the following cities:

- St. Paul, MN (Agency Scoping and Public Involvement)
- Rochester, MN (Public Involvement)
- Eau Claire, WI (Agency Scoping and Public Involvement)
- La Crosse, WI/La Crescent, MN (Public Involvement)
- Fond du Lac, WI (Public Involvement)
- Madison, WI (Public Involvement)

The Public Involvement Team presented on the following topics:

- NEPA Process Overview
- Purpose and Need of the Project
- Methodology to identify Potential Passenger Rail Alternatives
- Methodology to identify Reasonable and Feasible Passenger Rail Alternatives
- Methodology to identify Preferred Passenger Rail Alternatives
- Service Development Planning
- Project Schedule and next steps

Identification of the Universe of Routes

The Route Alternatives Analysis Methodology states that the Universe of Routes for the Milwaukee-Twin Cities corridor must be identified. The Universe of Routes is comprised of the existing, abandoned, and out of service rail lines within the corridor. Using geographic (GIS) data from Minnesota DOT and Wisconsin DOT, twenty-six routes were identified as the Universe of Routes. These routes included the following:

- Route 1 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis
- Route 2 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 3 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 4 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis
- Route 5 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 6 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 7 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-St. Paul-Minneapolis
- Route 8 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 9 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Hastings-St. Paul-Minneapolis
- Route 10 - Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 11 - Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12- Milwaukee-Wauwatosa-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12A - Milwaukee - Wiscona Jct.- Wyeville – Merrillan - Eau Claire - St. Paul -Minneapolis
- Route 13 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Eau Claire-St. Paul-Minneapolis
- Route 14 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Withrow-St. Paul-Minneapolis
- Route 15 – Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Hastings-St. Paul-Minneapolis
- Route 16 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-St. Paul-Minneapolis
- Route 17 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis

- Route 18 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 19 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 20 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 21 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester- Red Wing-St. Paul-Minneapolis
- Route 22 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Dodge Center-Randolph-Inver Grove Heights-St. Paul-Minneapolis
- Route 23 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis
- Route 24 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis
- Route 25 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis

Identification of Potential Passenger Rail Alternatives

In order to identify the Potential Passenger Rail Alternatives, each of the routes within the universe is assessed against a baseline route for the purpose of making comparative route evaluations. For this analysis, the baseline route defined in the MWRRI Project Notebook was used. It is defined as:

- Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN-St. Paul, MN-Minneapolis, MN.

Three evaluation criteria were developed to compare the differences between the route alternatives and the baseline route. These evaluation criteria include the following:

- Route Distance
- Route Population
- Physical Constraints

To evaluate the route alternatives, a percentage difference between each route and the baseline is calculated for evaluation criteria #1 and #2. For evaluation criterion #3 (Physical Constraints), the presence of physical constraints along a route eliminates a route from further analysis.

Through assessments of the three evaluation criteria, the states identified fourteen routes, Routes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12A, 13, and 14, as the Potential Passenger Rail Alternatives. The potential passenger rail alternatives, as described below, are subjected to a more detailed route alternative analysis in this report in order to identify the “reasonable and feasible passenger rail alternatives:

- Route 1 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis
- Route 2 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 3 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 4 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis
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- Route 10 - Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 11 - Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12A- Milwaukee - Wiscona Jct.- Wyeville – Merrillan - Eau Claire - St. Paul -Minneapolis
- Route 13 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Eau Claire-St. Paul-Minneapolis
- Route 14 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Withrow-St. Paul-Minneapolis

Process to Identify Reasonable and Feasible Passenger Rail Alternatives

Nine evaluation criteria and associated measures were developed in order to identify which of the potential passenger rail alternatives meet the project purpose and the project need for the proposed action. The measures for each evaluation criterion are assessed to ensure that a potential passenger rail alternative complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. The potential passenger rail alternative that does not meet the project purpose and the project need of the proposed action will be eliminated. The following are the nine evaluation criteria used to evaluate the potential passenger rail alternatives:

1. Route Characteristics
2. Travel Time
3. Market Size
4. Capital Costs
5. Operating Costs
6. Safety
7. Reliability
8. System Connectivity
9. Environmental Features

Workshops

A preliminary workshop was held on January 20, 2011 with the states and FRA to review the technical data that was developed for each of the fourteen potential passenger rail alternatives. This data is described above in section 2.1. Also at the workshop, the states and FRA discussed the use of "normative statements" in the evaluation of potential passenger rail alternatives. A normative statement is a value judgment given to data for the purpose of qualitatively assessing that data. The states and FRA agreed that a normative statement would be given to each measure to qualitatively assess the measure and to "rate" the routes using three colors; green, yellow, and red:

- Routes assessed as "green" are more likely to be reasonable and feasible when compared to other routes
- Routes assessed as "yellow" are sub-optimum when compared to "green" routes but can still be considered viable
- Routes assessed as "red" are a poor choice when compared to "green" and "yellow" routes

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail alternative complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. The potential passenger rail alternative that does not meet the project purpose and the project need of the proposed action will be eliminated.

A workshop was held on March 11, 2011 with representatives of Mn/DOT, WisDOT, and Amtrak to review technical data associated with the Potential Passenger Rail Alternatives and to qualitatively evaluate this data in order to identify a set of reasonable and feasible passenger rail alternatives for further analysis in the Tier 1 EIS.

At the March workshop, the states were divided into three teams to assess the evaluation criteria and measures. The workshop was structured so that the measures were assessed independently for a given criterion and an overall assessment was given to that evaluation criterion based on the results of the assessment of the measures. The teams individually assessed and rated the routes, and then discussed the team assessments to reach a consensus assessment. This process was completed for all measures and criterion.

Identification of Reasonable and Feasible Passenger Rail Alternatives

After the stakeholder workshop, four routes remained that could be identified as Reasonable and Feasible Passenger Rail Alternatives:

- Route 1 (Existing Amtrak) - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis
- Route 4 (MWRRI-Madison) - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis
- Route 10 (Amtrak-Eau Claire) - Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 11 (Madison-Eau Claire) - Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis

Of these four routes, Routes 1 and 10 best met the purpose of decreasing travel time in the corridor, with essentially comparable end-to-end travel times determined by the TPC modeling. Notably, these two routes also were the only two that were ranked “green” or “more likely reasonable and feasible” without any “red” or “poor” assessments given in any single major category in the final cumulative analyses determined in the Consensus-Based Quality Assessment. A final evaluation was made to determine other distinct and significant variations between the four routes. In comparing these routes to one another, Route 1 had the following advantages over the other routes:

- Route 1 has 0.0 miles of significant grades while Route 4 has 4.87 miles, Route 10 has 14.38 miles, and Route 11 has 19.25 miles of significant grades.
- Travel time between MTI and Milwaukee is 33 minutes less than Route 4 (route that connects to Madison), 3 minutes less than Route 10 through Eau Claire, and 42 minutes less than Route 11 through Madison and Eau Claire;
- Capital cost of Route 1 is $141 million less than Route 4, $550 million less than Route 10, and $690 million less than Route 11;
- Track maintenance cost of Route 1 is $979,000 less than Route 4, $630,000 less than Route 10, and $1.608 million less than Route 11; and
- 99.8% of Route 1 has CTC while only 85.4% of Route 4, 45.5% of Route 10, and

29.8% of Route 11 have CTC

Additionally, Route 1 most successfully met each purpose and need for the proposed action to construct and operate a high-speed passenger rail corridor between Milwaukee and Minneapolis/St. Paul.

Route 1 provided the greatest advantage of all routes by offering a competitive and attractive alternative mode of transportation. In order to attract rail users, the proposed action must provide conveniences that are competitive with or better than conveniences provided by other transportation modes to the majority of travelers in the corridor. This need was addressed by decreasing travel time from the current 6 hours and 30 minutes, which is the existing travel time for the *Empire Builder* between the Twin Cities and Milwaukee and also increasing the frequency of passenger rail service. Development of this route would not only establish high-speed, high-frequency passenger rail service, but also complement existing Amtrak service and improve its flexibility. Additionally, corridor project team members including FRA and Amtrak representatives were cognizant of the recent vacillation to completely fund the full high speed rail corridors in single funding cycle in favor of partial or incremental funding and building of a passenger rail route in phases allowing for incremental increases in frequency as well as “phased” reduction in travel time.

The Vision of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan is to develop a robust intrastate and interstate intercity passenger rail system which results in improved travel options, costs and speeds for Minnesota and interstate travelers. One of the priority program elements identified in the Statewide Rail Plan is to advance corridors incrementally and simultaneously with Mn/DOT’s support; sequencing depending on financing, ROW acquisition and agreements with freight railroads[1].

Project representatives considered the Vision and priority program of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan in the final evaluation. Section 4.2.2 of the draft Project Purpose and Need acknowledged that improvements to infrastructure and mitigation of freight capacity issues could allow for increased train frequency and reduced travel times for passenger rail service in the corridor. Route 1 currently has passenger service in that Amtrak’s *Empire Builder* serves the corridor, and, therefore, provided the best opportunity to implement a phased approach for infrastructure improvements and freight mitigation. The proper phasing of the improvements will achieve incremental reduction in travel time for each improvement allowing for an incremental increase in frequency of passenger rail service. In fact, Mn/DOT and WisDOT are currently exploring with Amtrak the feasibility of increasing the frequency of the current service from one round-trip per day to two with the introduction of the second *Empire Builder* train between the Twin Cities and Chicago via Milwaukee.

Routes 4, 10, and 11 do not offer this benefit since each route required significant capital investment prior to the introduction of any passenger rail train service. Appendix L detailed the capital cost estimates for each route alternative. The Watertown- Madison-

[1] *Minnesota Comprehensive Statewide Freight and Passenger Rail Plan*, February 2010

Portage segments needed building prior to the introduction of passenger rail service on Route 4. The estimated capital improvements for these segments are in excess of $500 million. Route 10 required the complete build of the Camp Douglas-Eau Claire-St Paul segments from Camp Douglas. Route 11, which also serves Eau Claire, required the complete build of the Route 4 and Route 10 segments. The estimated capital improvements for Route 10 and 11 needed prior to introducing any passenger rail service was in excess of $1.8 billion and $2.3 billion, respectively. While Route 10 in particular is indicated as a viable option for future expansion if and when a large an full-coverage funding source can be obtained, waiting for this resource to materialize may unduly delay service implementation.

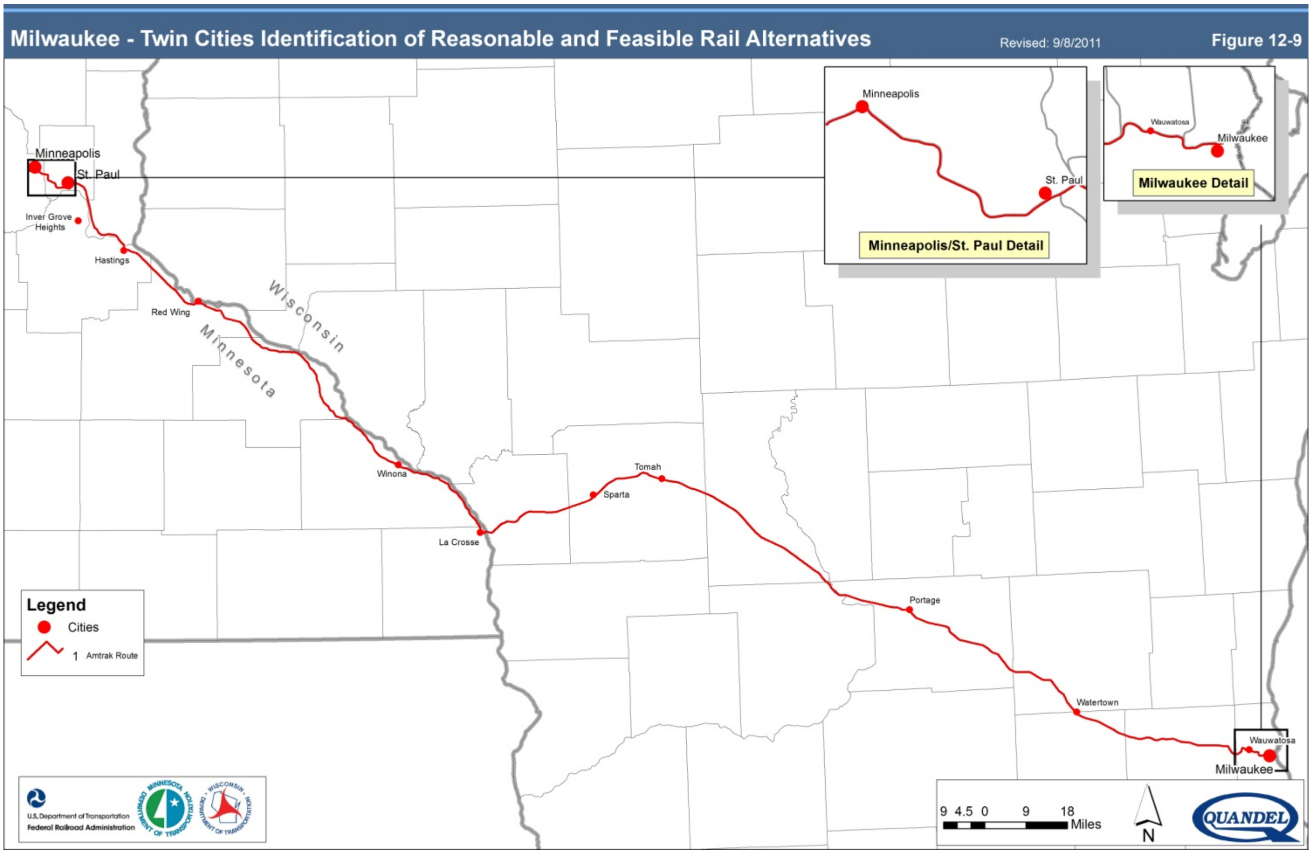
Given all of the aforementioned considerations, project representatives determined that one reason to identify Route 1 as the reasonable and feasible passenger rail alternative was because of the opportunities to incrementally implement a reduction in travel time and increase in frequency by phasing the build-out of the route. This phased approach recognizes the constraints associated with funding requirements for major infrastructure improvements at the state and federal levels and is consistent with the Minnesota Statewide Rail Plan.

In their oversight role, the Federal Railroad Administration has also consistently sought to address concerns raised by interested parties from Wisconsin and Southeastern Minnesota, who advocate for a different routing, by explaining that the EIS is intended to look at "near-term" options for expanded passenger service in the corridor (e.g. "Phase 1" of the MWRRI), and that a full build-out of the corridor in the longer term will examine other route alternatives. The FRA and the state DOT project representatives continue to operate in the context of the long-range vision that this is the first step or a 'near-term' focus of a high-speed passenger rail alternative in a highly viable corridor, one that in future phases will provide significantly better service in terms of speeds, frequency, supplemental routes and connections, and service coverage area as part of a full, robust system, ultimately with much enhanced levels of effectiveness and economic benefits.

Finally, on August 31, 2011, Wisconsin's Secretary of Transportation sent a letter to Mn/DOT stating that the Wisconsin Department of Transportation will no longer pursue the continuation of the Milwaukee-Twin Cities Passenger Rail Study at this time. The letter further stated that WisDOT will continue to support intercity passenger rail by focusing Wisconsin's resources on the Hiawatha and Empire Builder routes that have successfully serviced Wisconsin residents over the last 20 years. The letter further states that improving and enhancing these routes is Wisconsin's first priority. The letter is attached as Appendix P.

Because Route 1 more clearly meets the purpose and need, specifically related to a phased approach for implementation of high-speed intercity passenger rail service, Mn/DOT has identified Route 1 as the Reasonable and Feasible Passenger Rail Alternative.

The figure below depicts the Reasonable and Feasible Passenger Rail Alternative.



Next Steps

The next step in the project is to identify the preferred passenger rail alternative within a Tier 1 EIS document. Tiering is a staged approach to NEPA described in the Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508). Tiering addresses broad programs and issues in initial (Tier 1) analyses, and analyzes site-specific proposals and impacts in subsequent tier studies. The tiered process supports decision-making on issues that are ripe for decision and provides a means to preserve those decisions.

Within the Tier 1 EIS, the reasonable and feasible passenger rail alternative and a no build alternative will be evaluated to identify the preferred passenger rail alternative. The alternatives are evaluated based on:

- Conceptual Engineering
- Track Concepts
- Capital Cost Estimate
- Station Location Analysis
- Environmental Analysis
- Ridership

- Operating Costs
- Assessment of Benefits

The tiered environmental process will include a Draft Tier 1 EIS, a Final Tier 1 EIS, and a Tier 1 Record of Decision (ROD) to conclude Tier 1. Upon the conclusion of the Tier 1 study, a preferred alternative will be selected by FRA and projects to be studied in Tier 2 will be identified.

1.0 INTRODUCTION

1.1 Purpose of Alternatives Selection Report

The Alternatives Selection Report presents the identification of the reasonable and feasible passenger rail alternatives within the Milwaukee-Twin Cities High Speed Rail Corridor Program. This report will clearly indicate the following:

1. why and how the particular range of project route alternatives (potential passenger rail alternatives) was developed,
2. how the results of the scoping process and other public and agency input was used in the route alternatives analysis, and
3. the process used to evaluate and eliminate the route alternatives to arrive at the reasonable and feasible passenger rail alternatives

The Alternatives Selection Report builds on a previous report, the *Interim Alternatives Selection Report: Identification of Potential Passenger Rail Alternatives* (the *Initial Alternatives Selection Report)*, which describes how the universe of routes was developed and how the potential passenger rail alternatives were identified. See section 1.5 for further description of the Interim Alternatives Selection Report. The Interim Alternatives Selection Report is included as Appendix A.

The Alternatives Selection Report will be presented to the Federal Railroad Administration, agencies, and the public for review and comment prior to the analysis leading to the identification of the preferred passenger rail alternative.

1.2 Background of Midwest Regional Rail Initiative

In 1996, nine Midwest states, including Wisconsin and Minnesota, and Amtrak initiated the Midwest Regional Rail Initiative (MWRRI). The MWRRI elements include:

- Operation of a hub and spoke passenger rail system centered on Chicago
- Use of 3,000 miles of existing rail right of way to connect rural and urban areas
- Track and signal improvements and introduction of modern trains operating at speeds up to 110 mph
- Provision of multi-modal connections to improve system access
- Improvement in frequency, reliability, speed, and on-time performance

The work of this initiative (MWRRI) has resulted in a well coordinated and integrated 110-mph rail Business Plan that defines the way in which the rail system should be implemented. This Business Plan consists of various documents that were prepared - an Executive Summary (2004), MWRRI Project Notebook (2004), Appendices (2004), and

Benefit Cost and Economic Analysis (2006)[2].

In 2007, the MWRRI States developed a Draft Purpose and Need for the MWRRI, a Scope of Work for undertaking preliminary engineering and environmental studies of the MWRRI Phase 1 Implementation corridors, and a Scope of Work for undertaking a programmatic environmental study of the other MWRRS corridor outside of Phase 1.

On July 27, 2009 the Governors of the States of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin and the Mayor of the City of Chicago executed a Memorandum of Understanding for the "Implementation of High- Speed Rail Passenger Service and Connections Involving Corridors Linking Cities in their Respective States". This document affirms that "all MOU Participants recognize a priority to establish the Chicago Hub to corridors consisting of Chicago-St. Louis, Chicago to Milwaukee-Madison, and Chicago to Detroit-Pontiac, (MWRRI Phase 1 Implementation) that would form a high speed hub in the heart of the nation with high-speed and conventional passenger service connections radiating to seven other Midwestern states".

The Milwaukee to Twin Cities corridor (MWRRI Phase 2 Implementation) was predicated on six round trip trains per day to the Twin Cities with four additional round trip trains per day to Madison and was scheduled for implementation one year after Phase 1.

In March 2009, WisDOT, acting as the Secretariat for the MWRRI Steering Committee, entered into a cooperative agreement with FRA under the "Capital Assistance to States – Intercity Passenger Rail Service Program" for on-going planning work or MWRRI Planning Phase 7. The MWRRI Planning Phase 7 work was intended to provide basic information for the participant states as states proceed with meeting the requirements of the federal NEPA process for the preparation of a programmatic Environmental Impact Statement (EIS) for route selection in MWRRI corridors. The Project Notebook of 2004 and the Benefit Cost and Economic Analysis report of 2006 is the Plan for the MWRRI and addresses the elements that comprise a Service Development Plan (SDP) on a broad level. To meet the HSIPR application requirements, an SDP for the MWRRI system as a whole was developed to support the formulation of an SDP for each corridor of the MWRRI system. In 2009, individual corridor SDPs were prepared for corridors for which a Track 2 HSIPR application was submitted.

Figure 1-1 depicts the Midwest Regional Rail System.

[2] http://www.dot.wisconsin.gov/projects/rail.htm

Figure 1-1. Midwest Regional Rail System

The Chicago-St. Louis, Chicago-Detroit, and Chicago-Milwaukee corridors were authorized for designation as high-speed intercity passenger rail corridors by the Secretary of Transportation in 1992. On December 11, 1998 Then FRA Administrator Molitoris announced the *TEA-21* authorized extension of the Midwest High-Speed Rail Corridor from Milwaukee, WI to Minneapolis/St. Paul, MN, in the Federal Register. (Vol. 63, No. 238/ page 68500). By 2001, Chicago-Cleveland, Chicago-Cincinnati, Chicago-Indianapolis-Louisville, and Chicago-St. Louis-Kansas City were all designated high-speed intercity passenger rail corridors.

Figure 1-2 depicts the current nationally designated high-speed intercity passenger rail corridors.

Figure 1-2. National High-Speed Intercity Passenger Rail Corridors

1.3 Background of Milwaukee-Twin Cities High-Speed Rail Corridor Program

1.3.1 Background of Program

On June 23, 2009, the FRA issued a Notice of Funding Availability (NOFA) for the High-Speed Intercity Passenger Rail (HSIPR) Program in the Federal Register. In response, Mn/DOT submitted an application to develop a Tier 1 EIS document for new passenger rail service on the Milwaukee-Twin Cities corridor, a segment of the Chicago to Twin Cities high-speed rail corridor. The FRA reviewed Mn/DOT's application for eligibility and ranking with the criteria outlined in the NOFA. Based upon this evaluation, the FRA selected the State of Minnesota for an award of $600,000 for this project, through a cooperative agreement between FRA and Mn/DOT (the Grantee).

Mn/DOT entered into a cooperative agreement with FRA to develop the Tier 1 EIS document for the Milwaukee-Twin Cities Corridor. Funding for the project has been committed through Minnesota and Wisconsin state funds and FRA's HSIPR Program described in the previous paragraph. In addition to funding the project cooperatively, Mn/DOT and WisDOT have been working together on public involvement throughout both states.

1.3.2 Project Team

The project team was assembled specifically for the Milwaukee-Twin Cities High-Speed Rail Corridor Program. The team is comprised of Mn/DOT, WisDOT, Amtrak, and

Quandel Consultants staff members that have the technical expertise and experience in high-speed rail planning to produce a successful project. The following sections provide a brief biography on the key staff members.

1.3.2.1 Mn/DOT Staff

Daniel Krom, Director, Passenger Rail Office, Mn/DOT

Dan Krom is the Director of Mn/DOT's Passenger Rail Office. The Office was established in July 2009 as a result of the State legislature and the Governors support for passenger rail development in the state during the past legislative session.

Dan recently worked as the Transit Manager for Dakota County, Minnesota. His responsibilities included the implementation of the first bus rapid transit line in Minnesota along the Cedar Avenue corridor connecting to the Hiawatha light rail line and downtown Minneapolis.

Dan previously worked for Mn/DOT for 13 years starting his career in the Office of Transit, developing and managing funding for small urban and rural transit programs; Planning Supervisor in the Office of Freight, Railroads and Waterways managing the development of the first Twin Cities commuter rail system plan, Tri-State high speed rail studies and representative on the Midwest Regional Rail Initiative; and he served as Director of Federal Relations during the authorization of SAFETEA-LU.

Dan also served as the Transit Manager for the City of Moorhead, Minnesota. He has a Bachelor of Science and Master of Arts degrees in Urban and Regional Studies from Minnesota State University (Mankato).

Frank Pafko, Director, Office of Environmental Services, Mn/DOT

Frank Pafko is Chief Environmental Officer and Director of the Office of Environmental Services for the Minnesota Department of Transportation (Mn/DOT). After a year and a half with the Department of Natural Resources in Ely Minnesota, Frank began his career with Mn/DOT in 1977 as an aquatic biologist. Over the next 24 years he assumed several leadership positions in the Office of Environmental Services including Transportation Assistant Chief Environmental Officer from 1995 to 2000.

In 2001 he joined the Metro District as Area Manager. As Area Manager he was responsible for program delivery activities and development of relationships with transportation partners in Anoka, Ramsey and northern Hennepin counties. Frank was the first non-engineer to hold a program delivery management position with Mn/DOT.

Frank has an impressive background in the field of Environmental Services. His achievements include developing and implementing environmental policy; providing environmental and regulatory expertise to internal & external clients; and building and maintaining strong relationships with other environmental agencies. He has made presentations on a variety of environmental topics at national conferences and has represented Mn/DOT on the American Association of State Highway and Transportation Organization's (AASHTO) Standing Committee on Environment and Transportation

Resource Board Environmental Analysis Committee. Frank chairs the (AASHTO) Natural Resources Subcommittee and the Minnesota Scenic Byway Commission. He is also a Mississippi River Parkway Commissioner. Frank has a 1975 Bachelor of Science degree in Fisheries (Biology) from the University of Minnesota.

David Christianson, Freight & Rail Planning and Development, Mn/DOT

Dave has been involved with transportation as a vocation since 1973. His degree in Business Administration from University of Wisconsin-Eau Claire included independent study and internship with Santa Fe, Milwaukee Road, C&NW, and Illinois Central, including interaction with Alan Boyd, David Gunn, and Paul Reistrup. He spent 25 years in the private sector in the oil industry; warehousing, distribution, trucking and freight rail, and port and container operations. He has worked on I.C.C. ratemaking, the North East Rail Reorganization, Powder River Basin coal transportation, and intermodal facilities design, construction, and operation in the Port of Long Beach. In 12 years as intermodal manager at Long Beach Container Terminal, he was engaged with two terminal expansions, gate and data automation, the installation and operation of the Port's second on-dock container rail terminal, and planning for the Alameda Corridor.

Mr. Christianson also enjoyed seven years with the Metropolitan Council, the regional government of the Twin Cities, managing contracted transit operations and freight planning. He followed this experience with two years as a transportation consultant specializing in transit, freight, and rail design, engineering, and safety. Dave joined Mn/DOT in 2008 as a transportation planning manager. The office's current work includes several regional freight transportation plans, the Minnesota Comprehensive Freight and Passenger Rail Plan (Dave is Project Manager for the State Rail Plan), statewide transportation policy, and numerous freight and passenger rail initiatives and projects. An accomplished public speaker, Mr. Christianson has delivered both technical and informational presentations to numerous regional and national organizations on topics ranging from safety and energy to high speed passenger rail.

Praveena Pidaparthi, Planning Director, Mn/DOT

Praveena Pidaparthi is the Planning Director in the Passenger Rail Office at Minnesota Department of Transportation (Mn/DOT). Ms. Pidaparthi joined Mn/DOT in January 2009 in the Office of Transit and moved to the Passenger Rail Office upon its creation in July 2009. At Mn/DOT, she worked on the Minnesota Comprehensive Statewide Passenger and Freight Rail Plan and is currently involved in the development and management of passenger rail projects and activities in the state.

Prior to joining Mn/DOT, Ms. Pidaparthi was a consultant transportation planner at Iteris, Inc. where she led and managed tasks for a number of local and national transportation projects including the 'Access Minneapolis –Ten Year Transportation Action Plan' and 'Parking and Smart Growth Study for the City of Los Angeles'. She also held transportation planner roles at McCombs Frank Roos Associates and SRF Consulting Group, Inc. and was involved in a variety of Mn/DOT studies and county transportation plans.

Ms. Pidaparthi's educational background includes a Masters degree in Urban and Regional Planning from the Humphrey Institute at the University of Minnesota and a Graduate Certificate in Transportation Studies from the Center for Transportation Studies at the University of Minnesota. Ms. Pidaparthi also has a Bachelor of Architecture degree from Andhra University in India. She is certified with the American Institute of Certified Planners (AICP).

1.3.2.2 WisDOT Staff

Ronald Adams, Chief, Railroads and Harbors Section, WisDOT

Ronald Adams has worked for the Wisconsin Department of Transportation since 1984 in various positions dealing with the freight and passenger rail programs. Currently, Ronald is the Chief, Railroads and Harbors Section within the Bureau of Transit, Local Roads, Railroads and Harbors of the Division of Investment Management.

Ronald has served as Chair, Midwest Regional Rail Initiative Steering Committee and Co-chair of AASHTO's Standing Committee on Rail Transportation Passenger Rail Task Force.

Previously, Ronald worked in the rail program area with the Washington State DOT (1979 – 1984) and the Kansas DOT (1976 – 1979).

Ron has a Bachelor of Science in Civil Engineering and Master of Business Administration from the University of Kansas. Ron is a Professional Engineer licensed in Kansas (since 1980) and Wisconsin (since 1999)

Ronal retired as a CAPT in the Navy Reserve after 31 years of active and reserve duty

Awards: AASHTO President's Modal Award for Rail – 1997

Amtrak's Presidential Safety and Service Award as Distinguished State Partner - 2008

Donna L. Brown, Passenger Rail Planning Manager, WisDOT

Donna Brown, a 20-year veteran of the Wisconsin Department of Transportation (WisDOT), is the Passenger Rail Planning Manager for the state. Donna and her team are responsible for the environmental and planning, programming process for Wisconsin's Passenger Rail program.

Donna has a Masters Degree in Urban Policy from the University of Wisconsin -Madison, LaFollette Institute of Public Policy and a Bachelors Degree in Political Science from the UW-Madison, Political Science Department.

Donna joined WisDOT in 1992, as a planning analyst intern in the Environmental Strategies Unit. In 1993, she advanced to Congestion Mitigation & Air Quality program manager and held a variety of planning positions throughout the Department through

1998. In 1999, Donna served as Section Chief for the Intercity Planning Section of the Bureau of Planning responsible for plan development of long range statewide transportation plans such as the State Highway, Rail and Airport plans. In February 2001, she transferred to the Division of Districts and became the System Planning Manager for S.E. Region Transportation district.

Since 2005, Donna has planned and worked on major projects such as the Marquette Interchange, I-94 North-South Corridor Study and SE Region Rehabilitation Program implementation. Working with MPOs, local units of government and communities to address transportation needs in the region. For the last two years, Ms. Brown has led the Zoo Interchange Corridor Study as Project Director guiding the development of the environmental impact statement study for the region's major reconstruction projects.

Carrie Cooper, Project Manager/Environmental Lead, WisDOT

Carrie has worked in a variety of positions during her 17 years with WisDOT. She served as WisDOT's District Geographic Information Systems (GIS) Coordinator for 12 years where she performed transportation data and environmental analysis. In 2005, Carrie began working as an Environmental Planner writing Environmental Impact Statements (EIS) for WisDOT mega projects. Her first project was the 35-mile I-94 North-South Corridor Freeway EIS project in Milwaukee, Racine and Kenosha Counties. She has also worked on the EIS for the I-94 Zoo Interchange mega project in Milwaukee County. Carrie was the WisDOT Environmental Lead for these mega projects and also served on the public involvement team. Carrie previously served as the Project Manager for the development of Environmental Assessments for Passenger Rail Stations in Madison, WI and Watertown, WI and the as the Environmental Lead on the Milwaukee to Madison High-Speed Rail Corridor. Carrie is currently the Environmental Lead for a Train Car Maintenance Facility in Milwaukee and is the WisDOT Project Manager for the Design and Construction of the Milwaukee Airport Rail Station (MARS) platform & canopy extension project in Milwaukee, and the Truesdell Crossover project along the Canadian Pacific Rail line in Kenosha County.

Carrie has a B.S. in Environmental Studies and Geography from Western Michigan University.

Crystal DuPont, Urban Regional Planner, WisDOT

A 17-year veteran of WisDOT, Crystal is a lead Passenger Rail Planner. She is responsible for environmental, planning and programming processes as they relate to the Amtrak intercity passenger rail service. Crystal currently serves as WisDOT's project manager for the Milwaukee Train Shed project.

Crystal joined WisDOT District Operations programming in 1995 the lead for the Adopt-a-Highway, State sign program, and Consultant Services Contract management. In 1999, Crystal added Equal Rights responsibilities for Title IV activities for the SE Region including Disadvantage Business Enterprise, Environmental Justice and Labor compliance, Affirmative Action/Equal Employment Opportunity (AA/EEO) efforts.

In January 2002, Crystal transferred to the System Planning, Multi Modal Unit as Urban and Regional Planner for the SE Region transportation district. As a team leader she has planned and conducted analysis on a broad range of multimodal and demand management transportation studies on major projects including the Marquette Interchange, I-94 North-South Corridor Study, the I-94 Zoo Interchange Corridor Study and SE Region rehabilitation program implementation. In this role she works with all levels of management and government including Metropolitan Planning Organizations (MPOs), local units of government and communities to address transportation needs in the region.

Crystal led the State's first environmental justice efforts on the I-94 North-South Corridor Study and I-94 Zoo Interchange Corridor Study guiding the development of Environmental Justice Analysis study for the region's major freeway reconstruction projects completing the draft Environmental Justice Analysis document for review and consideration. She served as the WisDOT Lead for these efforts on region and mega projects and also on the public involvement team.

Crystal attended the University of Minnesota, Duluth.

Arun Rao, Urban and Regional Planner, WisDOT

Arun has 10 years of experience in transportation planning working for the Wisconsin Department of Transportation (WisDOT). Arun is an Urban and Regional Planner responsible for passenger rail planning and analysis in the Bureau of Planning and Economic Development, and works closely with the Passenger Rail Unit responsible for Wisconsin's passenger rail program. Arun also works on multimodal planning and transit issues, and is a WisDOT liaison to three Metropolitan Planning Organizations.

Since 2006, Arun has had extensive experience in intercity passenger rail planning. This has included developing the passenger rail chapter of the draft Wisconsin Rail Plan 2030, working on Wisconsin's High Speed Rail ARRA grant applications and other Federal Railroad Administration grant applications, analyzing Amtrak ridership data, developing trains schedule scenarios, participating on the Midwest Regional Rail Initiative (MWRRI) Steering Committee, providing technical support for MWRRI plans and reports, and working on passenger rail NEPA documents and rail capacity studies. Arun has also worked on Department passenger rail reports, testimonies, train equipment acquisition effort, and review of federal legislation and rulemaking. Arun has provided information for States for Passenger Rail Coalition efforts, Midwest Governors' High Speed Rail Group, and other organizations. Arun also has played a key role in developing parameters and scoping of passenger rail studies.

Arun has a Masters Degree in Urban and Regional Planning from the University of Wisconsin –Madison and a Bachelor in Business Administration in Real Estate and Urban Land Economics from the University of Wisconsin – Madison.

Jeffry J. Abboud, Urban and Regional Planner, WisDOT

Jeffry has been an Urban and Region Planner for the Wisconsin Department of

Transportation since 1992. His duties have included:

- District Railroad Coordinator, 1998 – 2000 where he was responsible of all interaction between Railroads and the Department within the District
- Highway Corridor Planning, 2000 to present, where he was responsible for Freeway Designation and Conversion Studies, STH's 29, 35 & 64, 2000 to present
- Transportation Planning Advisor to Local Communities where he was a TDP Committee Member for Eau Claire Transit 2004
- Metropolitan Planning Organization Liaison where he was an Advisory Committee Member for the Met Council Transportation Policy Plan. 2007
- Northern Lights Express, TAC Member. 2009 to present
- IH 94 Gateway Corridor Study TAC Member 2010 to present
- Milwaukee to Twin Cities High Speed Passenger Rail Region Team Member, 2009 to present

Previous positions were with the City of Eau Claire as a Transportation Planner from 1974 – 1981 and with Dayton Hudson Corporation as an Operation Supervisor with a Target Retail Store, 1982 - 1992

Jeffry has a Bachelor of Science in Urban/Transportation Emphasis and a Bachelor of Business Administration from UW-Eau Claire.

Tom Beekman, Regional Systems Planning and Programming Chief, WisDOT

Tom has been with WisDOT for over 25 years and has been in his current position of Regional Systems Planning and Programming Chief for over 10 years. In that position, Tom is the responsible manager for any highway or other multi-modal engineering and environmental studies on the current or future state transportation system. These efforts have included direct management over dozens of environmental studies ranging from simply environmental assessment (EA) to complex environmental impact statements (EIS), including the first Tiered EIS efforts done at WisDOT. This current position is also the responsible manager for identifying all future improvement projects for the Northwest Region which has an annual construction budget of between $120M to $200M, and a 6-Year Improvement Program of between $750M and $1B. From 1990 to 2000, Tom served as the WisDOT District 6 Technical Services Supervisor for surveys, plats, utility coordination, railroad coordination, CADDS, and automated highway engineering design, as well as direct supervision of several design projects. From 1989 to 1990, Tom was a construction supervisor for WisDOT District 5. From 1986 to 1989, Tom was a WisDOT District 5 staff engineering working in construction, design, and planning. From 1983-1985, Tom was a student engineer at WisDOT working in District 6, District 1, and Central Office Traffic.

Tom has a Bachelor of Science degree in Civil and Environmental Engineering from the

University of Wisconsin – Madison (1985).

Ethan Johnson, Program and Planning Analyst, WisDOT

Ethan Johnson is a Program and Planning Analyst with twelve years of experience monitoring and analyzing the performance of Wisconsin's intercity passenger rail service, as well as planning for future high-speed rail service in the state.

Ethan began his employment with the Wisconsin Department of Transportation in 1999 as a Program and Planning Analyst in the Bureau of Planning and Economic Development. In 2010 Ethan joined the Bureau of Transit, Local Roads, Railroads and Harbors, where he continued to work on intercity passenger rail analyses and planning in addition to his new duties working with Wisconsin's freight rail grant and loan assistance programs.

For the past twelve years Ethan has served on the WisDOT team that has performed Secretariat duties for the Midwest Regional Rail Initiative (MWRRI), an eight-state effort to develop a Midwest high-speed rail system hubbed in Chicago. Ethan has helped manage the multi-state MWRRI effort. He also has provided considerable input into the MWRRI technical planning process, as the Midwest states developed detailed ridership and revenue forecasts, operating strategies, and infrastructure and equipment investment plans.

Ethan also worked with other WisDOT staff to develop long-range transportation planning documents for Wisconsin. For Connections 2030, Wisconsin's current all-mode, long-range transportation plan, Ethan led the development of the intercity passenger rail component of the plan. Ethan also contributed to the development of the intercity passenger rail section of the current Draft State Rail Plan 2030.

Since 1999 Ethan has been responsible for analyzing Amtrak performance data for the Hiawatha Service and the Empire Builder. Ethan produces a monthly Hiawatha Service performance report that is distributed to key internal and external stakeholders. He also conducts specific analyses of Amtrak service in Wisconsin as needed.

Ethan has a joint Masters Degree in Public Affairs-Masters Degree in Environmental Science (MPA-MSES) from Indiana University's School of Public and Environmental Science (SPEA), as well as a Bachelors Degree in Engineering Mechanics (BSEM) from the University of Wisconsin-Madison.

1.3.2.3 Amtrak Staff

Walter L. Lander, Principal Officer, Corridor Planning, National Railroad Passenger Corporation (Amtrak)

Walter has 40 years of broad experience in the railroad industry. At Amtrak, Walter manages a wide range of responsibilities from stakeholder representative for station, infrastructure and operating projects to performing high level corridor feasibility studies, such as the Ohio 3-C Corridor Study. He also provides technical support and Amtrak internal coordination for various state and regional initiatives related to passenger rail corridor improvements. He is a member of several technical advisory committees for long range planning at Amtrak, including the Chicago Union Station Master Plan. His position is a point of contact with state and governmental officials, municipal planning organizations, host rail carriers, consultants and project stakeholders.

Walter's railroad career began in 1971 as a Field Engineer with the Illinois Central Railroad where he progressed through a number of roles in Engineering, Maintenance of Way, Economic Analysis, and Operations, culminating with the position of Director of Transportation Planning.

In 1987 Walter joined RoadRailer as Marketing Manager for Terminal Services working on the development of new RoadRailer terminals on the CSX and NS systems.

In 1989 he moved to Ragnar Benson Inc., a Chicago area general contractor, where he specialized for 15 years in the design and construction of railway facilities, including serving as Senior Project Engineer for two major intermodal construction projects – the BNSF San Bernardino, CA Intermodal Yard and the Union Pacific Rochelle, IL Intermodal Yard. He also served as Project Engineer and Project Manager for a number of railroad yard, main line, and locomotive shop construction projects.

Beginning in 2004, Walter worked as an independent consultant on both domestic and international projects. He spent two years with TERA International Group as a Railway Engineering and Intermodal Specialist. With TERA International he worked on railway feasibility and due diligence studies in Beijing, China for the Asian Development Bank and in Windhoek, Namibia for the US Trade and Development Agency, respectively. He also served as a railway technical advisor for a McKinsey and Company intermodal facilities cost study in Beijing, China.

Prior to joining Amtrak in 2008, Walter worked for two years with HDR Engineering where he served as Resident Engineer for the BNSF double track project west of Omaha, the reconstruction of CN's Johnston Yard in Memphis, and preliminary work on the DM&E extension to the Powder River Basin in Wyoming.

Walter holds a Bachelor of Science in Civil Engineering from Mississippi State University and is an AREMA member.

1.3.2.4 Quandel Consultants, LLC Staff

Charles Quandel, President and CEO, Quandel Consultants, LLC

Charlie has more than 30 years of experience as a professional engineer with the last 20 years dedicated to the development of high speed/intercity ground transportation systems, both steel-wheel/steel-rail and magnetic levitation, and transit systems in the Midwest. He has served as the project manager or project engineer on more than twenty high speed ground transportation programs including the Midwest Regional Rail Initiative, Florida High Speed Rail, Ohio Hub, Rocky Mountain (Colorado) High Speed Rail, and Twin Cities to Duluth Intercity Rail. He has served as project manager or project engineer on transit projects in Illinois, Wisconsin, and Michigan. He has also served as a consultant to AMTRAK and Lockheed Martin on special rail projects. He has facilitated more than 30 alternative analysis workshops in Pennsylvania, Florida, New York, Ohio, Indiana, Georgia, Illinois, Wisconsin, Michigan, Iowa, Maryland, Massachusetts, and Minnesota

Melanie K. Johnson, Project Engineer, Quandel Consultants, LLC

Melanie is a professional engineer with experience in the transportation industry. Her experience includes planning and project management on rail projects, and final design, construction observation, and plans, specifications, and estimates for traffic signal projects. In the rail industry, Melanie has served as Task Manager for the Milwaukee-Twin Cities High-Speed Rail Corridor Program, the Ohio Statewide Passenger Rail Project, and the Northern Lights Express Passenger Rail Project.

Melanie has a Bachelor of Science degree in Civil Engineering from Purdue University.

1.4 Project Purpose and Need[3]

The Draft Purpose and Need Statement was prepared by Mn/DOT and WisDOT in consultation with FRA to identify the purpose (desired outcomes) and needs (problems that are in need of a solution) of the project. The route alternatives analysis (discussed in section 1.5) links the measures of effectiveness to the purpose and need to ensure continuity throughout the project. The Draft Purpose and Need Statement is provided as Appendix B.

This document addresses the purpose and need for the proposed action. Need is driven by the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities. The purpose of the project is to meet future regional travel needs in the Milwaukee-Twin Cities corridor through improvements to the level and quality of regional passenger rail service and providing connections to other existing and planned transportation systems and the roadway network.

Proposed Action

The Minnesota Department of Transportation (Mn/DOT) and the Wisconsin Department of Transportation (WisDOT), in cooperation with the FRA, propose to construct and operate a high-speed passenger rail corridor between Milwaukee, Wisconsin and Minneapolis/St. Paul (Twin Cities), Minnesota. The Milwaukee-Twin Cities high-speed rail corridor program is part of a larger network of high speed passenger rail corridors in the Midwest, with a hub in Chicago, Illinois.

Project Purpose

The purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive

[3] Milwaukee-Twin Cities High-Speed Rail Corridor Program, Draft Purpose and Need Statement, March 2011

passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

In addition, the project will:

- Improve overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans
- Provide accessibility to major population centers,
- Improve freight rail mobility, and
- Minimize environmental impacts.

Project Need

The need for the proposed action is based on the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities. Existing transportation modes, including highway, bus, and air travel, have inherent problems including congested highways near the Milwaukee, Madison, and Twin Cities metro areas and airport capacity issues at Minneapolis-St. Paul International Airport and Milwaukee's General Mitchell International Airport. Improved and expanded passenger rail service can provide an alternative mode and/or relief to these congested roadways and airports.

The need for the proposed action exists because:

1. **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure
2. **Competitive and attractive alternative** modes of travel do not exist in the corridor
3. As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes ;
4. **Intermodal connectivity** among existing transportation systems is limited.

Minnesota and Wisconsin DOTs and local metropolitan planning organizations anticipate consistent increases in total daily vehicle-miles traveled on their freeway systems; much of these increases are expected to occur under congested conditions. As needed highway capacity expansion is physically constrained or exceeds available funds, future travel demands will need to be met through alternative travel modes and travel demand management.

Table 1-1 shows the relationship between the purpose and the identified needs of the project, as discussed in sections 1.4.1 and 1.4.2. The table demonstrates how addressing a specific need will aid in achieving a project purpose. Some of the relationships between purpose and need are direct; such as the relationship between the purpose of *Improve Overall System Connectivity* and the need of *Existing Intermodal Connectivity is Limited*.

Table 1-1. Matrix of Project Purpose vs. Project Need

	NEEDS			
PURPOSE	Increased Travel Demand	Competitive and Attractive Alternative Modes of Travel do not Exist	New Travel Mode Must be Reliable to Attract Riders	Existing Intermodal Connectivity is Limited
Decrease Travel Times	X	X	X	X
Increase Frequency of Service	X	X	X	
Provide Safe and Reliable Service	X	X	X	X
Improve Overall System Connectivity	X	X	X	X
Provide Accessibility to Major Population Centers	X	X	X	X
Improve Freight Rail Mobility	X			
Minimize Environmental Impacts	X	X		X

1.5 Route Alternatives Analysis

The States, in consultation with FRA, prepared a route alternative analysis methodology for use in developing, evaluating, and comparing route alternatives that is completed in three levels of increasing specificity. For each level of analysis, criteria will be analyzed to both quantitatively and qualitatively describe the benefits and impacts and narrow the range of route alternatives based on the Project Purpose and Need. As a result, the analysis will focus on progressively fewer route alternatives with higher levels of scrutiny.

The route alternative analysis will result in the preparation of a Tier 1 Environmental Impact Statement (EIS) that will identify preferred passenger rail alternatives and areas of the route or the entirety of the route designated for Project NEPA. In general, the screening will be completed as follows:

- Level 1 analysis identifies the universe of route alternatives within the project study area. Routes within the universe are pre-screened against the draft Purpose and Need including physical constraints along the route alternatives, route distance and route population. Routes that are obviously not suitable for passenger service are eliminated from further study.

- Level 2 analyses utilize qualitative and quantitative measures to evaluate engineering, travel market and environmental criteria. Route alternatives that are shown to have impacts that are extraordinary in nature will be eliminated. The result of the Level 2 analyses is the identification of the Reasonable and Feasible Passenger Rail Alternatives.

- Level 3 analyses compare route alternatives to the No Build Alternative and to each other. The range of route alternatives will be further reduced to those that perform well, minimize or avoid impacts and are more cost effective by comparison. The result of the Level 3 analyses will be reported in a Tier 1 EIS document, after which the study team will identify the Preferred Passenger Rail Alternative for the corridor.

The alternatives analysis evaluates **route alternatives** and not **service alternatives**. For one route alternative that has been identified as reasonable and feasible, there may be several service alternatives, each reflecting a different combination of service characteristics such as maximum speed, frequencies, stopping patterns, and fare structure. The service alternatives will be evaluated in the Tier 1 EIS document.

The full route alternatives analysis methodology is included as Appendix C.

1.6 Public Involvement

Public Involvement is a key activity within the NEPA process. The goals of public involvement are to engage the public in a meaningful and transparent way and build community consensus around recommendations.

Following the publication of the Notice of Intent in the Federal Register, six public involvement meetings and two agency scoping meetings were held in Minnesota and Wisconsin in November and December 2010 to inform the public and agencies about the Milwaukee-Twin Cities High-Speed Rail Corridor Program. Representatives of Minnesota Department of Transportation, Wisconsin Department of Transportation, and Quandel Consultants presented to the public in the following cities:

- St. Paul, MN (Agency Scoping and Public Involvement)
- Rochester, MN (Public Involvement)
- Eau Claire, WI (Agency Scoping and Public Involvement)
- La Crosse, WI/La Crescent, MN (Public Involvement)
- Fond du Lac, WI (Public Involvement)
- Madison, WI (Public Involvement)

The Public Involvement Team presented on the following topics:

- NEPA Process Overview

- Purpose and Need of the Project
- Methodology to identify Potential Passenger Rail Alternatives
- Methodology to identify Reasonable and Feasible Passenger Rail Alternatives
- Methodology to identify Preferred Passenger Rail Alternatives
- Service Development Planning
- Project Schedule and next steps

1.7 Identification of Potential Passenger Rail Alternatives

The Interim Alternatives Selection Report reports on the identification of Potential Passenger Rail Alternatives. The purpose of the report is to clearly indicate why and how the particular range of project route alternatives was developed.

In the Interim Alternatives Selection Report, twenty-six route alternatives were identified as the Universe of Routes. The Universe of Routes is comprised of existing and historical passenger rail segments that were in service post-World War II.

In order to identify the Potential Passenger Rail Alternatives, each of the routes within the universe of routes is assessed against a baseline route for the purpose of making comparative route evaluations. For this analysis, the baseline route defined in the MWRRI Project Notebook was used. It is defined as:

- Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN-St. Paul, MN-Minneapolis, MN.

For this initial analysis, Route 4 was selected to be the baseline route since it was the route used between Milwaukee and the Twin Cities to develop the Midwest Regional Rail System (MWRRS)[4].

Based on the draft Purpose and Need of the project, evaluation criteria and associated measures were developed to compare the differences between the route alternatives and the baseline. These criteria address the basic feasibility of the route alternatives. The evaluation criteria and measures and the link these criteria and measures have to the purpose and need are described in Table 1-1.

Table 1-1. Evaluation Criteria and Measures

Evaluation Criteria	Measure	Link to Purpose and Need
Route Distances	Provide a quantifiable means to measure and compare route length from end point to end point	Travel Time
Route Populations	Provide a quantifiable means to measure and compare ridership potential	Travel Demand

[4] Midwest Regional Rail Initiative. June 2004. MWRRI Project Notebook.

Physical Constraints	Provide locations where physical constraints are within abandoned rights-of-way	Minimize Capital Costs

In order to evaluate the route alternatives, a percentage difference between each route and the baseline (each route alternative is compared against the baseline, Route 4 - Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN- St. Paul, MN-Minneapolis, MN) is calculated for evaluation criteria #1 and #2. For evaluation criterion #3 (Physical Constraints), the presence of physical constraints along a route eliminates a route from further analysis.

A “normative statement” is used to assess each route against the baseline route. A normative statement is a value judgment given to data for the purposes of qualitatively assessing that data. The recommendation of whether a route alternative should be eliminated from further analysis or retained as a potential passenger rail alternative for further analysis is based on how the data for each criterion compares against the normative statement and the baseline route.

As described in section 1.6, a set of Public Involvement Meetings was held in November and December 2010 to present the NEPA Process, the Public Involvement Plan, the draft Purpose and Need, an overview of the route Alternatives Analysis process, and the routes that were identified as the potential passenger rail alternatives. Comments were received from the public which resulted in the addition of three routes (Routes 2, 3, and 10) to the group of potential passenger rail alternatives.

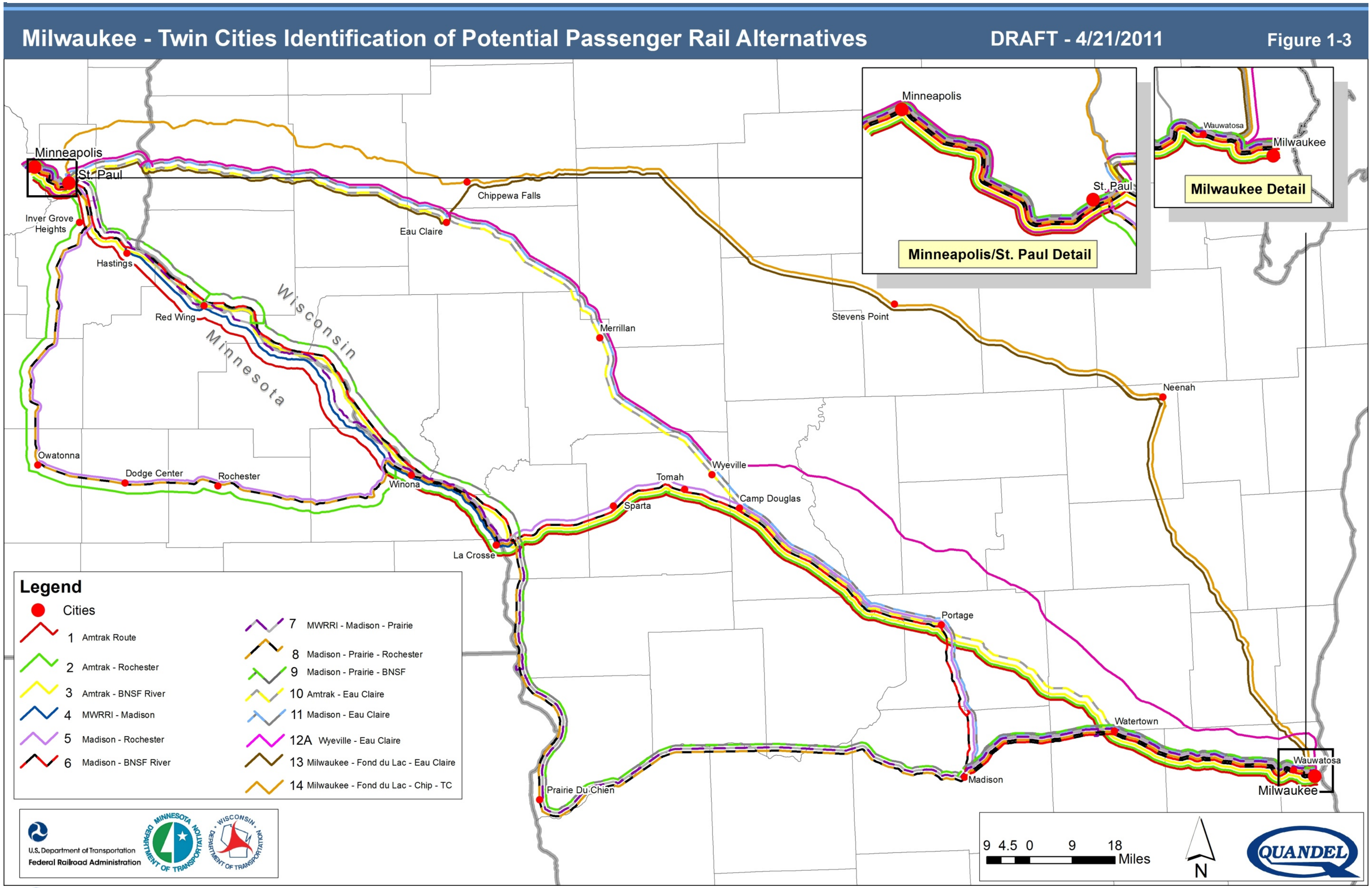
A workshop was held on December 9, 2010 with the states and FRA to review the route Alternatives Analysis process and the results of the route Alternatives Analysis. Additionally, the process to identify reasonable and feasible passenger rail alternatives was discussed. The participants agreed that the nine evaluation criteria and measures, shown in Table 2-1 in section 2.1, would be used to identify which of the potential passenger rail alternatives meet the project purpose and the project need for the proposed action, and to identify the reasonable and feasible passenger rail alternatives.

Upon further review by the FRA, one additional route was identified as a potential passenger rail alternative. This route, known as Route 12A, is similar to Route 12, but Route 12A utilizes Canadian Pacific and WSOR through Wiscona Junction, and the Union Pacific through Butler Junction West to Wyeville. See section 3.0 in Appendix A - Interim Alternatives Selection Report for a complete description of Route 12A.

As documented in the Interim Alternatives Selection Report, the twenty-six (26) route alternatives in the universe of routes between Milwaukee and Minneapolis/St. Paul were assessed using the normative statements for the three evaluation criteria – route distance, corridor population, and route defects. Through interactive analysis among the representatives of the Wisconsin and Minnesota Departments of Transportation and Quandel Consultants, fourteen (14) routes, Routes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12A, 13, and 14, as shown in Figure 1-3, were identified as “potential passenger rail alternatives”. The potential passenger rail alternatives, as described below, are subjected to a more detailed route alternative analysis in this report in order to identify the “reasonable and feasible passenger rail alternatives:

- Route 1 – Amtrak Route (Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis)
- Route 2 – Amtrak-Rochester (Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis)
- Route 3 – Amtrak-BNSF River (Milwaukee-Watertown-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis)
- Route 4 – MWRRI-Madison (Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis)
- Route 5 – Madison-Rochester (Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis)
- Route 6 – Madison-BNSF River (Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis)
- Route 7 – Madison-Prairie (Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-St. Paul-Minneapolis)
- Route 8 – Madison-Prairie-Rochester (Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis)
- Route 9 – Madison-Prairie-BNSF River (Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Hastings-St. Paul-Minneapolis)
- Route 10 – Amtrak-Eau Claire (Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis)
- Route 11 – Madison-Eau Claire-TC (Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis)
- Route 12A – Wyeville-Eau Claire - (Milwaukee-Wiscona Jct., Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis)
- Route 13 – Milwaukee-Fond du Lac-Eau Claire (Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Eau Claire-St. Paul-Minneapolis)
- Route 14 – Milwaukee-Fond du Lac-Chip-TC (Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Withrow-St. Paul-Minneapolis)

Figure 1-3. Milwaukee-Twin Cities Identification of Potential Passenger Rail Alternatives



1.8 Technical Documentation

Two technical documents have been prepared concurrently with the Alternatives Selection Report to aid in the evaluation of the fourteen potential passenger rail alternatives that were identified in the Initial Alternatives Selection Report. Each of these technical documents is included as an appendix to the Alternatives Selection Report.

1.8.1 Engineering Assessment of the Potential Passenger Rail Alternatives

The Engineering Assessment of the Potential Passenger Rail Alternatives, included as Appendix D, was prepared from information gathered during field observations between August 2010 and January 2011.

The fourteen Potential Passenger Rail Alternatives consist of track segments (described in detail in Tables 3-1 and 3-2 of the Interim Alternatives Selection Report). For the purposes of field observation, these track segments were divided at logical breakpoints, such as at a change in track ownership, into track sub-segments. The Engineering Assessment Report is provided in two forms: by sub-segment and by route. The Engineering Assessment Report by sub-segment is provided first, followed by the report by route.

The elements of the Engineering Assessment Report, included in the report by sub-segment and the report by route, is the following information:

- Sub-segment description,
- Description of existing passenger service,
- Existing maximum speed (freight and/or passenger),
- Locations of yards and junctions,
- Major infrastructure elements,
- Infrastructure needs to operate high-speed rail service,
- Capital costs for each sub-segment and route, and
- Constraints related to each sub-segment.

The Infrastructure Needs section describes the improvements required to allow for 110 mph operation along each route. Using the Cost Estimating Methodology (further described in section 1.8.2) and the field observations, the conceptual improvements and associated conceptual costs are estimated.

The Constrains section includes identification of constraints that were observed in the field that would or could have limiting effects on the capacity or efficiency of the sub-segment.

1.8.2 Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way

The Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way, included as Appendix E, serves as the basis for the conceptual cost estimates provided in section 6.0 of the Alternatives Selection Report for the fourteen potential passenger rail alternatives.

The cost estimates were approached at a high level conceptual effort based on limited information regarding overall track and infrastructure conditions, railroad operations, and input from the owning railroads. The validity of these estimates rests on the assumptions that were gained from available railroad track charts and timetables, aerial mapping, input from state departments of transportation and visual observations of the railroads made from publicly accessible locations

The unit costs employed by the MWRRI were originally developed as part of MWRRI Phase 3B in 1997. Those unit costs were based on previous high speed rail feasibility studies available at that time and cost information provided by Amtrak. Since then, each of the unit costs was updated to 2002 dollars, which were the most recent costs available for the MWRRI at the time of the update. For this methodology, the 2002 unit costs were updated to 2010 dollars using the inflation factors listed in the Producer Price Index (PPI) PCUBHVY 'PPI Inputs for Other Heavy Construction', which increased unit costs from 2002 by a factor of 1.48 (March 2010 was the most recent month for which PPI data was available).

Once the 2010 unit costs were derived, they were compared to current year industry cost estimates for railroad related construction; during this comparison, if a unit cost was found to be out of line with current trends, it was adjusted to better reflect current conditions in the market. The pay items and their associated unit costs were then reviewed for their applicability to the four projects mentioned above. Some of the line items were found to be not applicable to this effort and were removed; in a few cases, line items had to be added to completely address the infrastructure development being proposed for the HSR system.

The revised base set of unit costs addresses typical passenger rail infrastructure construction elements expected to be found within proposed and future projects including: roadbed and trackwork, systems, facilities, structures, and grade crossings. The unit costs are reasonable for developing the capital costs under either normal contractor bidding procedures or under railroad force account agreements for construction.

2.0 PROCESS TO IDENTIFY REASONABLE AND FEASIBLE PASSENGER RAIL ALTERNATIVES

2.1 Evaluation Criteria and Measure

Nine evaluation criteria and associated measures were developed in order to identify which of the potential passenger rail alternatives meet the project purpose and the project need for the proposed action. The measures for each evaluation criterion are assessed to ensure that a potential passenger rail alternative complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. The potential passenger rail alternative that does not meet the project purpose and the project need of the proposed action will be eliminated.

Table 2-1 defines the evaluation criteria and measures and the link the criteria and measures have to the purpose and need.

Table 2-1. Evaluation Criteria and Measure to Identify Reasonable and Feasible Passenger Rail Alternatives

Evaluation Criteria	Measure	Link to Purpose and Need
Route Characteristics	• Number of main tracks • Horizontal curvature • Significant grades • Miles/Percent of single vs. double track • Miles/Percent abandoned and out of service track • Miles/Percent Class 1 main vs. regional/shortline	Travel Time
Travel Time	• Travel time at 110 mph (after accounting for recovery, dwell, and handoff times) • Travel time vs. automobile travel time	Travel Time
Market Size	• Population centers served within a 20-mile bandwidth • Intermodal station outside terminal area	Travel Demand
Capital Cost	• Cost to upgrade to high-speed rail (order of magnitude) • Cost of additional right-of-way (order of magnitude) • Cyclic capital costs (order of magnitude)	Minimize Capital Costs
Operating Costs	• Track maintenance costs (order of magnitude)	Minimize Operating Costs
Safety	• Number of rail-rail crossings • Number of at-grade crossings	Competitive and Attractive Service
Reliability	• Freight conflicts (yards, etc.) • Shared track use (capacity) • Handoffs from Class 1-Class 1 • Handoffs from Class 1-regional/shortline • Train Control • Public Ownership of Route	Competitive and Attractive Service

System Connectivity	• Number of intermodal facilities	Intermodal Connectivity
Environmental Features	• Potential impacts of: o Floodplains o Wetlands o Threatened or Endangered Species o Cultural resources o 4(f)/6(f) protected properties o Environmental justice o Hazardous materials	Minimize Environmental Impacts

Technical data is collected and developed for each of these routes. This data includes:

1. Geometric data and information on the quantity of tracks, existing freight density and existing permissible freight speeds for each route alternative are collected. Based on this technical data, the speed profiles and route travel times are developed for each route alternative.
2. Population centers, interstate crossings, commercial airports for each route will be geographically illustrated.
3. Freight conflicts on each route, the extent of shared track usage, handoffs, and existing signals and communications systems for each route
4. Number of rail-rail crossings and number of public and private at-grade crossings for each route alternative
5. Connections to commuter rail and other modes of transportation for each potential route alternative
6. Cost to upgrade each potential route alternative based on existing track infrastructure conditions.
7. The operating maintenance and cyclic capital costs broadly estimated based using the Summary of Midwest Regional Rail System Maintenance Costs developed in MWRRI Phase 6 and is based upon the FRA Technical Monograph: Estimated Maintenance Costs for Mixed High Speed Passenger and Freight Rail Corridors dated August 2004.
8. GIS and Geospatial Data Collection and Mapping to assess the potential impacts of the following key environmental criteria on each route alternative: floodplains, wetlands, historic, cultural, and archaeological sites, 4(f)/6(f) protected properties, threatened or endangered species, hazardous materials, and areas that are likely to engender issues of environmental justice.

Each of the potential passenger rail alternatives is evaluated in the following sections according to the measures shown in Table 2-1.

2.2 Workshops to Identify the Reasonable and Feasible Passenger Rail Alternatives

2.2.1 January 20, 2011 Preliminary Workshop

A preliminary workshop was held on January 20, 2011 with the states and FRA to review the technical data that was developed for each of the fourteen potential passenger rail alternatives. This data is described above in section 2.1. Also at the workshop, the states and FRA discussed the use of "normative statements" in the evaluation of potential passenger rail alternatives. A normative statement is a value judgment given to data for the purpose of qualitatively assessing that data. The states and FRA agreed that a normative statement would be given to each measure to qualitatively assess the measure and to "rate" the routes using three colors; green, yellow, and red:

- Routes assessed as "green" are more likely to be reasonable and feasible when compared to other routes
- Routes assessed as "yellow" are sub-optimum when compared to "green" routes but can still be considered viable
- Routes assessed as "red" are a poor choice when compared to "green" and "yellow" routes

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail alternative complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. The potential passenger rail alternative that does not meet the project purpose and the project need of the proposed action will be eliminated.

2.2.2 March 11, 2011 Workshop

A workshop was held on March 11, 2011 with representatives of Mn/DOT, WisDOT, and Amtrak to review technical data associated with the Potential Passenger Rail Alternatives and to qualitatively evaluate this data in order to identify a set of reasonable and feasible passenger rail alternatives for further analysis in the Tier 1 EIS.

At the March workshop, the states were divided into three teams to assess the evaluation criteria and measures listed in Table 2-1. The workshop was structured so that the measures were assessed independently for a given criterion and an overall assessment was given to that evaluation criterion based on the results of the assessment of the measures. The teams individually assessed and rated the routes, and then discussed the team assessments to reach a consensus assessment. This process was completed for all measures and criterion.

The workshop began with a review of the draft Purpose and Need document. The states were advised to consider the project purpose and the project need while assessing the routes. The project purpose and project need are shown in sections 1.4.2 and 1.4.3, respectively.

The workshop participants were then presented with data on the evaluation criteria and measures shown in Table 2-1. Sections 3.0-11.0 of the Alternatives Selection Report show the data that was presented to the participants and the qualitative assessment process. Section 12.0 presents the results of the qualitative assessment.

3.0 ROUTE CHARACTERISTICS

Route characteristics describe the configuration of the railroad and its physical aspects that can affect the performance of the trains on a route. In order to evaluate each potential passenger rail alternative on the basis of route characteristics, four measures must be considered: number of main tracks, degree of curvature, significant grades, and track classification.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The route characteristics criterion is tied to the project purpose of decreasing travel times, increasing frequency of service, and improving freight rail mobility, and the project need for competitive and attractive alternative modes in the corridor. If a potential passenger rail alternative does not meet the project purpose or project need, the route will be eliminated from further analysis.

3.1 Number of Main Tracks

The number of main tracks that exists currently or formerly on a route is an indicator of the potential capacity of a route that is needed to accommodate high speed intercity passenger rail trains.

A greater number of main tracks that currently exist usually indicate that the current operations on the route have a need for this additional capacity to handle the current level of operations. Where operating speeds vary by category of trains, faster trains may need to overtake slower trains moving in the same direction while both trains continue at their normal speeds. Where this occurs in both directions at the same time, the presence of 3 or more main tracks may be required due to the limited capacity of the existing tracks and roadbed to sustain existing operations.

A single main on a one track roadbed is an indicator that the current operations may have a need for additional capacity. However, faster trains may need to overtake slower trains moving in the same direction required a second track. Furthermore, faster trains moving in the opposite direction will require a second main. These conditions will require that the track roadbed needs expansion or another independent roadbed needs to be constructed to accommodate to accommodate the faster trains.

A former two main track roadbed with one main removed is an indicator that the current operations have additional capacity available if the second main track was rebuilt on the existing roadbed to accommodate the faster trains.

Normative Statement: A route that has a two track roadbed with one main removed has *more capacity to accommodate faster trains than a route that has two main tracks or a route that has a single main track roadbed.*

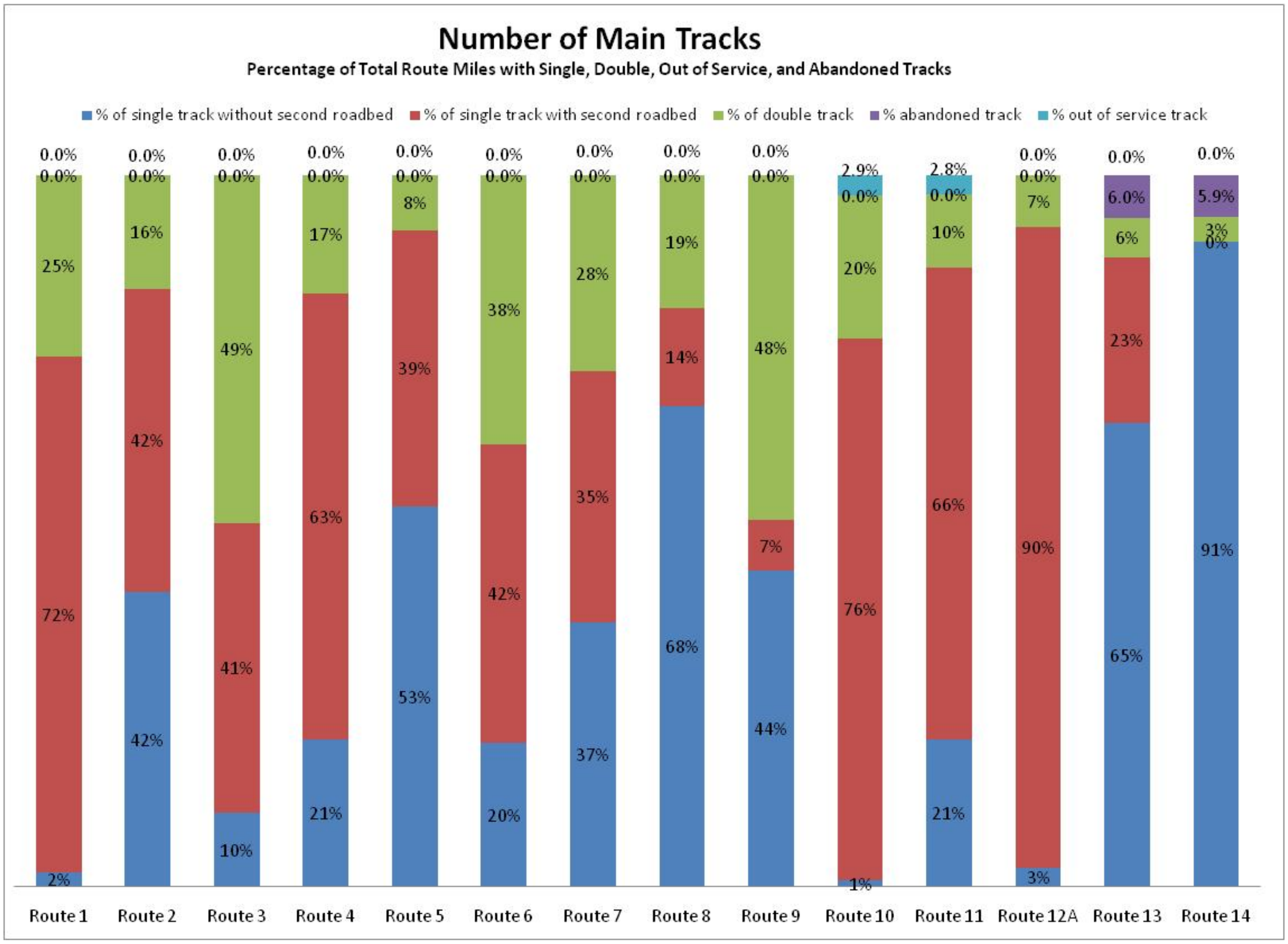
The number of main tracks is identified for each route using railroad track charts and time tables. Where track charts and time tables are not available, licensed aerial imaging software is used to identify the number of tracks. The data is entered into the Rail Corridor Alternatives Analysis Tool (RCAAT™) for the purposes of generating a table and chart depicting the data.

Table 3-1 and Chart 3-1 depict the number of miles and the percentage of total route miles of single, double, and out of service/abandoned track for each route. Sidings greater than three miles in length were counted as double track. The number of existing and proposed main tracks by milepost is provided in Appendix F.

Table 3-1. Number of Main Tracks

Route	Miles of Single Track without Second Roadbed	% of Total Route Miles that are Single Track without Second Roadbed	Miles of Single Track with an Existing Second Roadbed	% of Total Route Miles that are Single Track with an Existing Second Roadbed	Miles of Double Track	% of Total Route Miles that are Double Track	Miles of Out of Service/ Abandoned Track	% of Total Route Miles that are Out of Service/ Abandoned Track
1 –Amtrak Route	7.00	2%	243.07	72%	85.42	25%	0.00	0%
2 – Amtrak-Rochester	160.62	42%	164.37	42%	61.82	16%	0.00	0%
3 – Amtrak-BNSF River	34.91	10%	137.37	41%	164.52	49%	0.00	0%
4 – MWRRI-Madison	73.01	21%	221.72	63%	58.79	17%	0.00	0%
5 – Madison-Rochester	210.63	52%	162.90	40%	31.31	8%	0.00	0%
6 – Madison-BNSF River	67.12	19%	153.70	43%	134.00	38%	0.00	0%
7 – Madison-Prairie	133.66	36%	138.21	37%	103.20	28%	0.00	0%
8 – Madison-Prairie-Rochester	288.30	68%	58.49	14%	79.60	19%	0.00	0%
9 – Madison-Prairie-BNSF River	167.07	44%	27.00	7%	182.30	48%	0.00	0%
10 – Amtrak-Eau Claire	3.30	1%	251.54	76%	66.40	20%	9.60	3%
11 – Madison-Eau Claire-TC	72.01	21%	231.36	66%	35.89	10%	9.60	3%
12A – Wyeville-Eau Claire	8.80	3%	303.60	90%	24.28	7%	0.00	0%
13 – Milwaukee-Fond du Lac-Eau Claire	239.18	65%	84.87	23%	20.58	6%	21.90	6%
14 – Milwaukee-Fond du Lac-Chip-TC	337.24	91%	0.00	0%	12.82	4%	21.90	6%

Chart 3-1. Number of Main Tracks



Qualitative Assessment: Routes 1, 4, 10, 11, and 12A have the greatest number of two-track roadbeds with one existing main track removed. Routes 1, 4, 10, 11, and 12A have more capacity to accommodate faster trains than the remaining routes.

3.2 Degree of Curvature

Degree of curvature reduces the maximum speed at which a train may safely negotiate a curved segment of track. The greater the degree of curvature, the lower the maximum speed of the train will be, and the longer the running time will be through the segment. Curve restrictions can be mitigated or eliminated by increasing the superelevation of the track in the curve or by realigning the track where possible. However, due to the existence of natural features such as waterways, wetlands, mountains, and man-made structures, it is often difficult to realign track to reduce curvature.

The maximum permissible speed on a route is a function of the curve geometry, superelevation, and permissible unbalance of the operating equipment. Because it has not been determined whether tilt or non-tilt equipment will be used, the assumed unbalance must be permissible for both types of equipment. The optimal superelevation of freight rail through a curve at 60 mph is 2.5". Therefore, a maximum superelevation of 2.5" was used for passenger rail. The maximum allowable unbalance of a conventional suspension train is 4". The formula $E = 0.0007*D*v^2$, where E = the total allowable unbalance, D = the degree of curvature, and v = the speed through the curve, was used to calculate the maximum allowable degree of curvature for passenger rail. At 110 mph, the maximum degree of curvature for passenger rail is 45 minutes.

Normative Statement: A route with the least amount of curves greater than 45 minutes is better than a route with more curves.

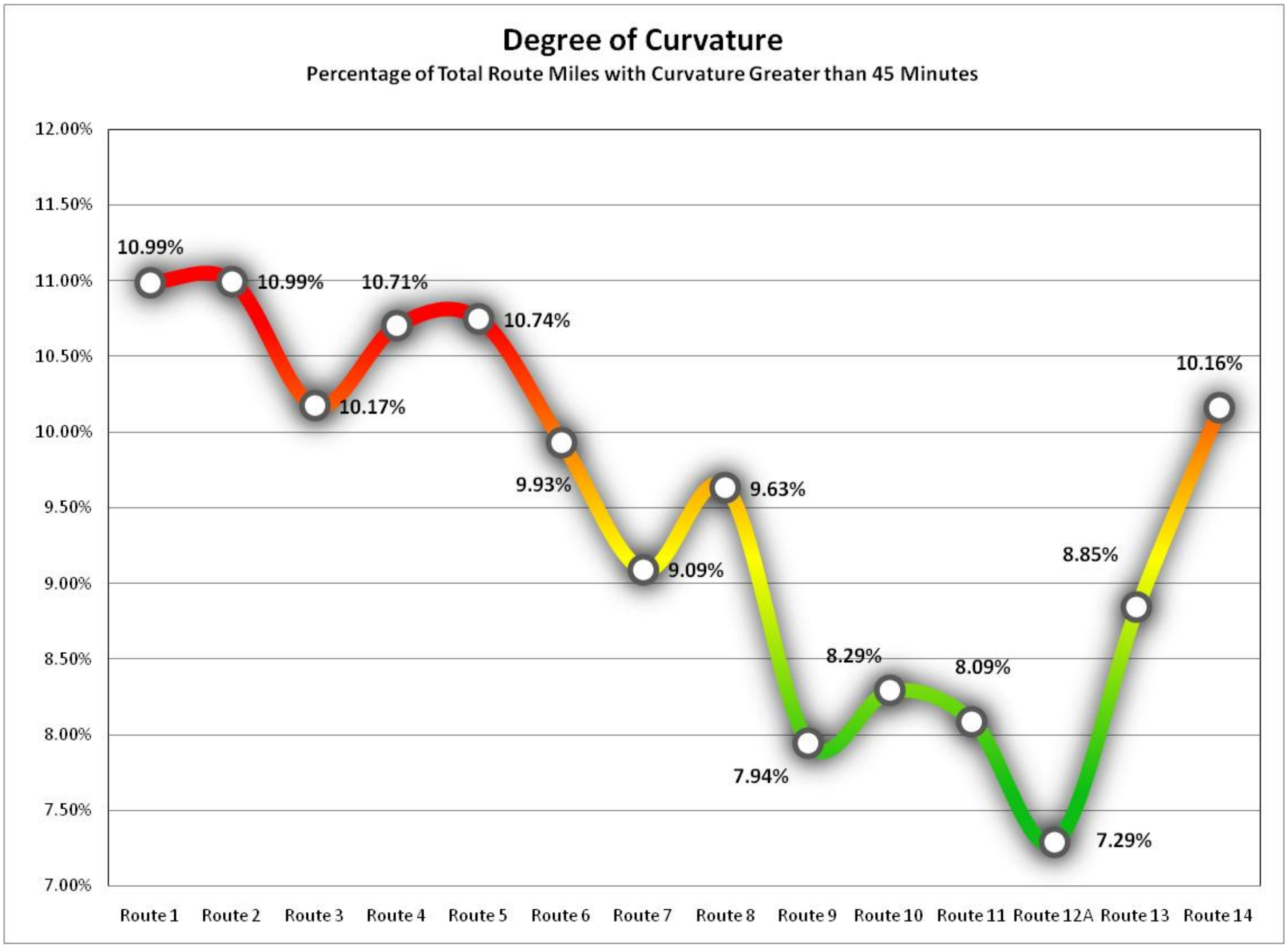
Degree of curvature data, including curve location and length are collected from available track charts and are inputted into RCAAT™ for the purposes of generating a table and chart depicting the data.

The number of miles and percentage of total route miles with curvature greater than 45 minutes is shown for each route in Table 3-2 and Chart 3-2. The degree of curvature by milepost is provided in Appendix G.

Table 3-2. Degree of Curvature

Route	Number of Miles with Curvature >45 Minutes	% of Total Route Miles with Curvature >45 Minutes
1 –Amtrak Route	36.87	10.99%
2 – Amtrak-Rochester	39.89	10.99%
3 – Amtrak-BNSF River	34.26	10.17%
4 – MWRRI-Madison	37.85	10.71%
5 – Madison-Rochester	43.50	10.74%
6 – Madison-BNSF River	35.24	9.93%
7 – Madison-Prairie	35.83	9.09%
8 – Madison-Prairie-Rochester	41.48	9.63%
9 – Madison-Prairie-BNSF River	33.22	7.94%
10 – Amtrak-Eau Claire	27.43	8.29%
11 – Madison-Eau Claire-TC	28.04	8.09%
12A – Wyeville-Eau Claire	24.55	7.29%
13 – Milwaukee-Fond du Lac-Eau Claire	32.42	8.85%
14 – Milwaukee-Fond du Lac-Chip-TC	37.79	10.16%

Chart 3-2. Degree of Curvature



Qualitative Assessment: Routes 9, 10, 11, and 12A have the least amount of curves greater than 45 minutes. Routes 9, 10, 11, and 12A are better than the remaining routes.

3.3 Significant Grades

Significant grades along a route require a train to have additional power to ascend and descend the grade. If a train's power-to-weight ratio is sufficient to maintain normal speed on flat track, the train will lose speed as it climbs a grade. The speeds of all following trains are reduced to the speed of the slowest train.

Significant grades are defined as grades greater than 1%. The location and length of significant grades are collected from railroad track charts. The grades are assumed to be less than 1% for abandoned track. The data is inputted into RCAAT™ for the purposes of generating a table and chart depicting the data.

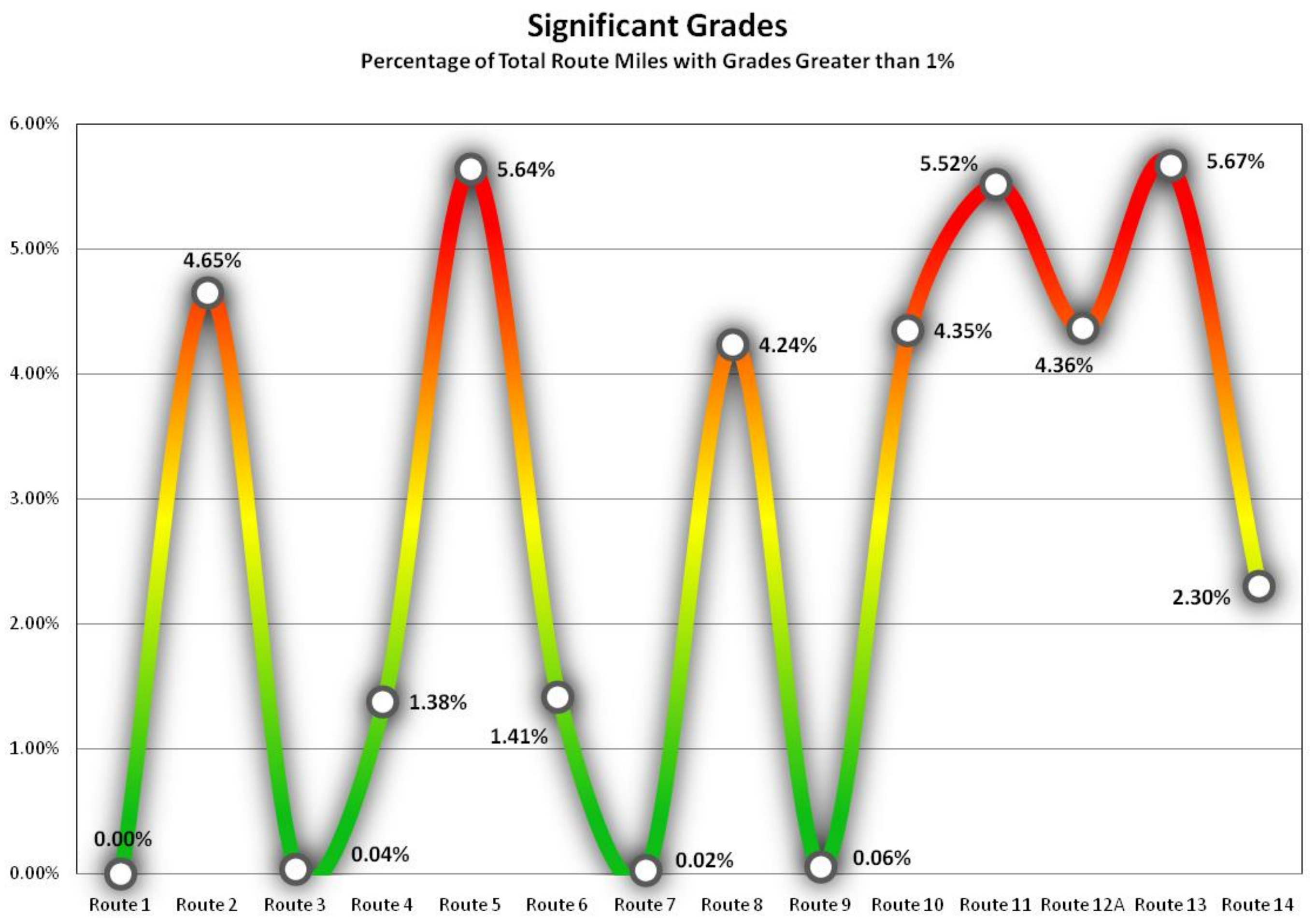
Normative Statement: A route with the least amount of grades greater than 1% is better than a route with more grades.

The number of miles and percentage of total route miles with grades greater than 1% is shown for each route in Table 3-3 and Chart 3-3. Grades by milepost are provided in Appendix H.

Table 3-3. Significant Grades

Route	Number of Miles with Grades > 1%	% of Total Route Miles with Grades > 1%
1 –Amtrak Route	0.00	0.00%
2 – Amtrak-Rochester	17.98	4.65%
3 – Amtrak-BNSF River	0.13	0.04%
4 – MWRRI-Madison	4.87	1.38%
5 – Madison-Rochester	22.85	5.64%
6 – Madison-BNSF River	5.00	1.41%
7 – Madison-Prairie	0.09	0.02%
8 – Madison-Prairie-Rochester	18.07	4.24%
9 – Madison-Prairie-BNSF River	0.22	0.06%
10 – Amtrak-Eau Claire	14.38	4.35%
11 – Madison-Eau Claire-TC	19.25	5.52%
12A – Wyeville-Eau Claire	14.69	4.36%
13 – Milwaukee-Fond du Lac-Eau Claire	20.77	5.67%
14 – Milwaukee-Fond du Lac-Chip-TC	8.55	2.30%

Chart 3-3. Significant Grades



Qualitative Assessment: Routes 5, 8, 10, 11,12A and 13 have more than 14 miles of grades greater than 1%. Routes 1, 3, 7, and 9 have the least amount of grades greater than 1%. Routes 1, 3, 7, and 9 are better than the remaining routes.

3.4 Track Classification

Classifications for active railroad lines are determined by the railroad's operating revenue. Class I railroads are large freight railroad companies such as Norfolk Southern or BNSF. Regional railroads often provide local and connecting freight rail service over former Class I rail routes for larger areas that still have a significant number of customers who use rail service frequently, but where total revenues are not enough to justify operation and maintenance by a Class I railroad. Shortline railroads are typically small railroads that serve the remaining rail customers on a portion of a former Class I railroad route. Due to operating revenue and frequent use of the track, Class I railroad tracks are usually designed for heavy, frequent and/or fast trains and are better maintained.

Track that is not being used for railroad service can either be classified as out of service or abandoned. Track that has been taken out of service by its railroad owner is generally not maintained and the right-of-way is usually discontinued. Abandoned track is track that has been released from railroad ownership. After a railroad has been given the right to abandon a line segment by the Surface Transportation Board, the land could be sold to a private party, for public use, or returned to the adjacent land owners.

To accommodate 110 mph train operations on a Class I railroad, an upgrade of existing track with tie replacement, additional ballast and surfacing may be sufficient. To accommodate 110 mph train operations on a regional or shortline railroad, more extensive improvements are required, including a total replacement of sub-ballast, roadbed, ties, ballast, rail and replacement or rehabilitation of bridges and drainage structures. Abandoned and out of service track typically require major reconstruction to accommodate 110 mph operations.

Normative Statement: Previous studies undertaken for incremental build high-speed rail programs indicate that the use of regional railroads provides more accessibility because of freight capacity issues. Therefore, a route utilizing more regional railroad-owned track is better than a route using less regional railroad-owned track.

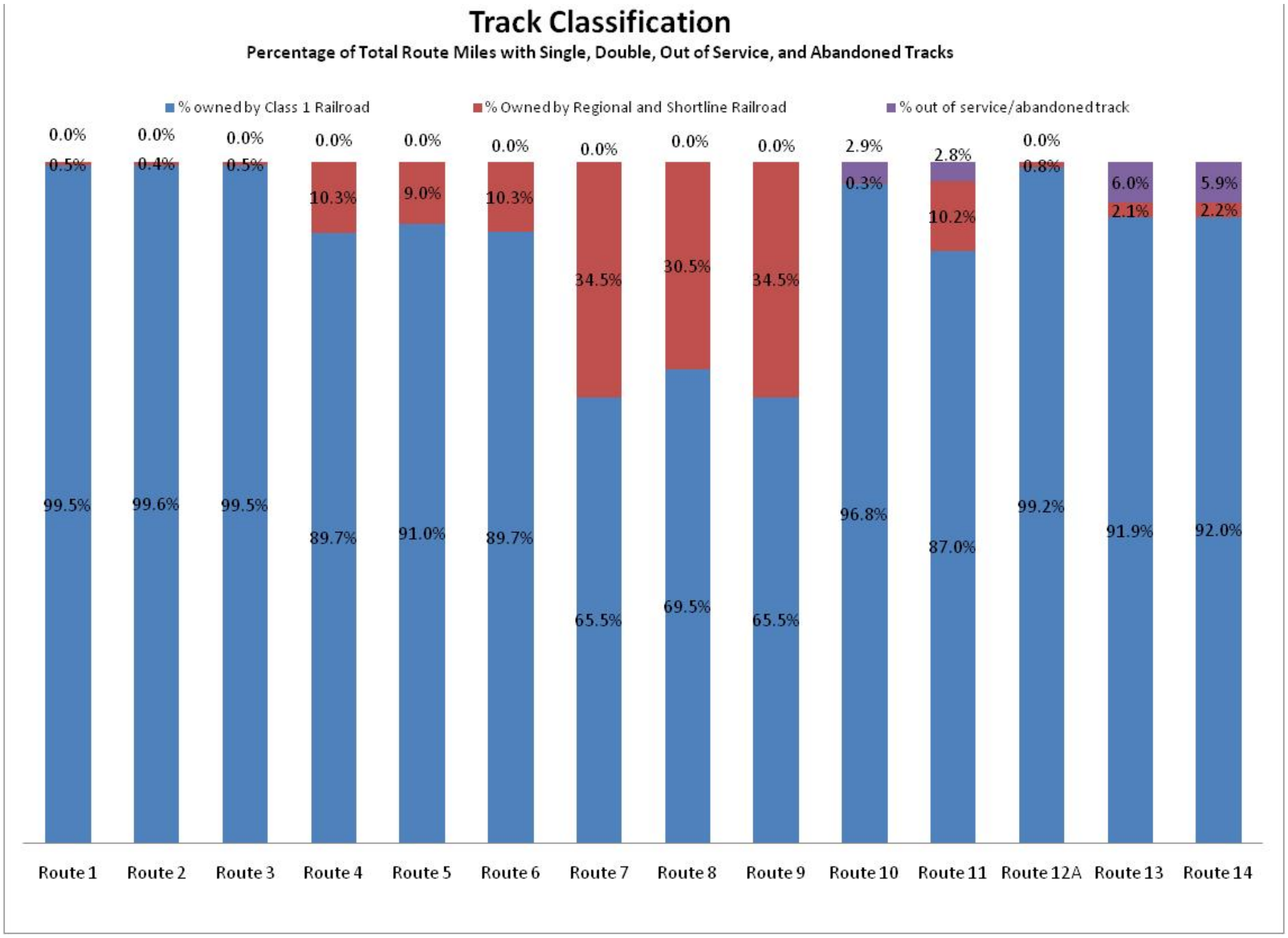
All track classification information was obtained from track charts and timetables and is inputted into RCAAT™ for the purposes of generating a table and chart depicting the data.

Miles and percentage of total route miles for each railroad class is shown by route in Table 3-4 and Chart 3-4.

Table 3-4. Track Classification

Route	Miles Owned by Class I Railroad	% of Total Route Miles Owned by Class I Railroad	Miles Owned by Regional/ Shortline Railroad	% of Total Route Miles Owned by Regional/ Shortline Railroad	Miles of Out of Service Track	% of Total Route Miles of Out of Service Track	Miles of Abandoned Track	% of Total Route Miles of Abandoned Track
1 –Amtrak Route	333.88	99.5%	1.61	0.5%	0.00	0.0%	0.00	0.0%
2 – Amtrak-Rochester	385.19	99.6%	1.61	0.4%	0.00	0.0%	0.00	0.0%
3 – Amtrak-BNSF River	335.19	99.5%	1.61	0.5%	0.00	0.0%	0.00	0.0%
4 – MWRRI-Madison	317.11	89.7%	36.41	10.3%	0.00	0.0%	0.00	0.0%
5 – Madison-Rochester	368.42	91.0%	36.42	9.0%	0.00	0.0%	0.00	0.0%
6 – Madison-BNSF River	318.41	89.7%	36.42	10.3%	0.00	0.0%	0.00	0.0%
7 – Madison-Prairie	245.70	65.5%	129.37	34.5%	0.00	0.0%	0.00	0.0%
8 – Madison-Prairie-Rochester	296.51	69.5%	129.88	30.5%	0.00	0.0%	0.00	0.0%
9 – Madison-Prairie-BNSF River	246.50	65.5%	129.87	34.5%	0.00	0.0%	0.00	0.0%
10 – Amtrak-Eau Claire	320.35	96.8%	0.89	0.3%	9.60	2.9%	0.00	0.0%
11 – Madison-Eau Claire-TC	303.57	87.0%	35.69	10.2%	9.60	2.8%	0.00	0.0%
12A – Wyeville-Eau Claire	333.99	99.2%	2.69	0.8%	0.00	0%	0.00	0.0%
13 – Milwaukee-Fond du Lac-Eau Claire	336.90	91.9%	29.63	8.1%	0.00	0.0%	21.90	6.0%
14 – Milwaukee-Fond du Lac-Chip-TC	342.04	92.0%	8.02	2.2%	0.00	0.0%	21.90	5.9%

Chart 3-4. Track Classification



Qualitative Assessment: Routes 1, 2, 3, 4, 5, 6, 10, 11, 13, and 14 operate on right-of-way owned by Class I Railroads for at least 85% of the system, with Routes 1, 3, and 12A having close to 100% of track owned by a Class I Railroad. Routes 7, 8, and 9 depend on using 90 miles-128 miles of regional railroads. Routes 7, 8, and 9 are better than the remaining routes because the routes have better accessibility than the remaining routes.

3.5 Results of Qualitative Assessment of Route Characteristics

The routes were assigned a color rating, as described in section 2.2, for the Number of Main Tracks, Degree of Curvature, Significant Grades, and Track Classification based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall route characteristics rating was assigned to each route based on the number of "green", "yellow", and "red" ratings the measures received. Table 3-5 depicts the color rating for each route for the measures and the overall route characteristics criteria.

Table 3-5. Results of Qualitative Assessment

Route	Number of Main Tracks	Degree of Curvature	Significant Grades	Track Classification	Overall Route Characteristics Rating
1 –Amtrak Route	Green	Red	Green	Red	Yellow
2 – Amtrak-Rochester	Yellow	Red	Red	Red	Red
3 – Amtrak-BNSF River	Green	Red	Green	Red	Yellow
4 – MWRRI-Madison	Yellow	Red	Yellow	Yellow	Yellow
5 – Madison-Rochester	Red	Red	Red	Yellow	Red
6 – Madison-BNSF River	Yellow	Yellow	Yellow	Yellow	Yellow
7 – Madison-Prairie	Yellow	Yellow	Green	Green	Green
8 – Madison-Prairie-Rochester	Red	Yellow	Red	Green	Yellow
9 – Madison-Prairie-BNSF River	Yellow	Green	Green	Green	Green
10 – Amtrak-Eau Claire	Green	Green	Red	Red	Yellow
11 – Madison-Eau Claire-TC	Green	Green	Red	Yellow	Yellow
12A – Wyeville-Eau Claire	Green	Green	Red	Red	Yellow
13 – Milwaukee-Fond du Lac-Eau Claire	Red	Yellow	Red	Red	Red
14 – Milwaukee-Fond du Lac-Chip-TC	Red	Red	Yellow	Red	Red

At the March 11, 2011 workshop, the teams were presented with route characteristics data and engaged in discussions regarding the qualitative assessment and color rating of each route. The following captures the overall qualitative assessment and rating for each route:

- Route 1 – Amtrak Route – The workshop attendees discussed that Route 1 has 243 miles (72% of the total route miles) of single track on a double track roadbed. This indicates that Route 1 has a greater capacity to accommodate faster trains than other routes. The route is rated yellow for route characteristics because the number of main tracks and significant grades are good, but the majority of track is owned by a Class I railroad and the workshop participants felt it would be difficult to mitigate the degree of curvature.

- Route 2 – Amtrak-Rochester – Route 2 has 164 miles (42% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 2 encounters significant grades between Winona and Rochester. The track has a 600 foot elevation change from the river basin area to the plateau to Rochester over a short distance. The construction of a second track in this area will be very difficult. This route is rated red for route characteristics because the route does not meet the project purpose of decreasing travel times and the project need for competitive and attractive alternative modes of travel.

- Route 3 – Amtrak-BNSF River – Route 3 has 137 miles (41% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 3 utilizes the BNSF River route between La Crosse, WI and Hastings, MN. The BNSF River route has a very high freight density. In order to accommodate high-speed passenger trains, a third track will have to be built. A new track would be built in the Mississippi River. This route is rated yellow for route characteristics because the number of main tracks and significant grades are good, but the majority of track is owned by a Class I railroad and the workshop participants felt it would be difficult to mitigate the degree of curvature. Overall, the route was average.

- Route 4 – MWRRI Madison – Route 4 has 223 miles (63% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. The route is rated yellow for route characteristics because the number of main tracks, significant grades and track owned by a Class I railroad are average.

- Route 5 – Madison-Rochester – Route 5 has 163 miles (40% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 5 encounters significant grades between Winona and Rochester. Similarly to Route 2, the track has a 600 foot elevation change from the river basin area to the plateau to Rochester over a short distance. The construction of a second track in this area will be very difficult. This route is rated **red** for route characteristics because the route does not meet the project purpose of decreasing travel times and the project need for competitive and attractive alternative modes of travel.

- Route 6 – Madison-BNSF River – Route 6 has 154 miles (43% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 6 utilizes the BNSF River route between La Crosse, WI and Hastings, MN. The BNSF River route has a very high freight density. In order to accommodate high-speed passenger trains, a third track will have to be built. A new third track would be built in the Mississippi River. This route is rated yellow for route characteristics because the number of main tracks, degree of curvature, significant grades, and track owned by Class I railroads are average.

- Route 7 – Madison-Prairie – Route 7 has 138 miles (37% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 7 utilizes the BNSF River route between Prairie du Chien, WI and La Crosse, WI. The BNSF River route has a very high freight density. In order to accommodate high-speed passenger trains, a third track will have to be built. A new third track would be built in the Mississippi River. The route is rated green for route characteristics because the significant grades and track owned by a Class I railroad were good, and the participants felt that the number of main tracks and degree of curvature were average.

- Route 8 – Madison-Prairie-Rochester – Route 8 has 58 miles (14% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, Route 8 utilizes the BNSF River route between Prairie du Chien, WI and La Crosse, WI. The BNSF River route has a very high freight density. In order to accommodate high-speed passenger trains, a third track will have to be built. A new third track would be built in the Mississippi River. Additionally, Route 8 encounters significant grades between Winona and Rochester. Similarly to Route 2, the track has a 600 foot elevation change from the river basin area to the plateau to Rochester over a short distance. The construction of a second track in this area will be very difficult. The route is rated yellow for route characteristics because while the track owned by a Class I railroad was good and the degree of curvature was average, the participants felt that it would be difficult to mitigate the number of main tracks and significant grades. Overall, the route was average.

- Route 9 – Madison-Prairie-BNSF River – Route 9 has 27 miles (7% of the total route miles) of single track on a double track roadbed. However, Route 9 utilizes the BNSF River route between Prairie du Chien, WI and Hastings, MN. The BNSF River route has a very high freight density. In order to accommodate high-speed passenger trains, a third track will have to be built. A new third track would be built in the Mississippi River. The route is rated green for route characteristics because the track owned by a Class I railroad, significant grades, and degree of curvature were all good.

- Route 10 – Amtrak-Eau Claire – Route 10 has 252 miles (76% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. The route is rated yellow for route characteristics because although it will be difficult to mitigate significant grades, the number of main tracks and degree of curvature were good. Overall, the route was average.

- Route 11 – Madison-Eau Claire-TC – Route 11 has 231 miles (66% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. The route is rated yellow for route characteristics because the degree of curvature was good and the significant grades would be difficult to mitigate, but the number of main tracks and track owned by a Class I railroad were average. Overall, the route was average.

- Route 12A – Wyeville-Eau Claire – Route 12A has 303.6 miles (90%) of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. This route is rated yellow for route characteristics because the number of main tracks and degree of curvature were good, but the significant grades and track owned by a Class I railroad were not good. Overall, the route was average.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire - Route 13 has 85 miles (23% of the total route miles) of single track on a double track roadbed. As with Route 1, this indicates that the route has a greater capacity to accommodate faster trains. However, the route travels through highly undulating territory from Fond du Lac, WI west to the state line. Constructing a second track in this type of territory is very expensive. The route is rated **red** for route characteristics because the route does not meet the project purpose of decreasing travel times and improving freight rail mobility, and the project need for competitive and attractive alternative modes of travel.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – Route 14 has 0 miles of single track on a double track roadbed. This indicates that the entire length of the route will require construction of new track on a new roadbed. This is a very high expense due to the undulating territory west of Fond du Lac. The route is rated **red** for route characteristics because the route does not meet the project purpose of decreasing travel times and improving freight rail mobility, and the project need for competitive and attractive alternative modes of travel.

4.0 TRAVEL TIME

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The travel time criterion is tied to the project purpose of decreasing travel times, and the project need for competitive and attractive alternative modes in the corridor. If a potential passenger rail alternative does not meet the project purpose or project need, the route will be eliminated from further analysis.

4.1 Train Performance Calculator (TPC)

The RCAAT™ is used to determine the estimated travel time for each potential passenger rail route for comparison. The train performance calculator employs the following parameters and assumptions. These parameters and assumptions are likely to prove aggressive in actual implementation, as speed may be further restricted for operation and safety considerations.

- Typical modern passenger train performance characteristics are modeled including:
    - Acceleration of 1.11 miles per hour per second for speeds from 0-50 mph, 0.50 miles per hour per second for speeds from 50-80 mph, and 0.24 miles per hour per second for speeds from 80-110 mph.
    - Deceleration of 1.00 mile per hour per second from 110-0 mph
- Passenger equipment will employ tilt technology, allowing operations at 6 inches of unbalance
- Enhanced superelevation is employed in curves on all tracks used by passenger trains, not exceeding a maximum of 4.0 inches.
- Municipal speed restrictions are eliminated as the corridor will be “sealed” with 4-quadrant gates at public crossings in high speed territory
- Passenger speed is limited to a maximum of 90 mph between La Crosse, WI and Hastings, MN and 110 mph everywhere else
- Possible degradation in performance due to grades is not considered
- Travel times are calculated including a schedule pad as recommended by the FRA in the *Rail Corridor Transportation Plan*. The formula to calculate pad is

  $$1.07*T + M*(0.5*L/S + W + D/S),$$

  Where T is the Train performance calculator run time, M is the number of meets with other passenger trains, L is the distance between passing tracks in miles, D is the distance in miles from home signal at passing track to distant signal at passing track, S is the average speed in miles per minutes, and W is the interlocking operating time. Typically, the pad ranges from 7% for a double-track alignment to approximately 15-20% for a single track with passing sidings.

- The speed profiles and travel times are computed with no freight interference. Sufficient freight infrastructure must be constructed to allow relatively independent operations.

Geometric features including tangent segments, grades, and curves, have been loaded into a spreadsheet for use in estimating passenger train travel times under the assumptions noted above. Where track charts could not be obtained, such as for abandoned railroad rights-of-way, curvature was determined by using aerial photography and geometric calculations in CAD software.

Theoretical travel times (including pad) are calculated for each route between Milwaukee and Minneapolis with 2 minute station stops at eleven locations along each route. Additional intermediate station stops will increase travel times. For the purpose of comparing route travel times, each of the routes has terminal locations at the Milwaukee Intermodal Station and at the Minneapolis Transportation Interchange via St. Paul Union Depot. The use of these terminals for comparing route alternatives is consistent throughout this evaluation. Intercity passenger rail models are predicated on the basis that the lower the travel time, the greater the ridership at the terminal cities.

Normative Statement: Routes with lower travel times are better than routes with higher travel times.

The travel times calculated by RCAAT™ are listed in Table 4-1 and Chart 4-1.

Speed profile graphs are provided in Appendix I. The graphs depict the estimated speeds achieved as a passenger train travels from Milwaukee to Twin Cities subject to geometric restrictions throughout the system and imposed speed limits.

Table 4-1. Travel Time

Route	TPC Travel Time with Pad
1 –Amtrak Route	4 hrs 35 min
2 – Amtrak-Rochester	5 hrs 22 min
3 – Amtrak-BNSF River	4 hrs 31 min
4 – MWRRI-Madison	5 hrs 8 min
5 – Madison-Rochester	5 hrs 38 min
6 – Madison-BNSF River	5 hrs 4 min
7 – Madison-Prairie	5 hrs 17 min
8 – Madison-Prairie-Rochester	5 hrs 47 min
9 – Madison-Prairie-BNSF River	5 hrs 13 min
10 – Amtrak-Eau Claire	4 hrs 38 min
11 – Madison-Eau Claire-TC	5 hrs 17 min
12A – Wyeville-Eau Claire	4 hrs 27 min
13 – Milwaukee-Fond du Lac-Eau Claire	5 hrs 5 min
14 – Milwaukee-Fond du Lac-Chip-TC	5 hrs 18 min

Chart 4-1. Travel Time

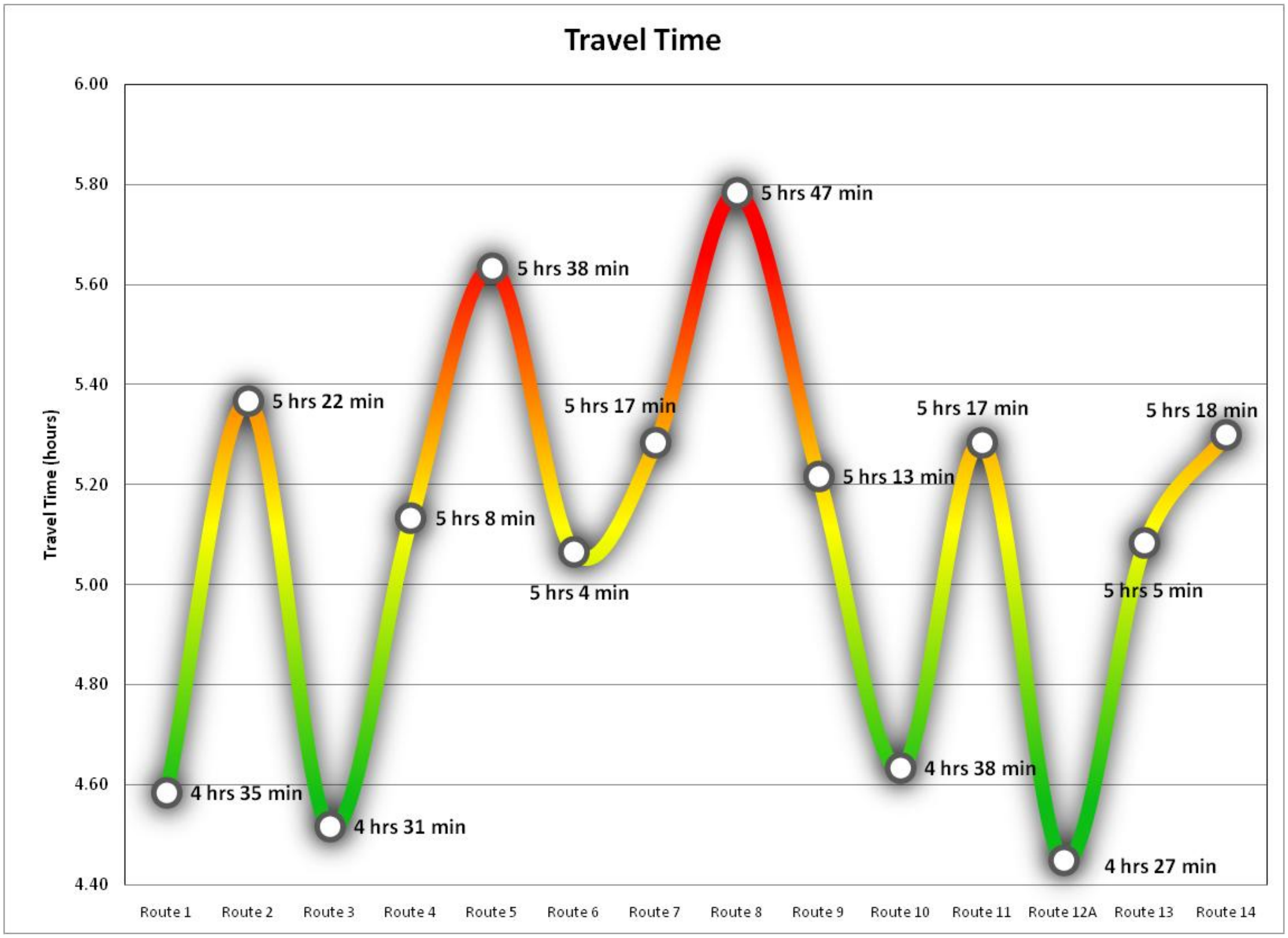


Table 4-1 shows that the difference in travel time between Routes 1 and 4 is 33 minutes (5 hrs 8 min less 4 hrs 35 min). Routes 1 and 4 use the same right-of-way between Milwaukee and the Twin Cities except for the segment between Watertown and Portage. Route 1 is direct from Watertown to Portage, whereas Route 4 follows a right-of-way from Watertown to Portage through Madison. Route 4 is 23.1 miles longer than Route 1 resulting in the difference of 33 minutes in travel time.

Table 4-1 shows that the difference in travel time between Routes 10 and 11 is 39 minutes (5 hrs 17 min less 4 hrs 38 min). Routes 10 and 11 use the same right-of-way between Milwaukee and the Twin Cities except for the segment between Watertown and Portage. Route 1 is direct from Watertown to Portage, whereas Route 4 follows a right-of-way from Watertown to Portage through Madison. Route 11 is 23.1 miles longer than Route 10 resulting in the difference of 39 minutes in travel time.

The reason for the difference in travel time between Routes 1 and 4 (33 minutes) and

Routes 10 and 11 (39 minutes) is because of the method used to calculate the schedule pad. Schedule pad is calculated based on total miles of single track on a route and is not calculated by segment. Route 1 has 250.07 miles of single track and Route 4 has 294.73 miles of single track. The difference between Routes 1 and 4 is 44.66 miles. Route 10 has 254.84 miles of single track and Route 11 has 303.37 miles of single track. The difference between Routes 10 and 11 is 48.53 miles. Since the pad is calculated based on the overall number of miles of single track, the schedule pad for Routes 10 and 11 will be greater than the schedule pad for Routes 1 and 4.

Qualitative Assessment: Routes 1, 3, 10, and 12A have the lowest travel times. Routes 1, 3, 10, and 12A are faster than the remaining routes.

4.2 Automobile Travel Time

As discussed in section 4.2.1 of the Draft Purpose and Need document, the high-speed passenger rail service between Milwaukee and Twin Cities must provide travel times that are competitive with or better than the travel time by auto in order to attract users. At the March 11, 2011 workshop, the participants discussed what travel time should be used as the automobile travel time. Four websites were used to estimate automobile travel time; the times ranged from 5 hours to 6 hours. It was determined that the most appropriate automobile travel time between the termini should be estimated at 5 hours 30 minutes using I-94.

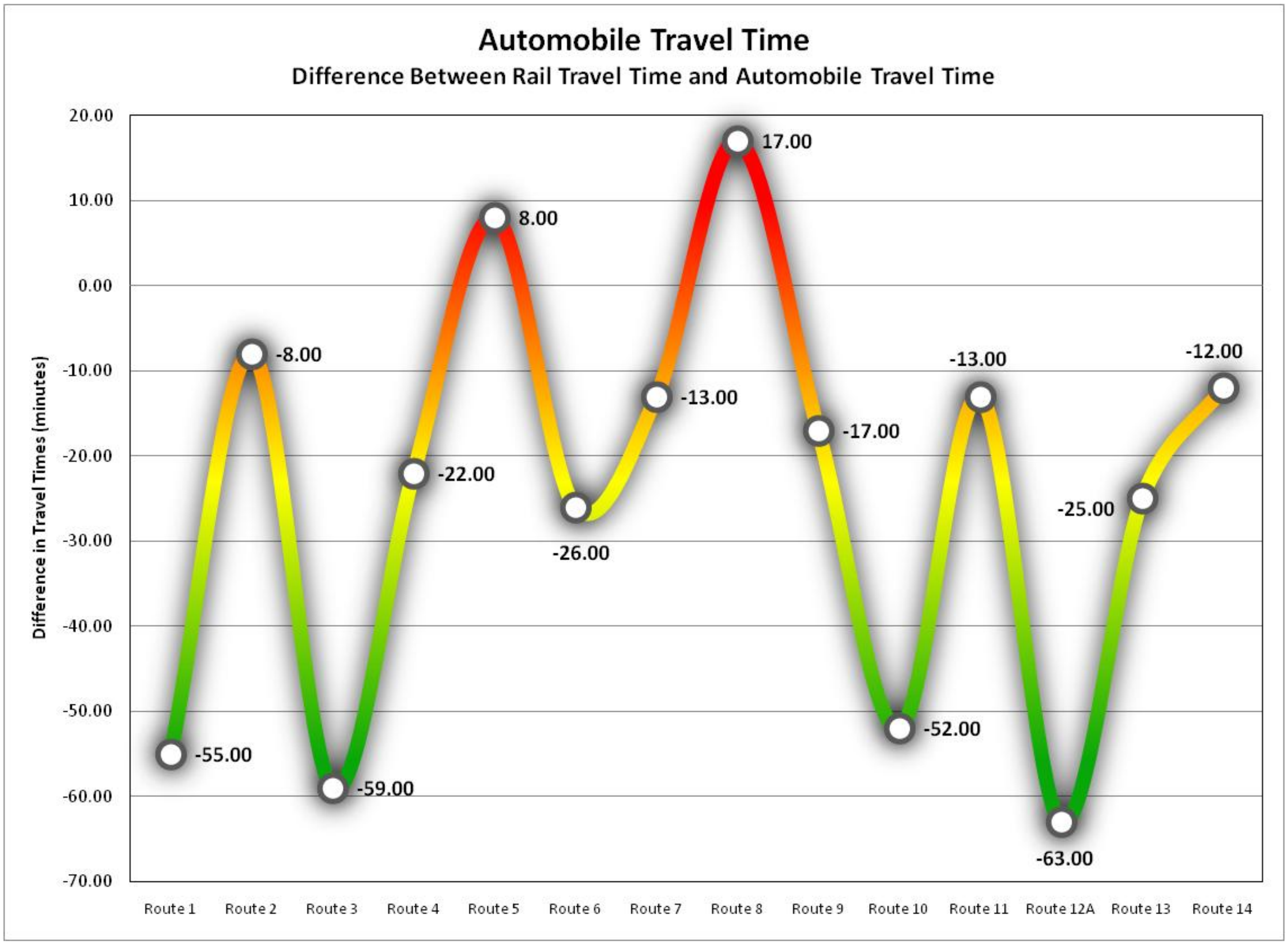
Normative Statement: Routes with the greatest difference between rail travel times and automobile travel time are more competitive and better than routes with lesser differences between rail and automobile travel times.

Table 4-2 and Chart 4-2 depict the difference in travel time between automobile and high-speed rail for each route.

Table 4-2. Automobile Travel Time

Route	Travel Time	Difference between Rail Travel Time and Automobile Travel Time
Automobile	5 hrs 30 min	-
1 –Amtrak Route	4 hrs 35 min	(55 min)
2 – Amtrak-Rochester	5 hrs 22 min	(8 min)
3 – Amtrak-BNSF River	4 hrs 31 min	(59 min)
4 – MWRRI-Madison	5 hrs 8 min	(22 min)
5 – Madison-Rochester	5 hrs 38 min	8 min
6 – Madison-BNSF River	5 hrs 4 min	(26 min)
7 – Madison-Prairie	5 hrs 17 min	(13 min)
8 – Madison-Prairie-Rochester	5 hrs 47 min	17min
9 – Madison-Prairie-BNSF River	5 hrs 13 min	(17 min)
10 – Amtrak-Eau Claire	4 hrs 38 min	(52 min)
11 – Madison-Eau Claire-TC	5 hrs 17 min	(13 min)
12A – Wyeville-Eau Claire	4 hrs 27 min	(1 hrs 3 min)
13 – Milwaukee-Fond du Lac-Eau Claire	5 hrs 5 min	(25 min)
14 – Milwaukee-Fond du Lac-Chip-TC	5 hrs 18 min	(12 min)

Chart 4-2. Difference between Rail Travel Time and Automobile Travel Time



Qualitative Assessment: Routes 1, 3, 10, and 12A have rail travel times that are more than 50 minutes shorter than the automobile travel time. Routes 1, 3, 10, and 12A will provide more competitive travel times than the remaining routes.

4.3 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the Travel Time and Automobile Travel Time based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall travel time rating was assigned to each route based on the number of “green”, “yellow”, and “red” ratings the measures received. Table 4-3 depicts the color rating for each route for the measures and the overall travel time criteria.

A speed limit of 90 mph was used between La Crosse, WI and Hastings, MN because of co-mingling between passenger and freight rail on the BNSF River line. It was assumed that since passenger and freight trains would be co-mingling, the maximum speed of the passenger trains would be limited to 90 mph. In discussions with FRA, it was requested that a maximum speed of 110 mph be used on the BNSF River line. RCAAT was used to calculate the travel time at 110 mph between La Crosse and Hastings. A time savings of 10 minutes was calculated. However, this does not affect the results of the qualitative assessment shown below because the assessments of Route 3, Route 6, and Route 9 would have remained the same even if 10 minutes had been subtracted from the overall travel time for these routes.

Table 4-3. Results of Qualitative Assessment

Route	Travel Time	Automobile Travel Time	Overall Travel Time Rating
1 –Amtrak Route			
2 – Amtrak-Rochester			
3 – Amtrak-BNSF River			
4 – MWRRI-Madison			
5 – Madison-Rochester			
6 – Madison-BNSF River			
7 – Madison-Prairie			
8 – Madison-Prairie-Rochester			
9 – Madison-Prairie-BNSF River			
10 – Amtrak-Eau Claire			
11 – Madison-Eau Claire-TC			
12A – Wyeville-Eau Claire			
13 – Milwaukee-Fond du Lac-Eau Claire			
14 – Milwaukee-Fond du Lac-Chip-TC			

At the March 11, 2011 workshop, the teams were presented with travel time and difference between rail and automobile travel time data and engaged in discussions regarding the qualitative assessment and color rating of each route. There was consensus among all attendees that travel time is a critical evaluation criterion essential for the success of this project. The following captures the qualitative assessment for each route:

- Route 1 – Amtrak Route – At the workshop, the teams assessed the travel time and difference between rail travel time and automobile travel time for Route 1. The teams discussed that Route 1 had a good travel time because it is a direct route with no reverse moves. Additionally, Route 1 has a travel time that is significantly shorter than the automobile travel time. The route is rated green for travel time.

- Route 2 – Amtrak-Rochester – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 2. The teams discussed that since the travel time was similar to the automobile travel time, the route received a "red" assessment. The teams discussed that all routes through Rochester have an increase in travel time for high speed intercity passenger rail service due to the increased distance to travel through Rochester, and the reverse move required at St. Paul Union Depot. Overall, the route is rated yellow for travel time.

- Route 3 – Amtrak-BNSF River – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 3. Route 3 has a good travel time because it is a relatively direct route with no reverse moves. Route 3 has a travel time significantly shorter than the automobile travel time. This route is rated green for travel time.

- Route 4 – MWRRI Madison – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 4. Route 4 has an increase in travel time due to the increased distance to travel through Madison. Additionally, depending on the location of the Madison station, a reverse move may be required. The route has a travel time that is less than the automobile travel time, but not significantly less. This route is rated yellow for travel time.

- Route 5 – Madison-Rochester – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 5. Route 5 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester, and at least one reverse move is required. Additionally, Route 5 has a travel time greater than the automobile travel time. The route is rated **red** for travel time because the route did not meet the project need for a competitive and attractive alternative mode of travel.

- Route 6 – Madison-BNSF River – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 6. The route has an increase in travel time due to the increased distance to travel through Madison. As stated during discussions of Route 4, depending on the location of the Madison station, a reverse move may be required. Additionally, Route 6 has a travel time that is less than the automobile travel time, but not significantly less. This route is rated yellow for travel time.

- Route 7 – Madison-Prairie – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 7. The route has an increase in travel time due to the increased distance to travel through Madison. As stated during discussions of Route 4, depending on the location of the Madison station, a reverse move may be required. The teams discussed that since the travel time was similar to the automobile travel time, the route received a "red" assessment. Overall, the route is rated yellow for travel time.

- Route 8 – Madison-Prairie-Rochester – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 8. Route 8 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester, and at least one reverse move is required. Additionally, Route 8 has a travel time greater than the automobile travel time. The route is rated red for travel time because the route did not meet the project need for a competitive and attractive alternative mode of travel.

- Route 9 – Madison-Prairie-BNSF River – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 9. The route has an increase in travel time due to the increased distance to travel through Madison. As stated during discussions of Route 4, depending on the location of the Madison station, a reverse move may be required. Additionally, Route 9 has a travel time that is less than the automobile travel time, but not significantly less. The route is rated yellow for travel time.

- Route 10 – Amtrak-Eau Claire – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 10. Route 10 has a good travel time because it is a relatively direct route with no reverse moves. Additionally, the route has a travel time significantly shorter than the automobile travel time. The route is rated green for travel time.

- Route 11 – Madison-Eau Claire-TC – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 11. The route has an increase in travel time due to the increased distance to travel through Madison. As stated during discussions of Route 4, depending on the location of the Madison station, a reverse move may be required. The teams discussed that since the travel time was similar to the automobile travel time, the route received a "red" assessment because the route did not meet the project need for a competitive and attractive alternative mode of travel. Overall, the route is rated yellow for travel time.

- Route 12A – Wyeville-Eau Claire - The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 12A. Route 12A has a good travel time because it is a direct route with no reverse moves. Additionally, the route has a travel time significantly shorter than the automobile travel time. The route is rated green for travel time.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 13. The teams agreed that Route 13 has an average travel time and the travel time is less than the automobile travel time, but not significantly less. Additionally, teams came to the consensus that routes traveling through Fond du Lac are long and do not capture the population that other routes with similar travel times do. This route is rated yellow for travel time.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – The teams assessed the travel time and difference between rail travel time and automobile travel time for Route 14. The teams agreed that Route 13 has an average travel time and the travel time is less than the automobile travel time, but not significantly less. Additionally, teams came to the consensus that routes traveling through Fond du Lac are long and do not capture the population that other routes with similar travel times do. This route is rated yellow for travel time.

5.0 MARKET SIZE

Market size is an indicator of the size of the potential ridership base for a route. Successful train operations require consistent and sustainable ridership. To achieve this, two measures must be evaluated: the ridership potential of each route and the availability of stations to serve the potential riders.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The market size criterion is tied to the project purpose of providing accessibility to major population centers. If a potential passenger rail alternative does not meet the project purpose, the route will be eliminated from further analysis.

5.1 Ridership Potential

A reasonable assumption for estimating market size is that the market size in a passenger rail corridor is directly related to the population within the service area. Based on this assumption, route populations are calculated for each route alternative using GIS software and US Census data from the year 2000. The populations for each route alternative include census tract populations found within a 20-mile band of the track, and within a 20 mile radius of each of the terminal stations. Maps depicting the population bands for each of the potential passenger rail alternatives are shown in Appendix J.

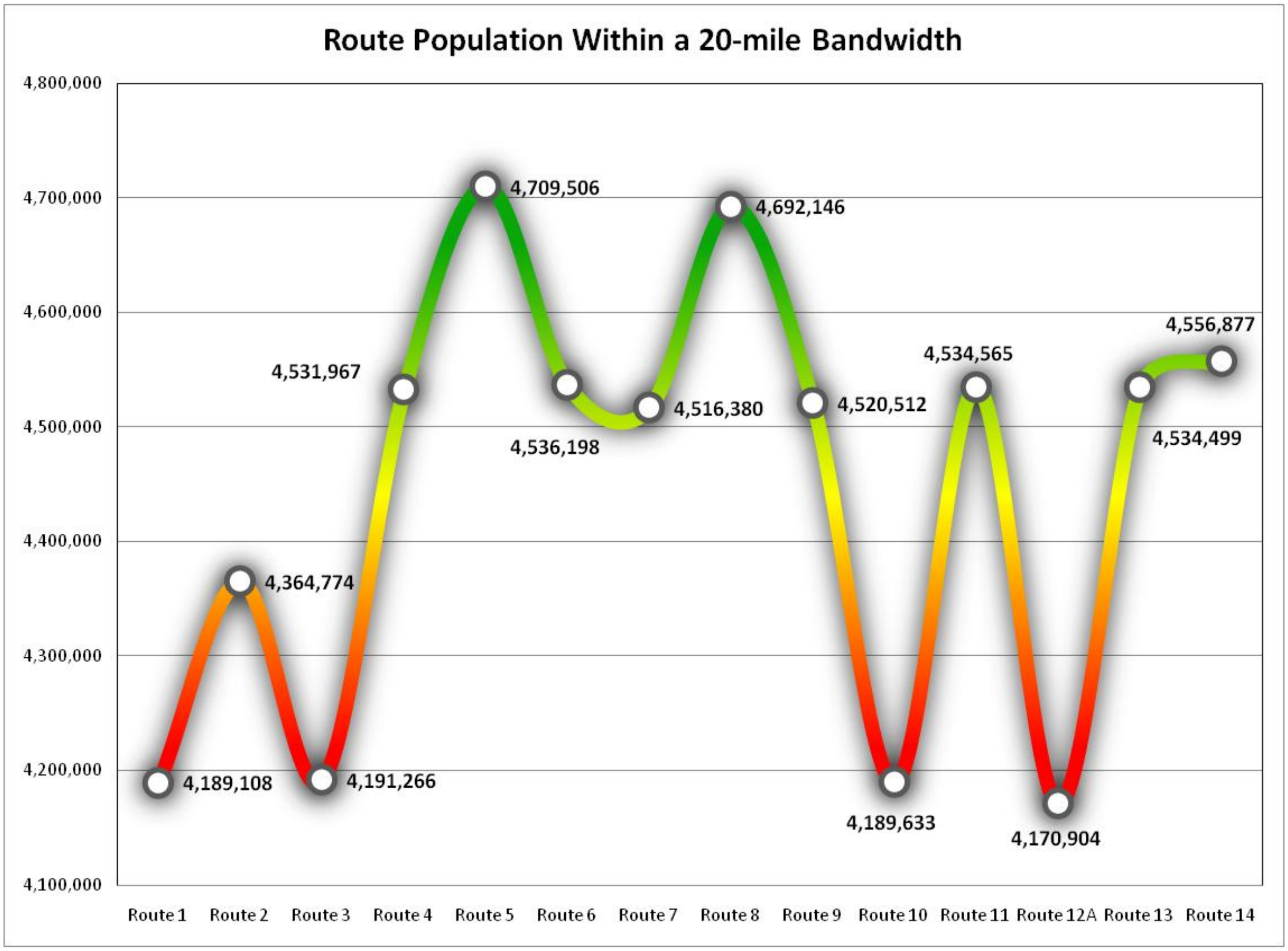
Normative Statement: Routes with greater populations are better than routes with lesser populations.

The route populations for each route are shown in Table 5-1 and Chart 5-1. The difference between the most and least populous routes is 538,602, which represents less than 13% of any route total.

Table 5-1. Route Populations

Route	Route Populations
1 –Amtrak Route	4,189,108
2 – Amtrak-Rochester	4,364,774
3 – Amtrak-BNSF River	4,191,266
4 – MWRRI-Madison	4,531,967
5 – Madison-Rochester	4,709,506
6 – Madison-BNSF River	4,536,198
7 – Madison-Prairie	4,516,380
8 – Madison-Prairie-Rochester	4,692,046
9 – Madison-Prairie-BNSF River	4,520,512
10 – Amtrak-Eau Claire	4,189,633
11 – Madison-Eau Claire-TC	4,534,565
12A – Wyeville-Eau Claire	4,170,904
13 – Milwaukee-Fond du Lac-Eau Claire	4,534,499
14 – Milwaukee-Fond du Lac-Chip-TC	4,556,877

Chart 5-1. Market Size



Qualitative Assessment: Routes 5 and 8 have the greatest populations. Routes 5 and 8 are better than the remaining routes because each will provide a good opportunity for a potential ridership base.

5.2 "Beltway" Intermodal Facilities

A "beltway" intermodal facility is a facility that provides access to the communities that are adjacent to terminal areas. These facilities allow fast and efficient access to the rail route from the surrounding highway network without the time and expense that would be required to reach the terminal in the central business district. Beltway intermodal stations can reduce the total trip time by eliminating redundant travel to or from the route's terminal in the central business district. For the purposes of this analysis, the communities to the north and west of the Milwaukee Intermodal Station (MKE) and the communities to the southeast and east of the Minneapolis Transportation Interchange (MTI) are considered for beltway intermodal facilities.

None of the potential beltway intermodal facilities have been selected as station locations, and none of the facilities are funded. The potential locations cited in the following sections were selected because of the proximity of each location to a potential high-speed rail line and beltway highway routes. Station locations will be studied and defined in the Tier 1 EIS document.

Normative Statement: Routes with a greater number of beltway intermodal facilities are better than routes with fewer beltway intermodal facilities.

Sections 5.2.1 and 5.2.2 discuss potential beltway intermodal facility locations in the Milwaukee and Twin Cities areas.

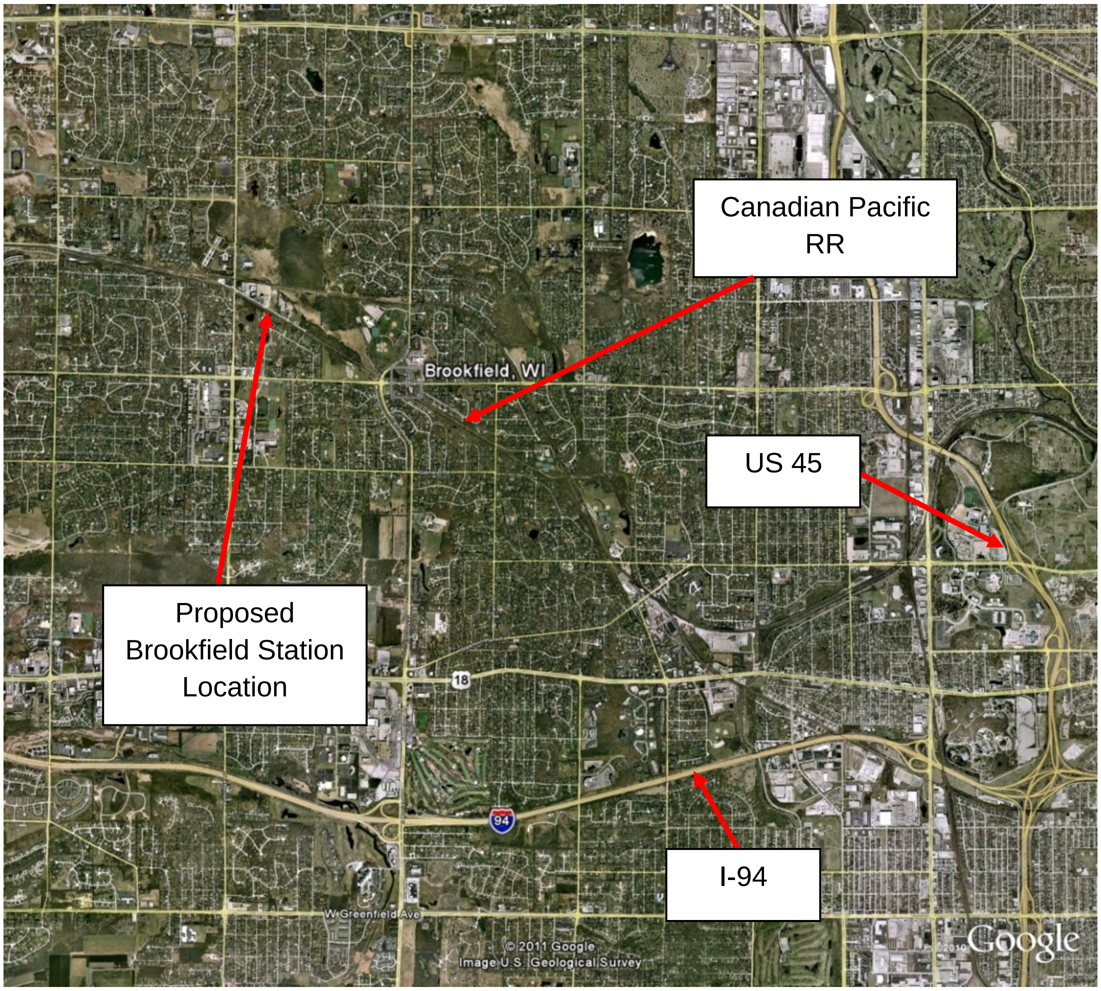
5.2.1 Milwaukee-Area Beltway Intermodal Facilities

There are several Milwaukee-Area locations that are considered as potential beltway intermodal facilities. The first location is Brookfield, WI, a suburb of Milwaukee with a population of 38,600[5]. The potential Brookfield station is located east of the intersection of Brookfield Road and River Road in Brookfield, WI and is accessible from the adjacent Canadian Pacific Watertown Line. The potential station is approximately 12 miles northwest of the Milwaukee Intermodal Station. Brookfield is accessible from US Route 45 three miles to the east and Interstate 94 two miles to the south. A station at this location is currently not funded.

Figure 5-1 depicts the potential beltway intermodal facility in Brookfield.

[5] www.census.gov, year 2000 Census data

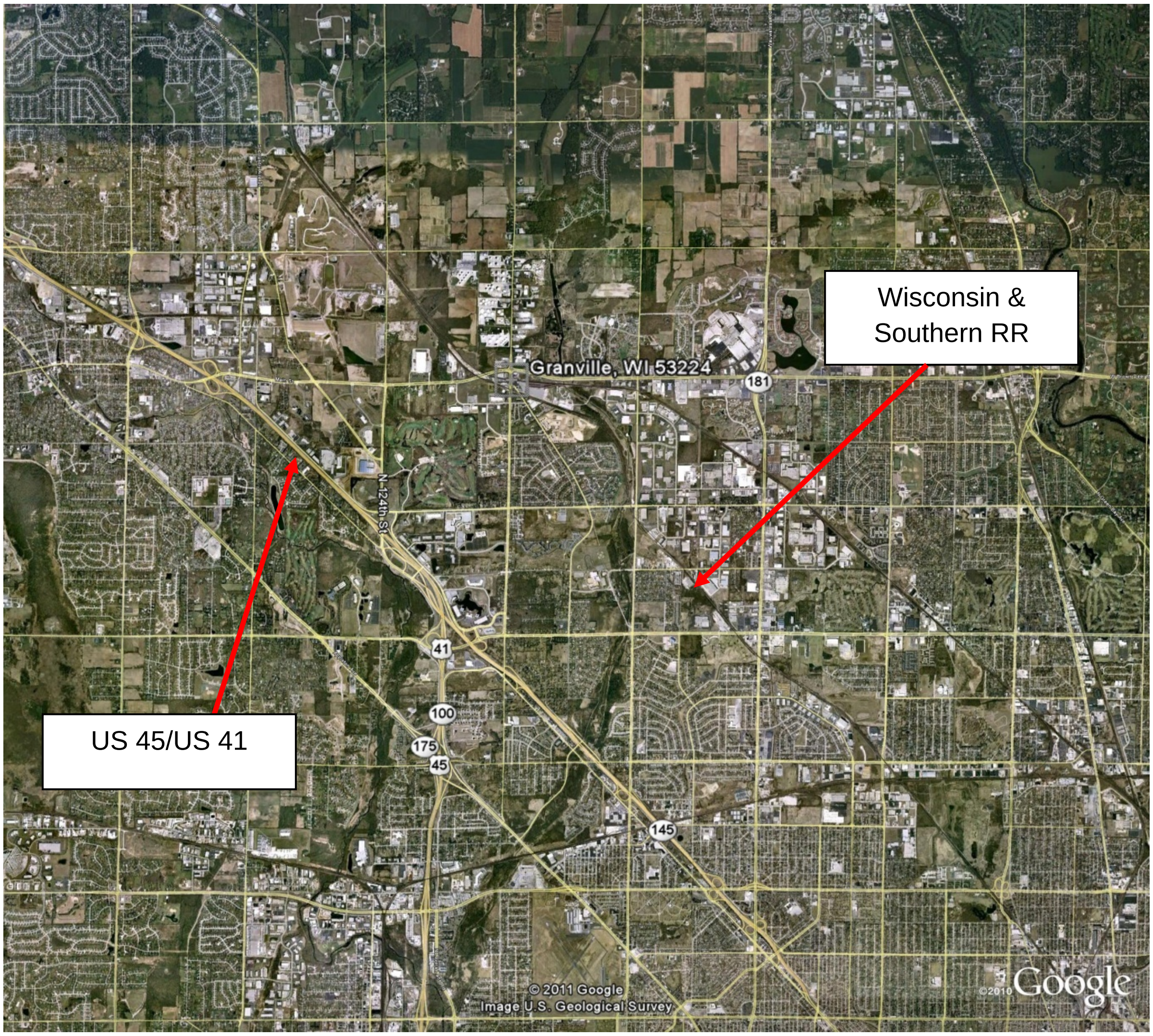
Figure 5-1. Brookfield Potential Beltway Intermodal Facility



The second Milwaukee-area location for a potential beltway intermodal facility is Granville, WI. Granville is a neighborhood of Milwaukee, approximately 12 miles northwest of the Milwaukee Intermodal Station. Although an exact location for the potential Granville station was not specified in either the draft Wisconsin State Rail Plan or the Midwest Regional Rail Initiative Project Notebook, the station will be located adjacent to the Wisconsin & Southern Line. Granville is accessible from US Route 45 and US Route 41 two miles to the west. A station at this location is currently not funded.

Figure 5-2 depicts the area in which the potential beltway intermodal facility in Granville would be located.

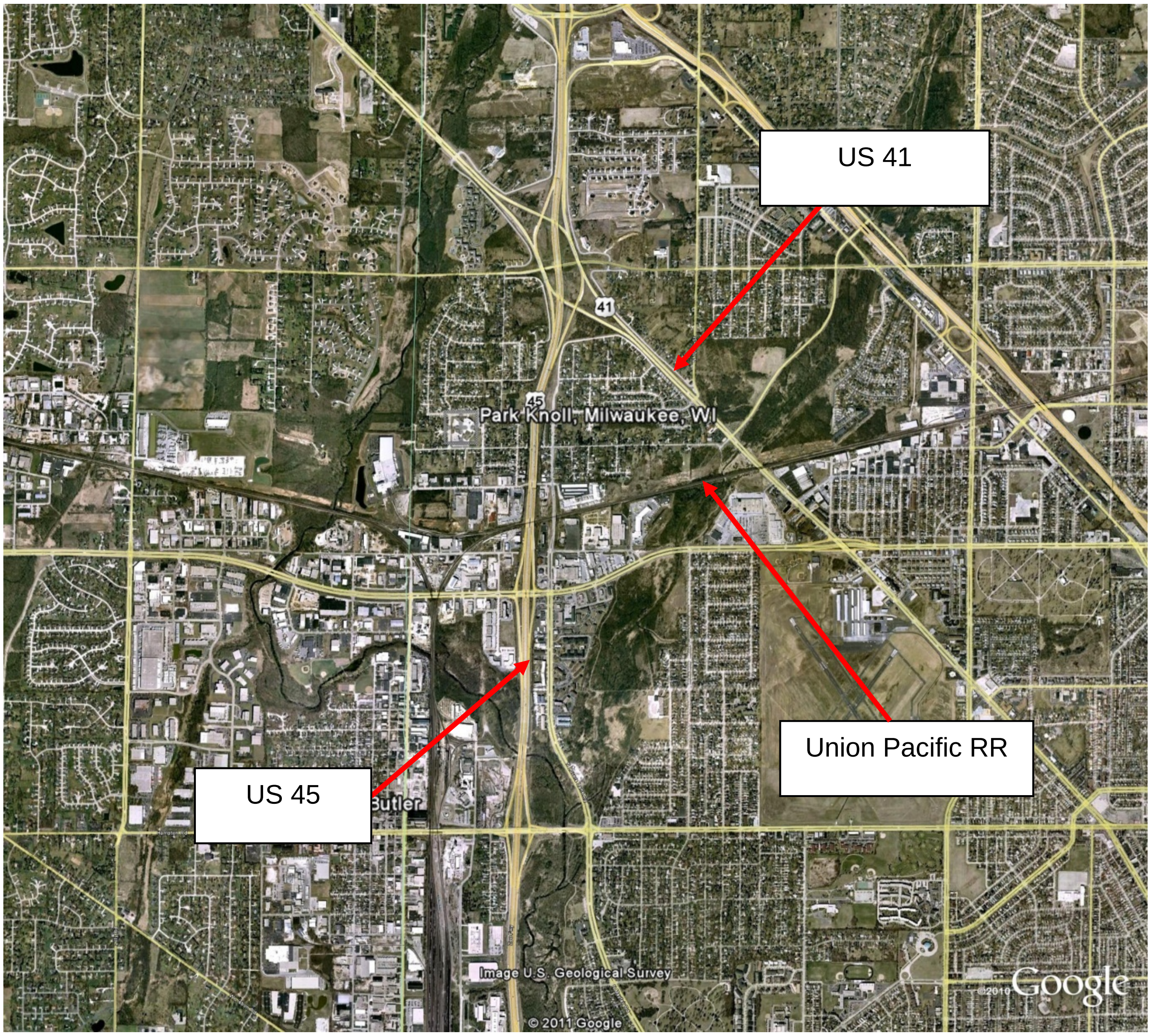
Figure 5-2. Granville Potential Beltway Intermodal Facility



The third Milwaukee-area location for a potential beltway intermodal facility is Park Knoll, WI. Park Knoll is a neighborhood of Milwaukee, approximately 10 miles northwest of the Milwaukee Intermodal Station. Although an exact location for the potential Park Knoll station was not specified in either the draft Wisconsin State Rail Plan or the Midwest Regional Rail Initiative Project Notebook, the station will be located adjacent to the Union Pacific Line. Park Knoll is directly adjacent to US Route 45 and is accessible from US Route 41 less than one mile to the east.

Figure 5-3 depicts the area in which the potential beltway intermodal facility in Granville would be located.

Figure 5-3. Park Knoll Potential Beltway Intermodal Facility



5.2.2 Twin Cities-Area Beltway Intermodal Facilities

There are several Twin Cities-Area locations that are considered as potential beltway intermodal facilities. The first location is Rosemount, MN, a southern suburb of St. Paul with a population of 14,600[6]. Rosemount is approximately 14 miles south of St. Paul. Rosemount is considered an important intermodal location because of its close proximity to Apple Valley, a populous area of suburban St. Paul[7]. Although an exact location for the potential Rosemount station was not specified in either the Minnesota State Rail Plan or the *Tri-State III High-Speed Rail Study*, the station will be located adjacent to the Union Pacific Albert Lea Line. Rosemount is accessible from Interstate 35 eight miles to the west. A station at this location is currently not funded.

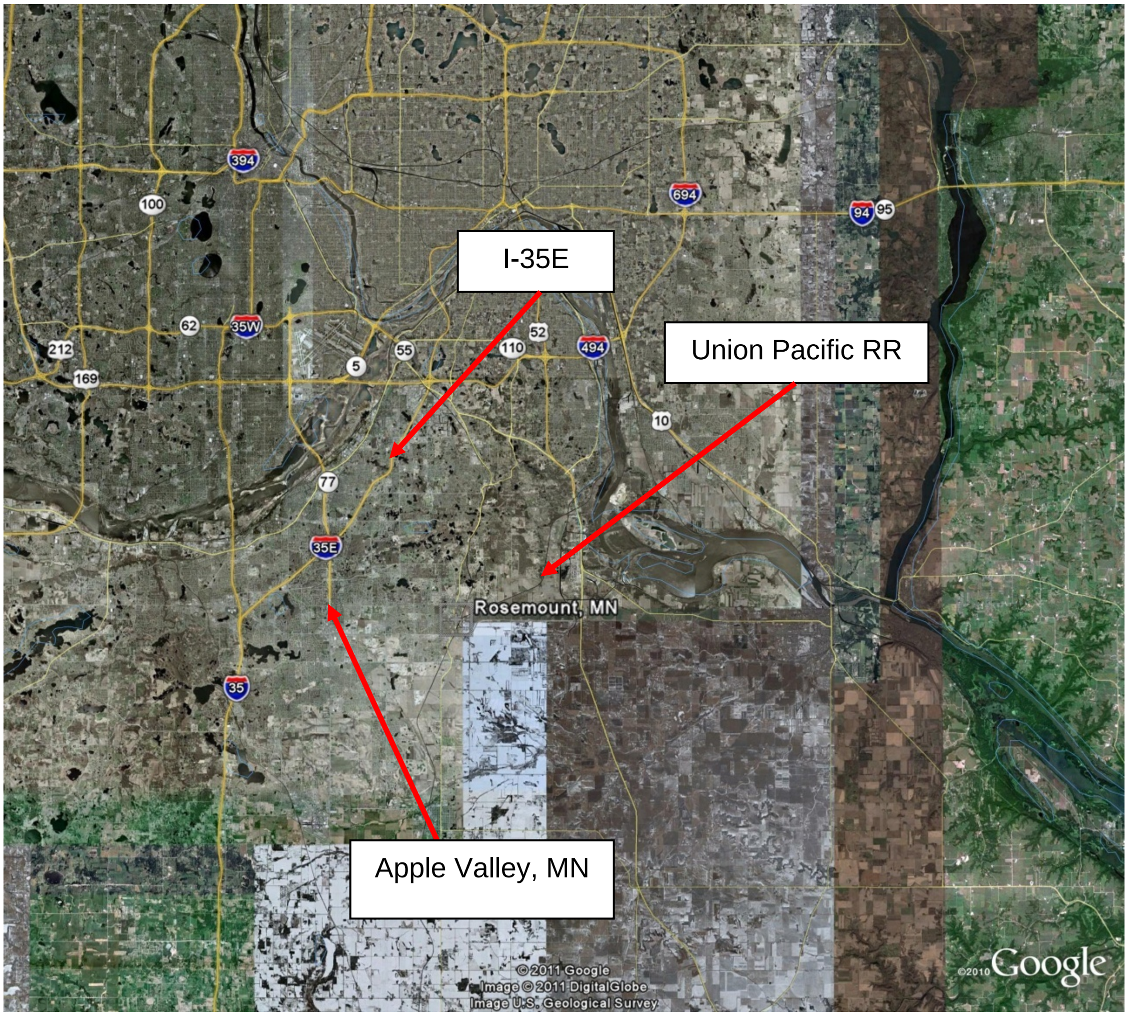
None of the potential beltway intermodal facilities have been selected as station locations, and none of the facilities are funded. The potential locations cited in the following sections were selected because of the proximity of each location to a potential high-speed rail line and beltway highway routes. Station locations will be studied and defined in the Tier 1 EIS document.

Figure 5-4 depicts the area in which the potential beltway intermodal facility in Rosemount would be located.

[6] www.census.gov, year 2000 Census data

[7] *Tri-State III High-Speed Rail Study Minnesota Segment Assessment*, Transportation Economics & Management Systems, Inc. September 2009

Figure 5-4. Rosemount Potential Beltway Intermodal Facility

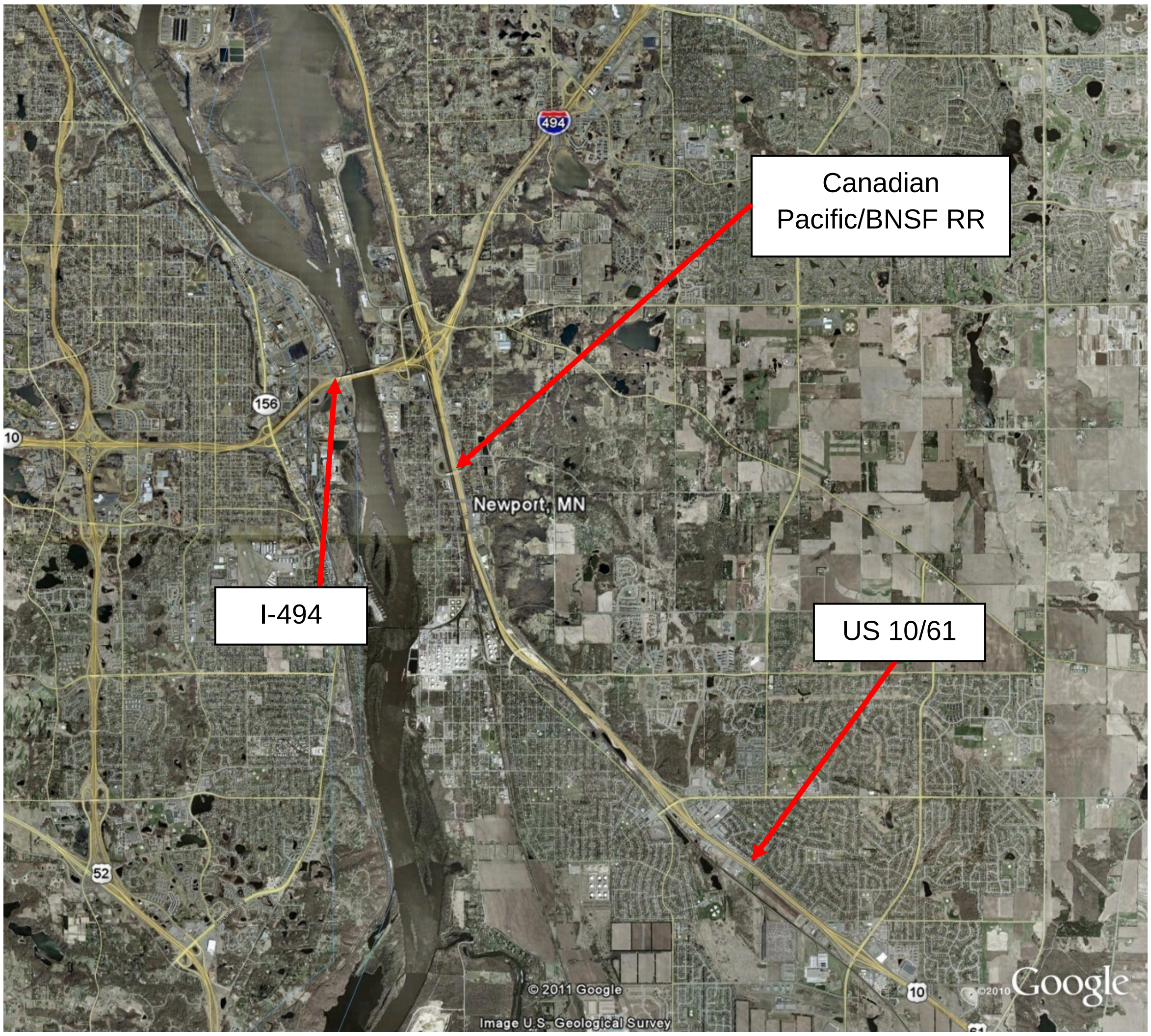


A second potential beltway station in the Twin Cities-area is Newport, MN, a southern suburb of St. Paul with a population of 3,500[8]. Newport is approximately 10 miles southeast of St. Paul. Newport is an important potential state site due to its location adjacent to Interstate 494 and US Routes 10 and 61; a beltway facility in Newport would provide excellent park-and-ride opportunities. Newport is 1.5 miles south of I-494, and directly adjacent to US Routes 10/61. Although a station has not been proposed for Newport, it should be considered because of its convenient location. An exact location for the potential Newport station was not specified in either the Minnesota State Rail Plan or the *Tri-State III High-Speed Rail Study*; however, the station will be located adjacent to the Canadian Pacific River or BNSF St. Paul Lines.

[8] www.census.gov, year 2000 Census data

Figure 5-5 depicts the area in which the potential beltway intermodal facility in Newport would be located.

Figure 5-5. Newport Potential Beltway Intermodal Facility



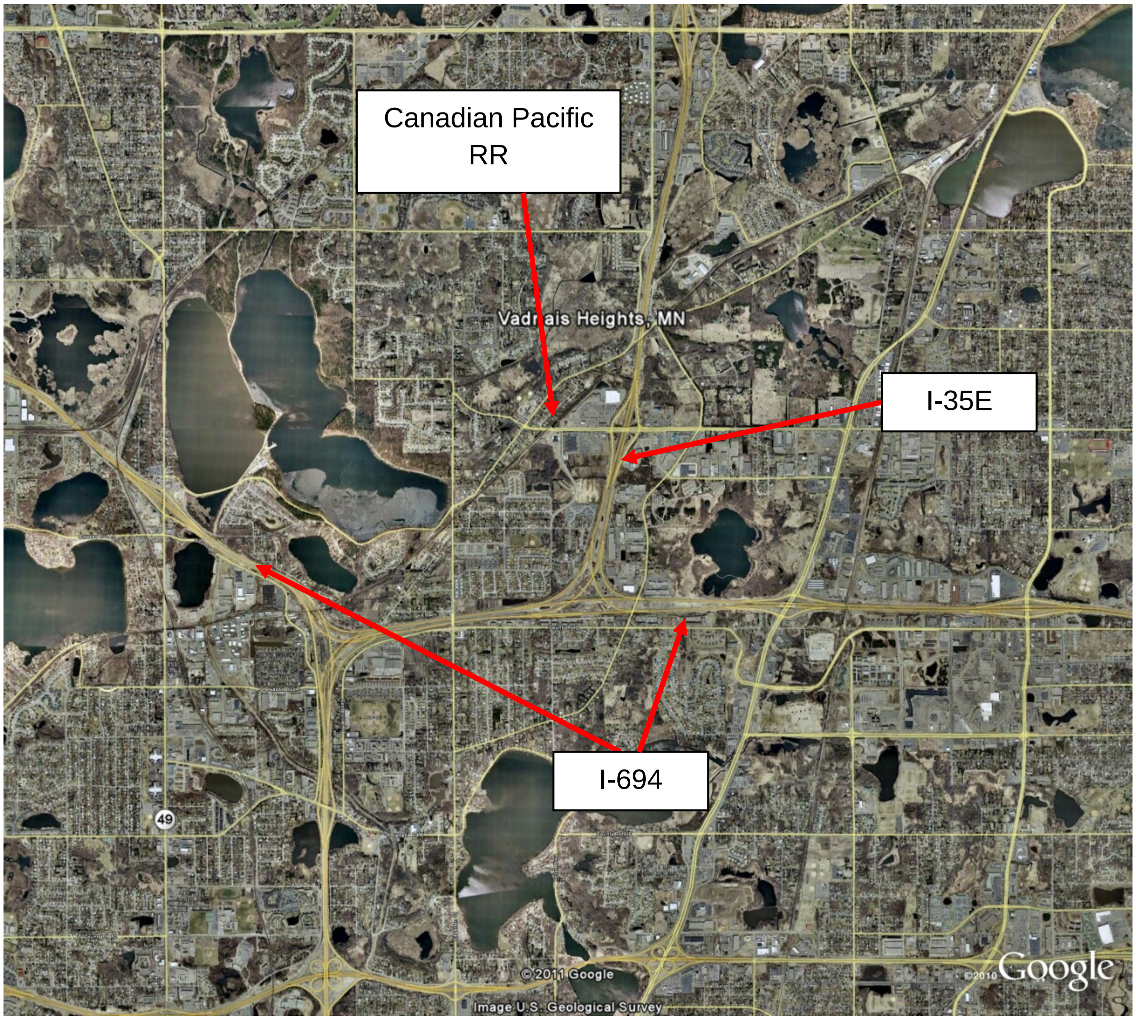
A third potential beltway station in the Twin Cities-area is Vadnais Heights, MN, a northern suburb of St. Paul with a population of 13,100[9]. Vadnais Heights is approximately 10 miles north of St. Paul. Vadnais Heights is an important potential state site due to its location adjacent to Interstates 694 and 35E; a beltway facility in Vadnais Heights would provide excellent park-and-ride opportunities. Vadnais Heights is just over a mile west of I-35E and 2 miles north of I-694. Although a station has not been proposed for Vadnais Heights, it should be considered because of its convenient location. An exact location for the potential Vadnais Heights station was not specified in

[9] www.census.gov, year 2000 Census data

either the Minnesota State Rail Plan or the *Tri-State III High-Speed Rail Study*; however, the station will be located adjacent to the Canadian Pacific St. Paul/Withrow Lines.

Figure 5-6 depicts the area in which the potential beltway intermodal facility in Vadnais Heights would be located.

Figure 5-6. Vadnais Heights Potential Beltway Intermodal Facility



The final potential beltway station in the Twin Cities-area is Oakdale, MN, an eastern suburb of St. Paul with a population of 26,700[10]. Oakdale is approximately 8 miles east of St. Paul. Oakdale is an important potential state site due to its location adjacent to Interstates 94 and 694; a beltway facility in Oakdale would provide excellent park-and-ride opportunities. Oakdale is directly adjacent to I-694 and is 1 mile north of I-94. Although a station has not been proposed for Oakdale, it should be considered because of its convenient location. An exact location for the potential Oakdale station was not

[10] www.census.gov, year 2000 Census data

specified in either the Minnesota State Rail Plan or the *Tri-State III High-Speed Rail Study*; however, the station will be located adjacent to the Union Pacific Altoona Line.

Figure 5-7 depicts the area in which the potential beltway intermodal facility in Oakdale would be located.

Figure 5-7. Oakdale Potential Beltway Intermodal Facility

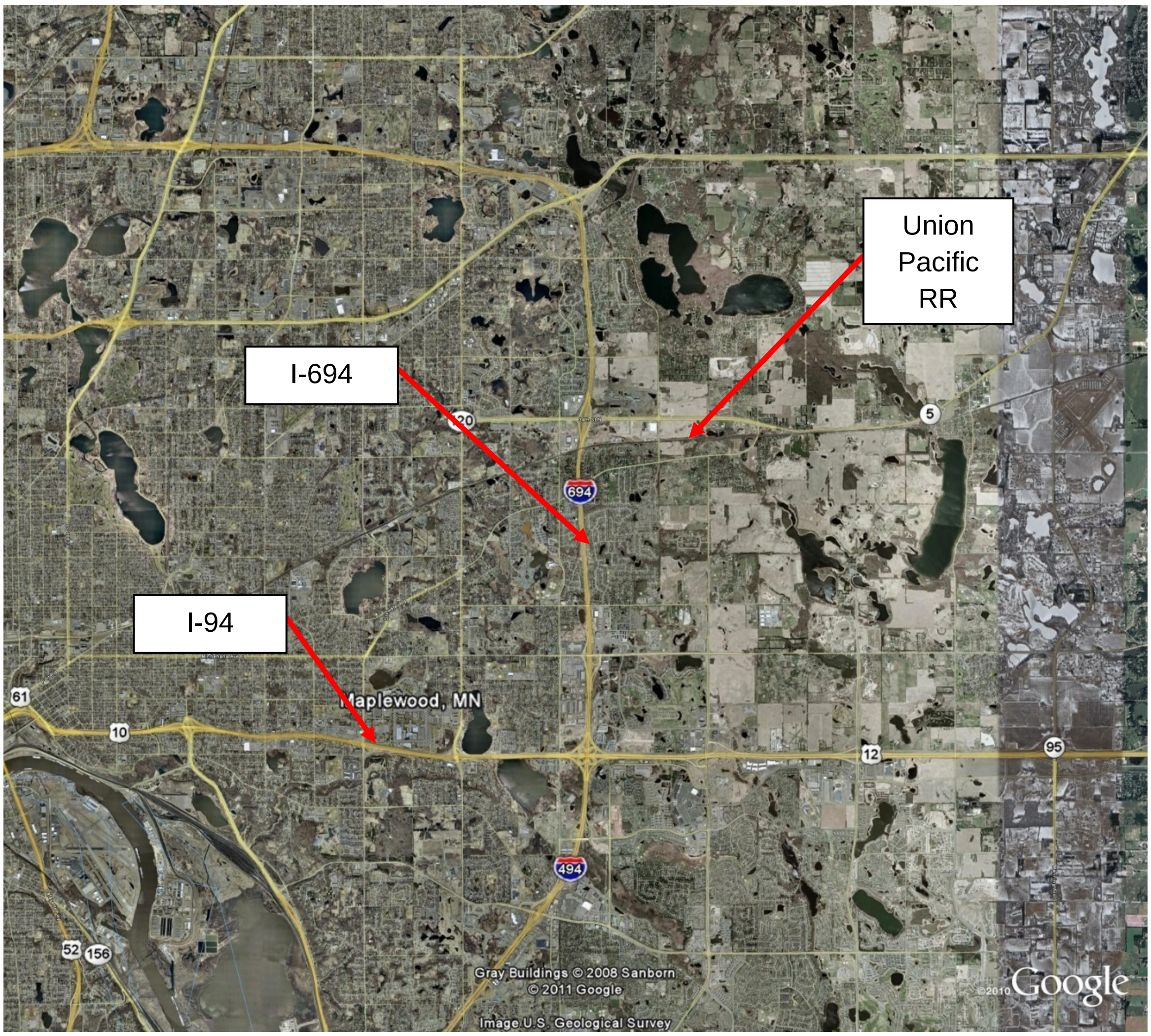


Table 5-2 depicts the number of beltway intermodal facilities for each route.

Table 5-2. Beltway Intermodal Facilities

Route	Number of Beltway Intermodal Facilities
1	2
2	2
3	2
4	2
5	2
6	2
7	2
8	2
9	2
10	2
11	2
13	2
14	2

Qualitative Assessment: All of the routes have an equivalent number of beltway intermodal facilities. One route is not better than another.

5.3 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the ridership potential and beltway intermodal facilities based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall market size rating was assigned to each route based on the number of "green", "yellow", and "red" ratings the measures received. Table 5-3 depicts the color rating for each route for the measures and the overall market size criteria.

Table 5-3. Results of Qualitative Assessment

Route	Ridership Potential	Beltway Intermodal Facilities	Overall Market Size Rating
1 –Amtrak Route	Red	Yellow	Yellow
2 – Amtrak-Rochester	Yellow	Yellow	Yellow
3 – Amtrak-BNSF River	Red	Yellow	Yellow
4 – MWRRI-Madison	Green	Yellow	Green
5 – Madison-Rochester	Green	Yellow	Green
6 – Madison-BNSF River	Green	Yellow	Green
7 – Madison-Prairie	Green	Yellow	Green
8 – Madison-Prairie-Rochester	Green	Yellow	Green
9 – Madison-Prairie-BNSF River	Green	Yellow	Green
10 – Amtrak-Eau Claire	Red	Yellow	Yellow
11 – Madison-Eau Claire-TC	Green	Yellow	Green
12A – Wyeville-Eau Claire	Red	Yellow	Yellow
13 – Milwaukee-Fond du Lac-Eau Claire	Green	Yellow	Green
14 – Milwaukee-Fond du Lac-Chip-TC	Green	Yellow	Green

At the March 11, 2011 workshop, the teams were presented with the market size data and engaged in discussions regarding the qualitative assessment and color rating of each route. The following captures the qualitative assessment for each route:

- Route 1 – Amtrak Route – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 1. The teams discussed that the existing Amtrak route has low ridership potential compared to the other routes. The teams also discussed the fact that since there are an equal number of beltway intermodal facilities for all of the routes, the routes are rated "yellow" for that measure. Overall, this route is rated yellow for market size.

- Route 2 – Amtrak-Rochester – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 2. The teams discussed that since Route 2 has an average ridership potential and all of the routes have a "yellow" rating, the route is rated yellow for market size.

- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 3. The teams discussed that Route 3 has low ridership compared to the other routes. The route is rated yellow for market size.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 4. The teams came to the consensus that Route 4 has good ridership potential because it serves Madison. The route is rated green for market size.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 5. The teams came to the consensus that Route 5 has good ridership potential because it serves Madison and Rochester. The route is rated green for market size.

- Route 6 – Madison-BNSF River – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 6. The teams came to the consensus that Route 6 has good ridership potential because it serves Madison. This route is rated green for market size.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 7. The teams came to the consensus that Route 7 has good ridership potential because it serves Madison. This route is rated green for market size.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 8. The teams came to the consensus that Route 8 has good ridership potential because it serves Madison and Rochester. The route is rated green for market size.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 9. The teams came to the consensus that Route 9 has good ridership potential because it serves Madison. This route is rated green for market size.

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 10. The teams discussed that Route 10 has low ridership compared to the other routes. The route is rated yellow for market size.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 11. The teams came to the consensus that Route 11 has good ridership potential because it serves Madison. This route is rated green.

- Route 12A – Wyeville-Eau Claire - At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 12A. The teams discussed that Route 12A has low ridership compared to the other routes. The route is rated yellow for market size.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 13.

The teams came to the consensus that Route 13 has good ridership potential. This route is rated green for market size.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed the ridership potential and beltway intermodal facilities for Route 14. The teams came to the consensus that Route 14 has good ridership potential. This route is rated green for market size.

6.0 CAPITAL COSTS

Capital costs for the Milwaukee-Twin Cities high speed rail corridor program include the costs to upgrade the track to accommodate 110 mph operations, the cost of right-of-way acquisition, and cyclic capital costs.

Capital costs are developed using the Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way (Appendix E) and are based on field observations that are included in the Engineering Assessment of the Potential Passenger Rail Alternatives (Appendix D).

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The capital costs criterion is tied to the project need of providing competitive and attractive alternative modes in the corridor. If a potential passenger rail alternative does not meet the project purpose, the route will be eliminated from further analysis.

6.1 Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way

The purpose of the Cost Estimating Methodology is two-fold: to serve as a written methodology for establishing unit costs for pay items related to the construction of high-speed rail corridors on shared right-of-way, and to serve as a methodology for identifying the capital improvements required to accommodate 110 mph operations.

As described in the Cost Estimating Methodology, unit costs developed within the MWRRI Phase 3B in 1997 were used as baseline costs. Since 1997, the unit costs have been updated to 2002 (MWRRI Phase 4) using inflation factors listed in the Producer Price Index (PPI) PCUBHVY 'PPI Inputs for Other Heavy Construction'. For this methodology, the 2002 unit costs were updated to 2010 dollars using the PPI PCUBHVY. Once the 2010 unit costs were derived, each unit cost was compared to current year industry unit cost estimates for railroad-related construction to ensure that the derived unit costs reflected current market conditions.

The development of high-speed passenger rail corridors with train operations up to 110 mph will require that the track and infrastructure have the ability to support the proposed speeds. Design considerations and capital improvements for the construction of trackwork, structures, systems, and crossings have been developed to address the requirements for operating at 110 mph. Each pay item that was assigned a unit cost is included in the methodology with a description of the materials and labor that are included in the unit cost.

The Cost Estimating Methodology serves as an integral part of establishing the framework by which the capital improvements and capital cost estimates were determined.

6.2 Engineering Assessment of the Potential Passenger Rail Alternatives

The purpose of the Engineering Assessment of the Potential Passenger Rail Alternatives is to document the field observations that were made between August 2010 and January 2011 and provide documentation of the capacity and efficiency constraints and infrastructure improvements required to implement high-speed passenger rail operations.

Field observations were made from public vantage points such as highway-rail grade crossings, highway overpasses, adjacent public property and other locations such as passenger station platforms. Some of the information included in the Engineering Assessment was obtained from the timetables and track charts of the railroads. Other information was provided by persons familiar with various aspects of the covered territory.

Each of the potential passenger rail routes consist of several route segments as described in the Interim Alternatives Selection Report. Within the route segments are track sub-segments. The information in the Engineering Assessment is presented by track sub-segment. Table 6-1 lists the endpoint of each segment and sub-segment.

Table 6-1. Route Segments and Sub-Segments

Segment	Segment Endpoints	Sub-Segment	Sub-Segment Endpoints
A	Milwaukee-Grand Avenue Junction	1	Milwaukee-Grand Avenue Junction
B & C	Grand Avenue Junction-Watertown	2	Grand Avenue Junction-Watertown
D	Grand Avenue Junction-North Milwaukee	3	Grand Avenue Junction-North Milwaukee
E	Watertown-Portage	36	Watertown-Portage
F	Watertown-Madison	6	Watertown-Madison
G	Madison-Portage	8	Madison-Portage
J	Madison-Prairie du Chien-La Crosse	9	Madison-Prairie du Chien
		12	Prairie du Chien-La Crosse
K	Portage-Camp Douglas	11	Portage-Camp Douglas
L	Camp Douglas-Wyeville	15	Camp Douglas-Wyeville
M	Wyeville-Eau Claire	18	Wyeville-Eau Claire
N & O	Camp Douglas-La Crosse	16	Camp Douglas-La Crosse

P	Chippewa Falls-Eau Claire	19	Chippewa Falls-Eau Claire
Q	La Crosse-Hastings	20	La Crosse-Hastings
R	La Crosse-Winona	21	La Crosse-Winona
S & V	Winona-Red Wing-Hastings	24	Winona-Red Wing-Hastings
T, W, & X	Winona-Rochester-Owatonna	25	Winona-Rochester-Owatonna
Z	Owatonna-Inver Grove Heights	26	Owatonna-Northfield
		42	Northfield-Inver Grove Heights
AA	Hastings-St. Paul Junction	28	Hastings-Hoffman Avenue
		29	Hoffman Avenue-Division Street
		34	Division Street-St. Paul Junction
BB	Inver Grove Heights-Robert Street	27	Inver Grove Heights-Robert Street
CC	Chippewa Falls-Seventh Street	22	Chippewa Falls-Withrow
		30	Withrow-Soo Junction
		31	Soo Line Junction-Seventh Street
DD	Eau Claire-Seventh Street	23	Eau Claire-Westminster Street
		32	Westminster Street-Seventh Street
EE	Seventh Street-St. Paul Junction	33	Seventh Street-St. Paul Junction
FF	St. Paul Junction-St. Paul Union Depot	35	St. Paul Junction-St. Paul Union Depot
GG	St. Paul Union Depot-Robert Street	41	St. Paul Union Depot-Robert Street
HH	Robert Street-Minneapolis Transportation Interchange	37	Robert Street-Chestnut Street
		38	Chestnut Street-Merriam Park
		39	Merriam Park-Minneapolis Junction
		40	Minneapolis Junction-Minneapolis Transportation Interchange
II	North Milwaukee-Chippewa Falls	4	North Milwaukee-Mill Road
		5	Mill Road-Granville
		7	Granville-West Bend
		10	West Bend-Eden

		13	Eden-Fond du Lac
		14	Fond du Lac-Owen
		17	Owen-Chippewa Falls
JJ	Butler Junction West-Wyeville	46	Butler Junction West-Adams
		47	Adams-Wyeville
KK	North Milwaukee-Butler Junction West	43	North Milwaukee-Canco
		44	Canco-Wiscona Jct.
		45	Wiscona Jct.-Butler Junction West

The Engineering Assessment provides the following information for each track sub-segment:

- Sub-segment number and description
- Existing passenger service
- Maximum track speed
- Yards and junctions
- Major infrastructure elements
- Photographs
- Infrastructure needs
- Constraints

The field observations and assessment of infrastructure needs are directly used to estimate the capital costs required to upgrade existing track to high-speed rail.

6.3 Costs to Upgrade to High-Speed Rail

Costs to upgrade to high-speed rail were estimated using field observations that are included in the Engineering Assessment of the Potential Passenger Rail Alternatives, included as Appendix D of this report, and the Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way, included as Appendix E of this report. After the total infrastructure costs were calculated, contingencies and soft costs were calculated to determine the total cost to upgrade to high-speed rail.

Contingencies for project development and construction, and "soft costs" relating to Design Engineering, Insurance and Bonding, Program Management, Construction Management and Inspection, Engineering Services during Construction, Integrated Testing and Commissioning and Erosion Control and Water Quality Management have been added to the cost estimate. A contingency additive of 30% of construction costs has been applied to the infrastructure capital cost estimates. A 24% additive for Professional Services and Environmental based on the sum of the work elements and contingency has also been included in the capital cost estimate.

Special Elements serve as placeholders for conservative estimates for large and/or complex engineering projects that have not been estimated on the basis of unit costs and quantities. Placeholders are used where detailed engineering requirements are not fully known."

Capital cost spreadsheets will be included as a separate appendix from the Cost Estimating Methodology for High-Speed Rail on Shared Right-of-Way, which identifies the costs utilized for the following special elements:

- Rail yard placeholders (See Appendix C of the Cost Estimating Methodology)
- Access to signal/switch locations
- Maintenance of way spur
- Rail-rail flyovers
- ARRA application funds
- Upgrades near MTI
- Structural Reconfiguration of the west approach to SPUD
- Rehabilitation of swing bridges
- Construction of lift bridges
- Marshland settlement issues in Wisconsin
- Restoration of a 2nd track structure
- Retaining Wall costs
- Restoration of track
- Bike path/trail relocation

Right-of-way acquisition is required where new track or other infrastructure is proposed to be built outside of existing railroad right-of-way. Additional property may be necessary to add roadbed and tracks, to change the degree of curvature in a curve to permit higher operating speeds, or to construct a connecting track between segments of track at a junction. For existing rail corridors, it is assumed that additional right-of-way 50' in width is needed. The number of linear miles of land acquisition required to accommodate the proposed infrastructure is determined for each route. The cost for right-of-way acquisition in rural areas is $185,680 per mile and the cost of right-of-way acquisition in urban areas is $557,580 per mile. These costs were verified with local sources in Minnesota and Wisconsin.

As stated previously, the quantities of trackwork, structures, systems, crossings, and special elements are estimated for each route based on the field observations. Improvements and costs between Milwaukee and Madison are obtained from the 2009 High-Speed Intercity Passenger Rail Program Track 2 grant that Wisconsin DOT applied for. This application is provided in Appendix K.

Capital cost spreadsheets are included as Appendix L of this document.

Normative Statement: Routes with lower costs to upgrade to high-speed rail are better than routes with higher costs to upgrade to high-speed rail.

The following tables show the costs to upgrade to high-speed rail for each route broken down by cost element.

Table 6-2. Cost to Upgrade to High-Speed Rail by Cost Element – Route 1

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$617,411
Structures	$175,705
Systems	$168,447
Crossings	$132,767
Allocations for Special Elements	$492,274
Sub-Total Construction Elements	**$1,586,604**
Contingency	$396,296
Professional Services and Environmental	$412,148
Total Route Cost	**$2,395,049**
Route Cost Per Mile	**$7,105**

Table 6-3. Cost to Upgrade to High-Speed Rail by Cost Element – Route 2

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$875,125
Structures	$166,704
Systems	$203,682
Crossings	$146,082
Allocations for Special Elements	$399,074
Sub-Total Construction Elements	**$1,790,667**
Contingency	$457,515
Professional Services and Environmental	$475,816
Total Route Cost	**$2,723,998**
Route Cost Per Mile	**$6,949**

Table 6-4. Cost to Upgrade to High-Speed Rail by Cost Element – Route 3

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,214,472
Structures	$381,194
Systems	$164,046
Crossings	$91,001
Allocations for Special Elements	$417,374
Sub-Total Construction Elements	**$2,268,087**
Contingency	$600,741
Professional Services and Environmental	$624,771
Total Route Cost	**$3,493,599**
Route Cost Per Mile	**$10,350**

Table 6-5. Cost to Upgrade to High-Speed Rail by Cost Element – Route 4

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$625,101
Structures	$120,877
Systems	$177,250
Crossings	$138,944
Allocations for Special Elements	$725,062
Sub-Total Construction Elements	**$1,787,233**
Contingency	$366,812
Professional Services and Environmental	$381,484
Total Route Cost	**$2,535,529**
Route Cost Per Mile	**$7,120**

Table 6-6. Cost to Upgrade to High-Speed Rail by Cost Element – Route 5

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$882,814
Structures	$111,876
Systems	$212,485
Crossings	$152,259
Allocations for Special Elements	$631,862
Sub-Total Construction Elements	**$1,991,296**
Contingency	$428,030
Professional Services and Environmental	$445,151
Total Route Cost	**$2,864,478**
Route Cost Per Mile	**$6,970**

Table 6-7. Cost to Upgrade to High-Speed Rail by Cost Element – Route 6

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,222,162
Structures	$326,366
Systems	$172,849
Crossings	$97,178
Allocations for Special Elements	$650,162
Sub-Total Construction Elements	**$2,468,716**
Contingency	$571,256
Professional Services and Environmental	$594,107
Total Route Cost	**$3,634,079**
Route Cost Per Mile	**$10,265**

Table 6-8. Cost to Upgrade to High-Speed Rail by Cost Element – Route 7

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,117,852
Structures	$265,460
Systems	$217,848
Crossings	$152,143
Allocations for Special Elements	$711,462
Sub-Total Construction Elements	**$2,464,766**
Contingency	$570,071
Professional Services and Environmental	$592,874
Total Route Cost	**$3,627,711**
Route Cost Per Mile	**$9,472**

Table 6-9. Cost to Upgrade to High-Speed Rail by Cost Element – Route 8

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,375,566
Structures	$256,459
Systems	$253,083
Crossings	$165,458
Allocations for Special Elements	$618,262
Sub-Total Construction Elements	**$2,668,828**
Contingency	$631,290
Professional Services and Environmental	$656,542
Total Route Cost	**$3,956,660**
Route Cost Per Mile	**$8,984**

Table 6-10. Cost to Upgrade to High-Speed Rail by Cost Element – Route 9

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,707,241
Structures	$409,267
Systems	$209,667
Crossings	$110,376
Allocations for Special Elements	$621,462
Sub-Total Construction Elements	**$3,058,013**
Contingency	$748,046
Professional Services and Environmental	$777,967
Total Route Cost	**$4,584,026**
Route Cost Per Mile	**$11,963**

Table 6-11. Cost to Upgrade to High-Speed Rail by Cost Element – Route 10

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,083,356
Structures	$157,283
Systems	$185,481
Crossings	$131,263
Allocations for Special Elements	$370,374
Sub-Total Construction Elements	**$1,927,757**
Contingency	$498,642
Professional Services and Environmental	$518,588
Total Route Cost	**$2,944,987**
Route Cost Per Mile	**$8,744**

Table 6-12. Cost to Upgrade to High-Speed Rail by Cost Element – Route 11

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,091,046
Structures	$102,455
Systems	$194,283
Crossings	$137,440
Allocations for Special Elements	$603,162
Sub-Total Construction Elements	**$2,128,386**
Contingency	$469,157
Professional Services and Environmental	$487,924
Total Route Cost	**$3,085,467**
Route Cost Per Mile	**$8,672**

Table 6-13. Cost to Upgrade to High-Speed Rail by Cost Element – Route 12A

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,353,470
Structures	$247,688
Systems	$235,115
Crossings	$206,831
Allocations for Special Elements	$161,966
Sub-Total Construction Elements	**$2,205,070**
Contingency	$657,648
Professional Services and Environmental	$683,954
Total Route Cost	**$3,518,601**
Route Cost Per Mile	**$10,451**

Table 6-14. Cost to Upgrade to High-Speed Rail by Cost Element – Route 13

Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$1,353,470
Structures	$247,688
Systems	$235,115
Crossings	$206,831
Allocations for Special Elements	$161,966
Sub-Total Construction Elements	**$2,205,070**
Contingency	$657,648
Professional Services and Environmental	$683,954
Total Route Cost	**$3,546,672**
Route Cost Per Mile	**$9,675**

Table 6-15. Cost to Upgrade to High-Speed Rail by Cost Element – Route 14

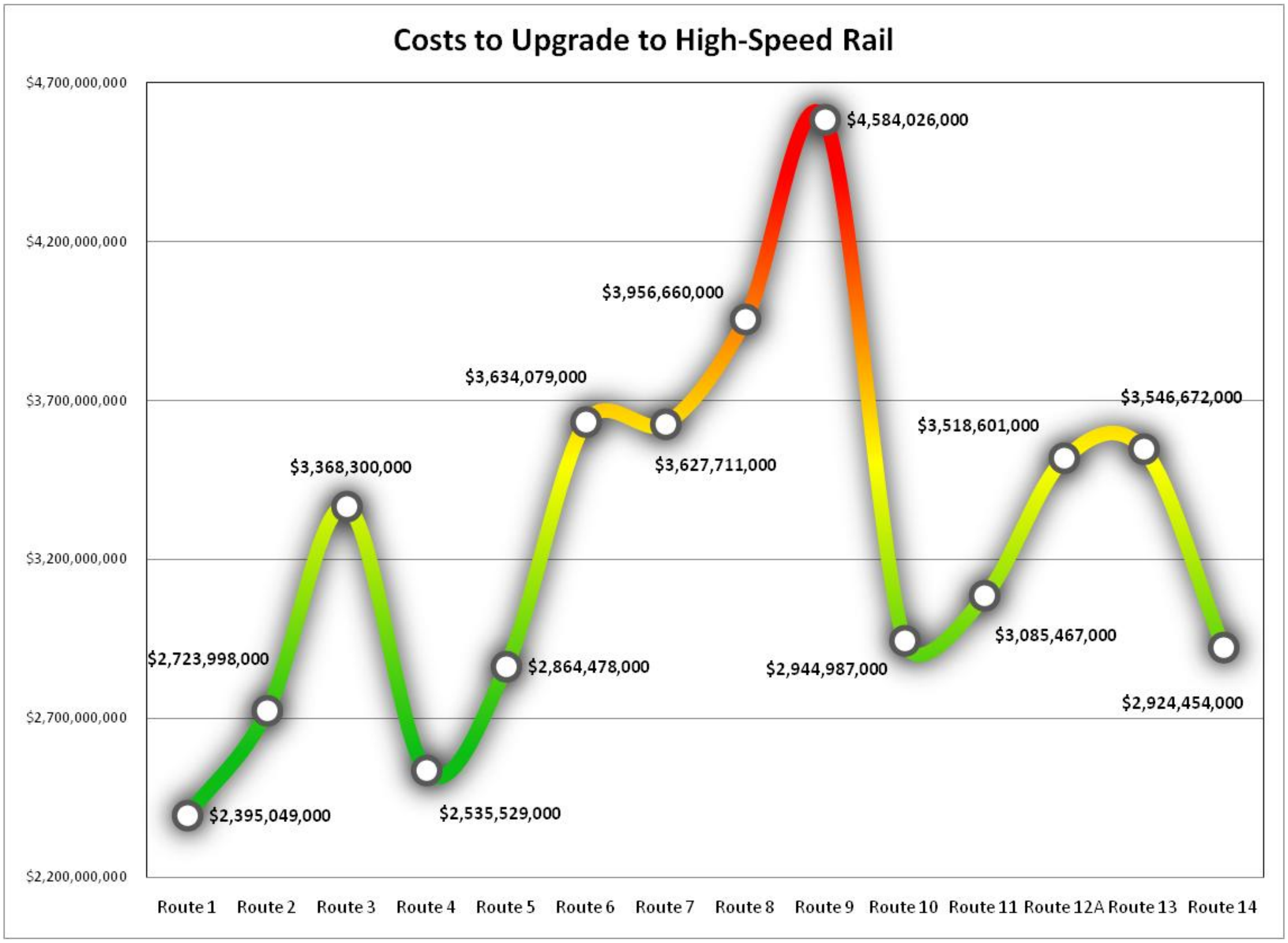
Cost Element	Cost to Upgrade to High-Speed Rail (thousands)
Trackwork	$958,169
Structures	$234,384
Systems	$220,082
Crossings	$215,187
Allocations for Special Elements	$128,000
Sub-Total Construction Elements	**$1,755,823**
Contingency	$526,747
Professional Services and Environmental	$451,932
Total Route Cost	**$2,924,454**
Route Cost Per Mile	**$7,581**

The overall costs to upgrade to high-speed rail for each route are shown in Table 6-16 and Chart 6-1.

Table 6-16. Costs to Upgrade to High-Speed Rail

Route	Costs to Upgrade to High-Speed Rail
1 –Amtrak Route	$2,395,049,000
2 – Amtrak-Rochester	$2,723,998,000
3 – Amtrak-BNSF River	$3,368,300,000
4 – MWRRI-Madison	$2,535,529,000
5 – Madison-Rochester	$2,864,478,000
6 – Madison-BNSF River	$3,634,079,000
7 – Madison-Prairie	$3,627,711,000
8 – Madison-Prairie-Rochester	$3,956,660,000
9 – Madison-Prairie-BNSF River	$4,584,026,000
10 – Amtrak-Eau Claire	$2,944,987,000
11 – Madison-Eau Claire-TC	$3,085,467,000
12A – Wyeville-Eau Claire	$3,518,601,000
13 – Milwaukee-Fond du Lac-Eau Claire	$3,546,672,000
14 – Milwaukee-Fond du Lac-Chip-TC	$2,924,454,000

Chart 6-1. Costs to Upgrade to High-Speed Rail



Qualitative Assessment: Routes 1, 2, 4, 5, 10, 11, and 14 have the lowest costs to upgrade to high-speed rail. These routes are better than the remaining routes.

6.4 Cost of Right-of-Way Acquisition

Right-of-way acquisition is required where new track or other infrastructure is proposed to be built outside of existing railroad right-of-way. Additional property may be necessary to add roadbed and tracks, to change the degree of curvature in a curve to permit higher operating speeds, or to construct a connecting track between segments of track at a junction. For existing rail corridors, it is assumed that additional right-of-way 50' in width is needed. The number of linear miles of land acquisition required to accommodate the proposed infrastructure is determined for each route.

The Cost of right-of-way acquisition shown in Table 6-17 is presented by sub-segment for each route and is quantified in the capital cost estimate in Appendix L – Capital Cost Spreadsheets. The need for the right-of-way acquisition for each of the sub-segments and routes is described in Appendix D, Engineering Assessment of the Potential Passenger Rail Alternatives by Sub-Segment and by Route.

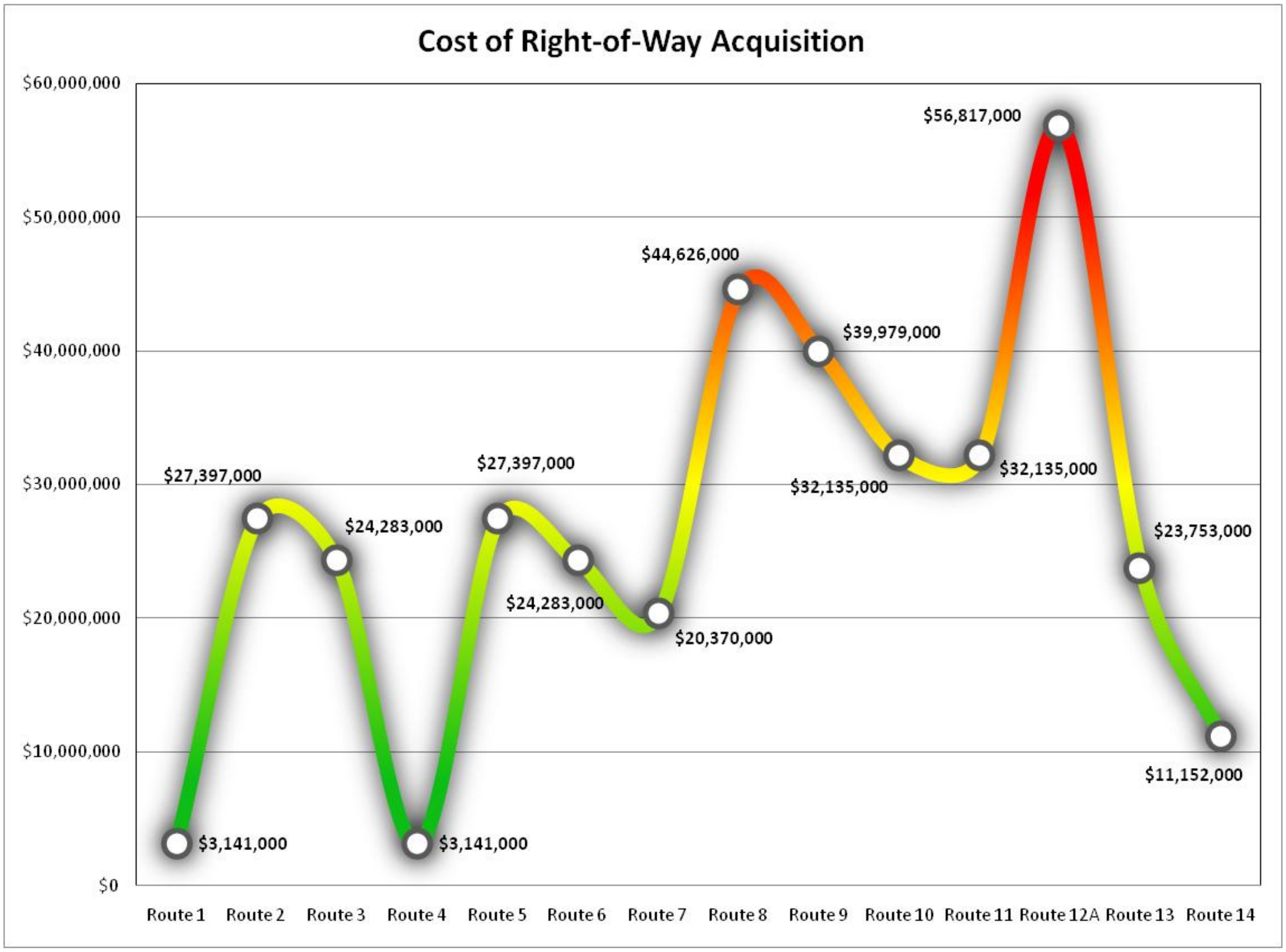
Normative Statement: Routes with lower costs to acquire right-of-way are better than routes with higher costs to acquire right-of-way acquisition.

The cost of right-of-way acquisition for each route is shown in Table 6-17 and Chart 6-2.

Table 6-17. Cost of Right-of-Way Acquisition

Route	Cost of Right-of-Way Acquisition
1 –Amtrak Route	$3,141,000
2 – Amtrak-Rochester	$27,397,000
3 – Amtrak-BNSF River	$24,283,000
4 – MWRRI-Madison	$3,141,000
5 – Madison-Rochester	$27,397,000
6 – Madison-BNSF River	$24,283,000
7 – Madison-Prairie	$20,370,000
8 – Madison-Prairie-Rochester	$44,626,000
9 – Madison-Prairie-BNSF River	$39,979,000
10 – Amtrak-Eau Claire	$32,135,000
11 – Madison-Eau Claire-TC	$32,135,000
12A – Wyeville-Eau Claire	$56,817,000
13 – Milwaukee-Fond du Lac-Eau Claire	$23,753,000
14 – Milwaukee-Fond du Lac-Chip-TC	$11,152,000

Chart 6-2. Cost of Right-of-Way Acquisition



Qualitative Assessment: Routes 1, 4, and 14 have the lowest right-of-way acquisition costs. These routes are better than the remaining routes.

6.5 Cyclic Capital Costs

Cyclic capital costs are the dollar value of the costs required to perform cyclical maintenance tasks on a railroad. Cyclical maintenance tasks are those that are undertaken at regular intervals and which are necessary to preserve the expected life of the track structure. Cyclical maintenance tasks include track surfacing, rail grinding and profiling, ballast replenishment and cleaning, rail defect removal and similar maintenance for structures and signal components. These tasks are normally performed on a cyclic basis to avoid shutting the railroad down completely to replace the components which otherwise may fail all at once.

Cyclic capital costs are derived from "steady state" track-segment-specific maintenance costs defined by ZETA-TECH Associates, Inc. in *Technical Monograph: Estimating Maintenance Costs for Mixed High Speed Passenger and Freight Rail Corridors*

(*Technical Monograph*). In the *Technical Monograph*, ZETA-TECH calculates the maintenance costs per track mile for various operating scenarios. The costs take into consideration the following parameters:

- Annual tonnage (MGT) by tonnage categories
- Track geometry by broad curvature category
- Maximum operating speed
- Mix of passenger and freight
- Tie type

There are 216 cost matrices which correspond to the number of combinations of track, topology, traffic mix, and operating speed. In order to determine the cyclic capital costs for a particular route, a route is divided into shorter segments corresponding to an individual matrix element. Then, the cost per mile for each element is multiplied by the segment mileage. The sumation of the costs for each segment is the total route cyclic capital cost.

The MWRRI Planning Phase 5 developed a model that computed the maintenance costs for the entire Midwest Regional Rail System using the FRA Technical Monograph. The model cacluated the cyclic capital costs to estimate the future spending required to replace components that wear out. These costs included rail replacement, tie renewals, surfacing, ballast replacement and similar activities. Using the MWRRI Planning Phase 5 model (Appendix M), the annual cyclic capital costs for the route alternatives were developed.

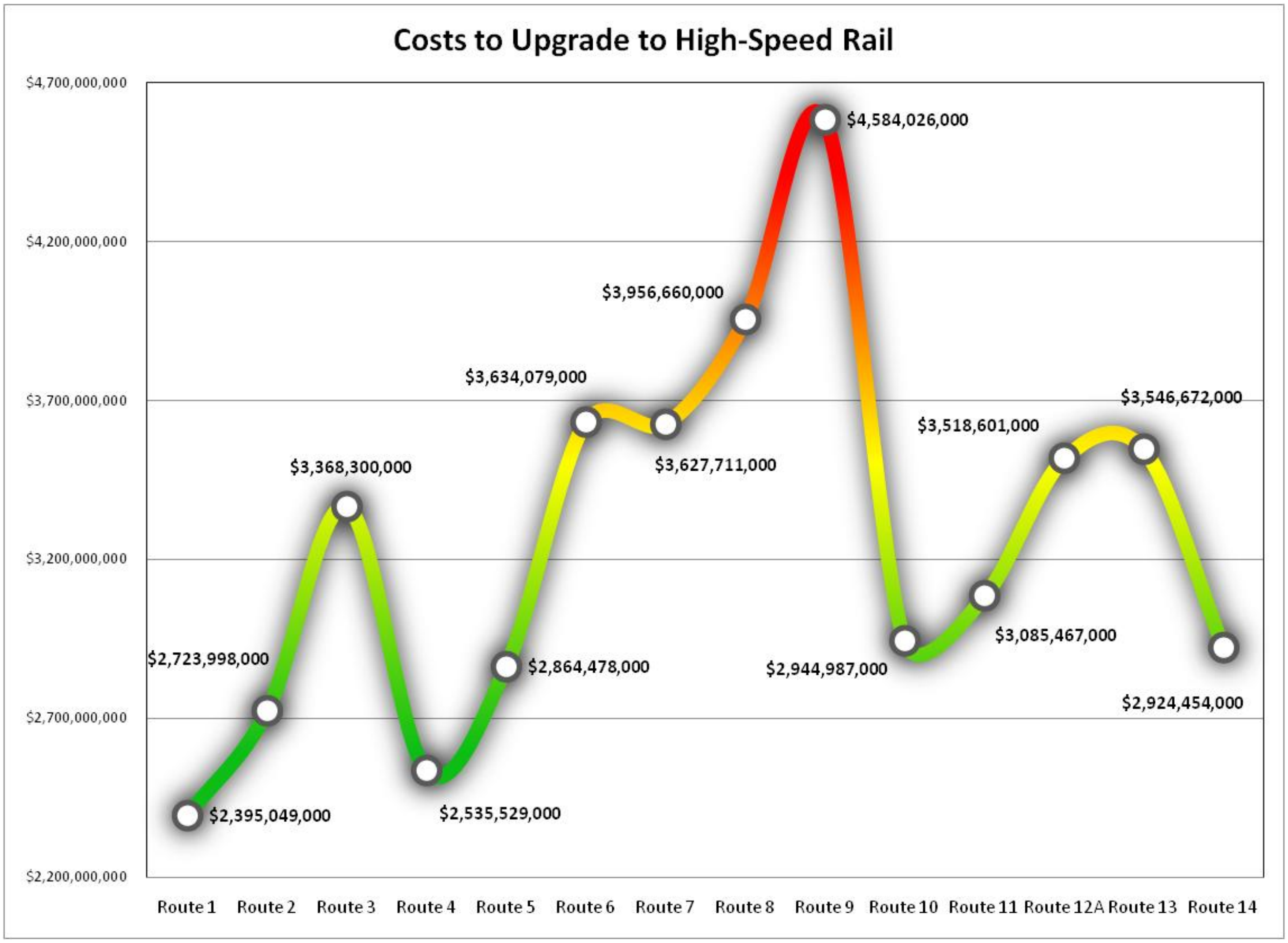
Normative Statement: Routes with lower cyclic capital costs are better than routes with higher cyclic capital costs.

Table 6-18 and Chart 6-3 depict the cyclic capital costs by route.

Table 6-18. Annual Cyclic Capital Costs

Route	Cyclic Capital Costs
1 –Amtrak Route	$4,112,000
2 – Amtrak-Rochester	$4,948,000
3 – Amtrak-BNSF River	$4,222,000
4 – MWRRI-Madison	$5,067,000
5 – Madison-Rochester	$5,903,000
6 – Madison-BNSF River	$5,177,000
7 – Madison-Prairie	$5,448,000
8 – Madison-Prairie-Rochester	$6,285,000
9 – Madison-Prairie-BNSF River	$5,559,000
10 – Amtrak-Eau Claire	$4,256,000
11 – Madison-Eau Claire-TC	$5,211,000
12A – Wyeville-Eau Claire	$4,311,000
13 – Milwaukee-Fond du Lac-Eau Claire	$4,679,000
14 – Milwaukee-Fond du Lac-Chip-TC	$4,726,000

Chart 6-3. Cyclic Capital Costs



Qualitative Assessment: Routes 1, 3, 10, 12A, 13 and 14 have the lowest cyclic capital costs. These routes are better than the remaining routes.

6.6 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the costs to upgrade to high-speed rail, the cost of right-of-way acquisition, and the cyclic capital costs based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall capital cost rating was assigned to each route based on the number of "green", "yellow", and "red" ratings the measures received. Table 6-19 depicts the color rating for each route for the measures and overall capital cost criteria.

Table 6-19. Results of Qualitative Assessment

Route	Cost to Upgrade to High-Speed Rail	Cost of Right-of-Way Acquisition	Cyclic Capital Costs	Overall Capital Cost Rating
1 –Amtrak Route				
2 – Amtrak-Rochester				
3 – Amtrak-BNSF River				
4 – MWRRI-Madison				
5 – Madison-Rochester				
6 – Madison-BNSF River				
7 – Madison-Prairie				
8 – Madison-Prairie-Rochester				
9 – Madison-Prairie-BNSF River				
10 – Amtrak-Eau Claire				
11 – Madison-Eau Claire-TC				
12A – Wyeville-Eau Claire				
13 – Milwaukee-Fond du Lac-Eau Claire				
14 – Milwaukee-Fond du Lac-Chip-TC				

At the March 11, 2011 workshop, the teams were presented with the capital cost data and engaged in discussions regarding the qualitative assessment and color rating of each route. The teams came to a consensus that the cost of right-of-way acquisition is not a discriminator because, relative to the other costs, the cost to acquire right-of-way is not a significant amount. The teams agreed that the cost of right-of-way would be removed from assessment. The following captures the qualitative assessment for each route:

- Route 1 – Amtrak Route – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 1. Since the existing Amtrak route had a low cost to upgrade to high-speed rail and a low cyclic capital cost, the route is rated green for capital costs.

- Route 2 – Amtrak-Rochester – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 2. Overall, the cost to upgrade to high-speed rail was low and the cyclic capital costs were average for Route 2. The route is rated green for capital costs.

- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 3. The cost to upgrade to high-speed rail was average and the cyclic capital costs were low for Route 3. The route is rated green for capital costs.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 4. The cost to upgrade to high-speed rail was low and the cyclic capital costs were average for Route 4. The route is rated green for capital costs.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 5. The cost to upgrade to high-speed rail was low but the cyclic capital costs were high for Route 5. The route is rated yellow for capital costs.

- Route 6 – Madison-BNSF River – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 6. The cost to upgrade to high-speed rail was average and the cyclic capital costs were average for Route 6. This route is rated yellow for capital costs.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 7. The cost to upgrade to high-speed rail was average and the cyclic capital costs were average for Route 7. This route is rated yellow for capital costs.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 8. The cost to upgrade to high-speed rail was high and the cyclic capital costs were high for Route 8. The route is rated red for capital costs because the route did not meet the project need for a competitive and attractive alternative mode of travel.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 9. The cost to upgrade to high-speed rail was high and the cyclic capital costs were average for Route 9. The route is rated yellow for capital costs.

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 10. The cost to upgrade to high-speed rail was low and the cyclic capital costs were low for Route 10. The route is rated green for capital costs.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 11. The cost to upgrade to high-speed rail was low and the cyclic capital costs were average for Route 11. This route is rated green for capital costs.

- Route 12A – Wyeville-Eau Claire - At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 12A. The cost to upgrade to high-speed rail was average and the cyclic capital costs were low for

Route 12A. The route is rated green for capital costs.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 13. The cost to upgrade to high-speed rail was average and the cyclic capital costs were low for Route 13. This route is rated green for capital costs.
- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed the cost to upgrade to high-speed rail and cyclic capital costs for Route 14. The cost to upgrade to high-speed rail was low and the cyclic capital costs were low for Route 14. This route is rated green for capital costs.

7.0 OPERATING COSTS

Operating costs are the costs incurred to maintain the infrastructure and equipment and to operate the train service on a route. Track maintenance costs are the normal discriminators between routes. However, if one route is longer than the others, and the travel time using that route is significantly greater than the other routes, the longer route may require one or more additional intercity passenger train sets and additional operating crews to provide the number of scheduled trips over that route distance.

Since track maintenance costs are the major operating cost discriminator between routes, track maintenance costs are developed and assessed for each route.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The operating costs criterion is tied to the project need of providing competitive and attractive alternative modes in the corridor. If a potential passenger rail alternative does not meet the project purpose, the route will be eliminated from further analysis.

7.1 Track Maintenance Costs

Track maintenance costs are the costs that are incurred to perform the required periodic inspection, servicing, repair, and maintenance activities needed to keep a railroad operational on a daily basis. These activities are often smaller actions performed “under traffic” by the track, bridge, and signal personnel of the owning railroad.

Track maintenance costs are derived similarly to cyclic capital costs, as discussed in section 6.5. ZETA-TECH defined the track maintenance costs in *Technical Monograph: Estimating Maintenance Costs for Mixed High Speed Passenger and Freight Rail Corridors* (*Technical Monograph*). In the *Technical Monograph*, ZETA-TECH calculates the maintenance costs per track mile for various operating scenarios. The costs take into consideration the following parameters:

- Annual tonnage (MGT) by tonnage categories
- Track geometry by broad curvature category
- Maximum operating speed
- Mix of passenger and freight
- Tie type

There are 216 cost matrices which correspond to the number of combinations of track, topology, traffic mix, and operating speed. In order to determine the track maintenance costs for a particular route, a route is divided into shorter segments corresponding to an individual matrix element. Then, the cost per mile for each element is multiplied by the segment mileage. The sumation of the costs for each segment is the total route track maintenance cost.

The MWRRI Planning Phase 5 developed a model that computed the maintenance costs for the entire Midwest Regional Rail System using the FRA Technical Monograph. The model cacluated the maintenance costs for such tasks as inspection, spot repairs, and routine maintenance. Using the MWRRI Planning Phase 5 model (Appendix M), the annual track maintenance costs for the rail alternatives were developed

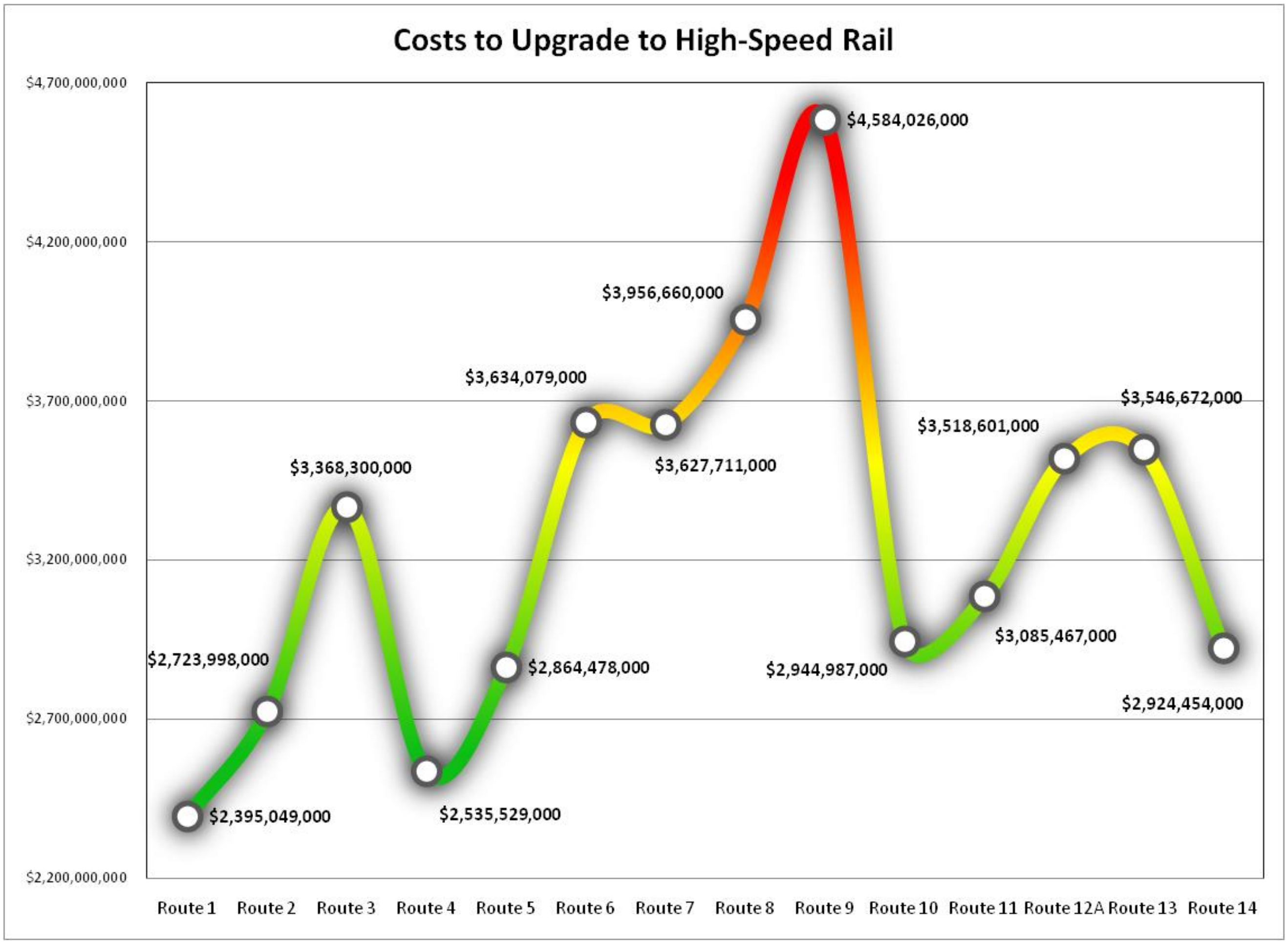
Normative Statement: Routes with lower track maintenance costs are better than routes with higher track maintenance costs.

Table 7-1 and Chart 7-1 depict the track maintenance costs by route.

Table 7-1. Track Maintenance Costs

Route	Track Maintenance Costs
1 –Amtrak Route	$6,228,000
2 – Amtrak-Rochester	$7,292,000
3 – Amtrak-BNSF River	$6,715,000
4 – MWRRI-Madison	$7,207,000
5 – Madison-Rochester	$8,270,000
6 – Madison-BNSF River	$7,694,000
7 – Madison-Prairie	$7,393,000
8 – Madison-Prairie-Rochester	$8,457,000
9 – Madison-Prairie-BNSF River	$7,880,000
10 – Amtrak-Eau Claire	$6,858,000
11 – Madison-Eau Claire-TC	$7,836,000
12A – Wyeville-Eau Claire	$6,946,000
13 – Milwaukee-Fond du Lac-Eau Claire	$7,238,000
14 – Milwaukee-Fond du Lac-Chip-TC	$7,314,000

Chart 7-1. Track Maintenance Costs



Qualitative Assessment: Routes 1, 3, 10, and 12A have the lowest track maintenance costs. These routes are better than the remaining routes.

7.2 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the track maintenance costs based on the qualitative assessment completed for this measure. Using the color rating for the measures, an overall operating cost rating was assigned to each route based on the number of “green”, “yellow”, and “red” ratings the measures received. Table 7-2 depicts the color rating for each route for the measure and overall operating cost criteria.

Table 7-2. Results of Qualitative Assessment

Route	Track Maintenance Costs	Overall Operating Cost Rating
1 –Amtrak Route		
2 – Amtrak-Rochester		
3 – Amtrak-BNSF River		
4 – MWRRI-Madison		
5 – Madison-Rochester		
6 – Madison-BNSF River		
7 – Madison-Prairie		
8 – Madison-Prairie-Rochester		
9 – Madison-Prairie-BNSF River		
10 – Amtrak-Eau Claire		
11 – Madison-Eau Claire-TC		
12 – Wyeville-Eau Claire		
13 – Milwaukee-Fond du Lac-Eau Claire		
14 – Milwaukee-Fond du Lac-Chip-TC		

At the March 11, 2011 workshop, the teams were presented with the operating cost data and engaged in discussions regarding the qualitative assessment and color rating of each route. The following captures the qualitative assessment for each route based on operating costs:

- Route 1 – Amtrak Route – At the workshop, the teams assessed the track maintenance costs for Route 1. The existing Amtrak route had the lowest track maintenance costs. The route is rated green for operating costs.
- Route 2 – Amtrak-Rochester – At the workshop, the teams assessed the track maintenance costs for Route 2. Route 2 had average track maintenance costs compared to the other routes. The route is rated yellow for operating costs.
- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed the track maintenance costs for Route 3. Route 3 had one of the lowest track maintenance costs. The route is rated green for operating costs.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed the track maintenance costs for Route 4. Route 4 had average track maintenance costs compared to the other routes. The route is rated yellow for operating costs.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed the track maintenance costs for Route 5. Route 5 had one of the highest track maintenance costs. The route is rated red for operating costs because it does not meet the project need for a competitive and attractive alternative mode of travel.

- Route 6 – Madison-BNSF River – At the workshop, the teams assessed the track maintenance costs for Route 6. Route 6 had average track maintenance costs compared to the other routes. The route is rated yellow for operating costs.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed the track maintenance costs for Route 7. Route 7 had average track maintenance costs compared to the other routes. This route is rated yellow for operating costs.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed the track maintenance costs for Route 8. Route 8 had the highest track maintenance cost of all the routes. The route is rated red for operating costs because it does not meet the project need for a competitive and attractive alternative mode of travel.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed the track maintenance costs for Route 9. Route 9 had a high track maintenance cost. The route is rated red for operating costs because it does not meet the project need for a competitive and attractive alternative mode of travel .

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed the track maintenance costs for Route 10. Route 10 has a low track maintenance cost. The route is rated green for operating costs.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed the track maintenance costs for Route 11. Route 11 has a high track maintenance cost. The route is rated red for operating costs because it does not meet the project need for a competitive and attractive alternative mode of travel.

- Route 12A – Wyeville-Eau Claire - At the workshop, the teams assessed the track maintenance costs for Route 12A. Route 12A had a low track maintenance cost. The route is rated green for operating costs.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – At the workshop, the teams assessed the track maintenance costs for Route 13. This route had average track maintenance costs. The route is rated yellow for operating costs.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed the track maintenance costs for Route 14. This route had average track maintenance costs. The route is rated yellow for operating costs.

8.0 SAFETY

Passenger, pedestrian, train, and vehicle safety within railroad right-of-way is of utmost importance. In order to ensure safe operation on a rail line, safety guidelines outlined in the *Highway-Rail Grade Grossing Guidelines for High-Speed Passenger Rail*[11] and the *Pedestrian Grade Crossing Guidance*[12] are used to determine the necessary modifications needed to implement to existing rail-rail and at-grade crossings.

Information regarding rail-rail and at-grade crossings is taken from the Federal Railroad Administration (FRA) Office of Safety Analysis crossing database.

Wisconsin's experience has identified the need for the development of a "grade crossing diagnostic team" to visually evaluate and analyze what should be done in terms of rail crossing needs and closures. WisDOT would encourage the same approach during the Tier 1 EIS phase of the project.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The safety criterion is tied to the project purpose of providing safe and reliable service. If a potential passenger rail alternative does not meet the project purpose, the route will be eliminated from further analysis.

8.1 Rail-Rail Crossings

Rail-rail crossings are locations where the track(s) of one railroad or rail line crosses the track(s) of another railroad at grade. At these locations, a complex piece of trackwork known as a "crossing diamond" is used to permit the passing of trains through the crossing. Crossing diamonds may cause the maximum operating speed to be limited to 79 mph. By building a grade separation, trains traveling at speeds greater than 79 mph will be able to continue through crossing diamonds without reducing speeds. The following is a list of the rail-rail crossings within the Milwaukee-Twin Cities corridor:

- Duplainville, WI (Canadian Pacific crosses Canadian National)
- Watertown, WI (Canadian Pacific crosses Union Pacific)
- Grand Junction, WI (Canadian Pacific crosses BNSF)
- Wyeville, WI (Union Pacific crosses Union Pacific)
- Merrillan, WI (Union Pacific crosses Canadian National)

[11] http://www.fra.dot.gov/downloads/safety/HwyRailXingGuidelines110609.pdf

[12] *Pedestrian Grade Crossing Guidance, Draft,* U.S. Department of Transportation Federal Railroad Administration, December 2010

- Junction City, WI (Canadian National crosses Canadian National)
- Chippewa Falls, WI (Canadian National crosses Union Pacific)
- Bald Eagle, MN (Canadian Pacific crosses Minnesota Commercial)
- Robert Street, MN (Union Pacific crosses Canadian Pacific)

If a grade separation is not considered feasible, several upgrades will need to be implemented to allow high speed passenger trains to travel through a rail-rail crossing. In order to allow adequate warning for trains approaching the crossing along the intersecting rail line, signal spacing on the approaches to the crossing will be increased proportional to the authorized track speed at that location. The signals on the intersecting rail line may need to be relocated to allow room for the placement of switch point derails or for new connection tracks. Switch point derails may be required on the line intersecting the high speed rail line to provide failsafe protection for the high speed line.

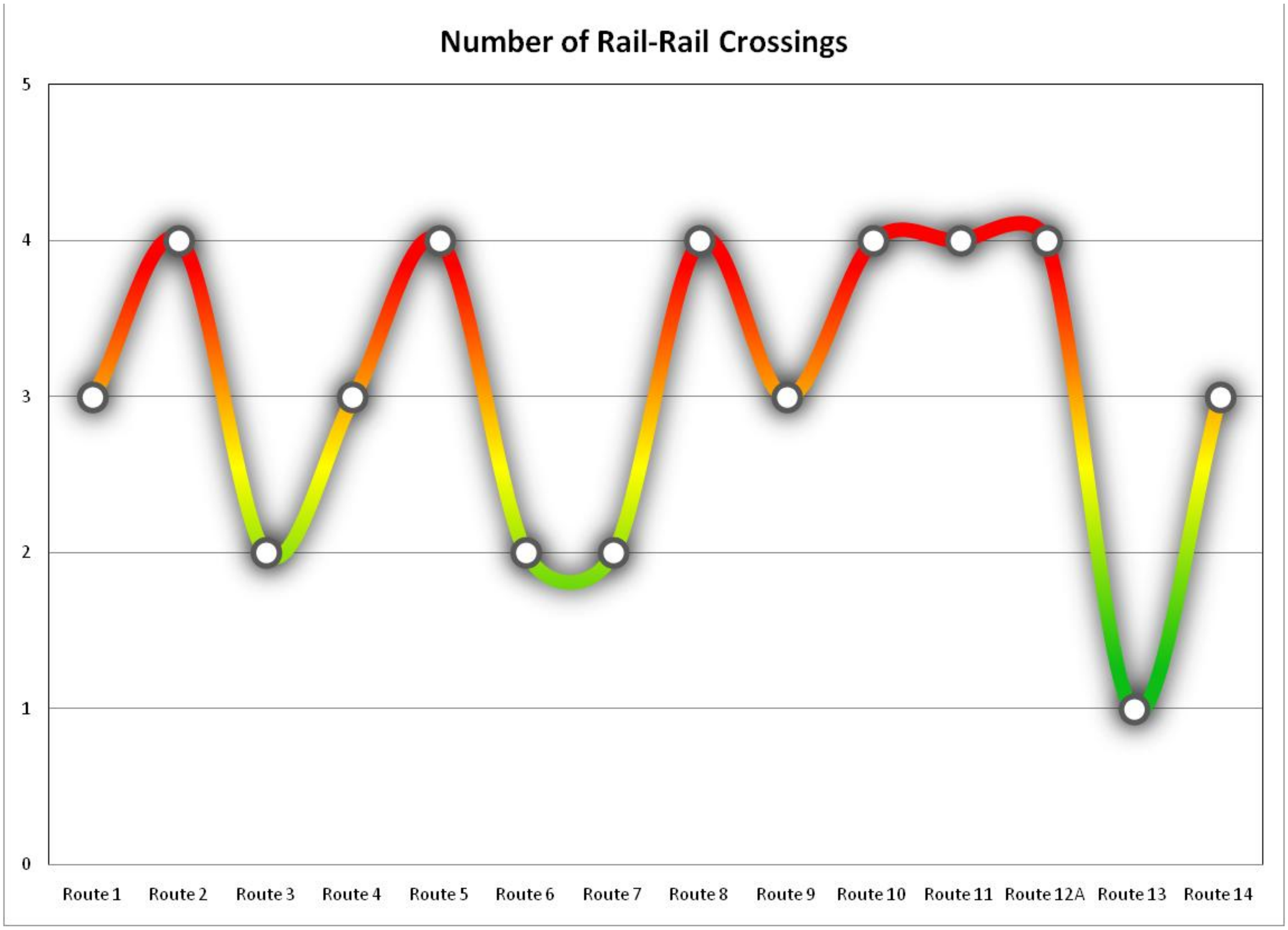
Normative Statement: Routes with fewer rail-rail crossings are better than routes with more rail-rail crossings.

Rail-rail crossings on each route are identified directly from railroad track charts and are inputted into RCAAT™ for the purposes of generating a table and chart depicting the data. The quantity of these crossings for each route is shown in Table 8-1 and Chart 8-1.

Table 8-1. Number of Rail-Rail Crossings

Route	Number of Rail-Rail Crossings
1 –Amtrak Route	3
2 – Amtrak-Rochester	4
3 – Amtrak-BNSF River	2
4 – MWRRI-Madison	3
5 – Madison-Rochester	4
6 – Madison-BNSF River	2
7 – Madison-Prairie	2
8 – Madison-Prairie-Rochester	4
9 – Madison-Prairie-BNSF River	3
10 – Amtrak-Eau Claire	4
11 – Madison-Eau Claire-TC	4
12A – Wyeville-Eau Claire	4
13 – Milwaukee-Fond du Lac-Eau Claire	1
14 – Milwaukee-Fond du Lac-Chip-TC	3

Chart 8-1. Number of Rail-Rail Crossings



Qualitative Assessment: Route 13 has the least amount of rail-rail crossings and is better than the remaining routes.

8.2 At-Grade Crossings

At-grade crossings are locations where the track(s) of a railroad intersect with a public or private roadway, highway, or pedestrian walkway or recreational trail at grade. At public crossings, a public agency has jurisdiction over the standards, installation, and maintenance of those crossings. At private crossings, a railroad has granted an entity the right to cross the railroad for a specific purpose, such as farming or access to parcels of owned-land bisected by the railroad. The agreement between the railroad and the property owner determine the ownership, warning devices, maintenance, and accident liability at the crossing.

In order to increase the level of safety at crossings, the *Highway-Rail Grade Crossing*

Guidelines for High-Speed Passenger Rail[13] published by the FRA in November 2009 emphasized that "crossing consolidation is the cornerstone of effective planning for high-speed rail." Although grade crossing closure requires significant effort, minimizing the number of at-grade crossings is more cost effective when compared to other safety alternatives (upgrading warning devices, maintaining warning devices and crossing surfaces through the lifecycle, expenses associated with maintenance of track structure at crossing location, etc.)[14]. In areas where there are several at-grade crossing within a short distance of each other, closing several crossings and directing traffic to a crossing chosen to remain in use that has been provided with enhanced safety measures (approximately one at-grade crossing per mile in rural settings or as the situation requires in more congested urban settings) would provide a lower probability of an at-grade crossing collision. Public crossings are critical safety locations because the Average Daily Traffic over these crossings is higher than private crossings and public crossings are generally located in metropolitan or municipal areas.

The FRA also emphasized that closing private at-grade crossings should be an "integral part of the crossing safety strategy for any HSR corridor" since movements over private crossings are a greater risk to persons on trains. This is because heavy trucks and agricultural equipment are prevalent at private crossings and are slow to clear the crossings. By eliminating private crossings and providing an alternate route to the crossing holder, risk of a collision will be decreased. However, private crossings are more manageable than public crossings, in that the traffic over the crossings is considerably lower than at public crossings. The private crossing traffic generally can be re-routed more easily.

If it is not feasible to close at-grade crossings, the concept of a "sealed corridor" should be applied to those crossings which are crossed at a speed of 79 mph or greater. After closure of any possible at-grade crossings has occurred, safety measures including four quadrant gates, median separators, and longer gate arms should be installed for all remaining public crossings. Additionally, the cross-sectional profile of at-grade crossings should be assessed to determine if the height difference between the crossing and 30 feet from the outside of the crossing is greater than 3 inches. This type of crossing is known as a "hump crossing" and can cause low-profile or long vehicles to scrape the pavement at the crest of the crossing. There is also a potential for these vehicles to become stuck at a hump crossing. Roadway modifications should be made to correct the profile of the crossing.

Pedestrian railroad crossings are also considered to be at-grade crossings and require similar safety considerations as roadway at-grade crossings. FRA recommends that railroads with busy passenger stations located on multi-track rail lines with frequent freight service should investigate the application of a high-capacity grade separation

[13] http://www.fra.dot.gov/downloads/safety/HwyRailXingGuidelines110609.pdf

[14] *Highway-Rail Grade Crossing Guidelines for High-Speed Passenger Rail: Version 1.0,* U.S. Department of Transportation Federal Railroad Administration, November 2009

structure to carry large volumes of pedestrians to and from their busy passenger platforms. If a crossing is not located in a high-volume freight and passenger service area, there are other measures available to enhance pedestrian crossing safety.[15] These measures include:

- Train-borne audible and visual warnings
- Station-sited audible and visual warnings
- Swing gates
- Access for persons with disabilities
- Infrastructure at crossings to improve safety – includes visually contrasting surface materials and a smooth crossing surface
- Station signing
- Fencing at and near passenger platforms
- Enforcement initiatives at and near passenger stations[16]

Normative Statement: Routes with fewer at-grade public crossings are safer than routes with more at-grade public crossings, and routes with fewer at-grade private crossings are safer than routes with more at-grade private crossings.

At-grade crossings on each route are identified directly from railroad track charts and are inputted into RCAAT™ for the purposes of generating a table and chart depicting the data. The number of at-grade crossings (including pedestrian crossings) by route is shown in Table 8-2, Chart 8-2, and Chart 8-3.

[15] *Pedestrian Grade Crossing Guidance, Draft,* U.S. Department of Transportation Federal Railroad Administration, December 2010

[16] *Pedestrian Grade Crossing Guidance, Draft,* U.S. Department of Transportation Federal Railroad Administration, December 2010

Table 8-2. Number of At-Grade Crossings

Route	Number of Public At-Grade Crossings	Number of Private At-Grade Crossings	Total Number of At-Grade Crossings
1 –Amtrak Route	312	163	475
2 – Amtrak-Rochester	382	225	607
3 – Amtrak-BNSF River	268	143	411
4 – MWRRI-Madison	327	175	502
5 – Madison-Rochester	396	237	633
6 – Madison-BNSF River	282	155	437
7 – Madison-Prairie	303	199	502
8 – Madison-Prairie-Rochester	371	261	632
9 – Madison-Prairie-BNSF River	281	196	477
10 – Amtrak-Eau Claire	320	157	477
11 – Madison-Eau Claire-TC	334	169	503
12A – Wyeville-Eau Claire	170	262	432
13 – Milwaukee-Fond du Lac-Eau Claire	389	220	609
14 – Milwaukee-Fond du Lac-Chip-TC	386	260	646

Figure 8-2. Number of At-Grade Crossings – Public and Private

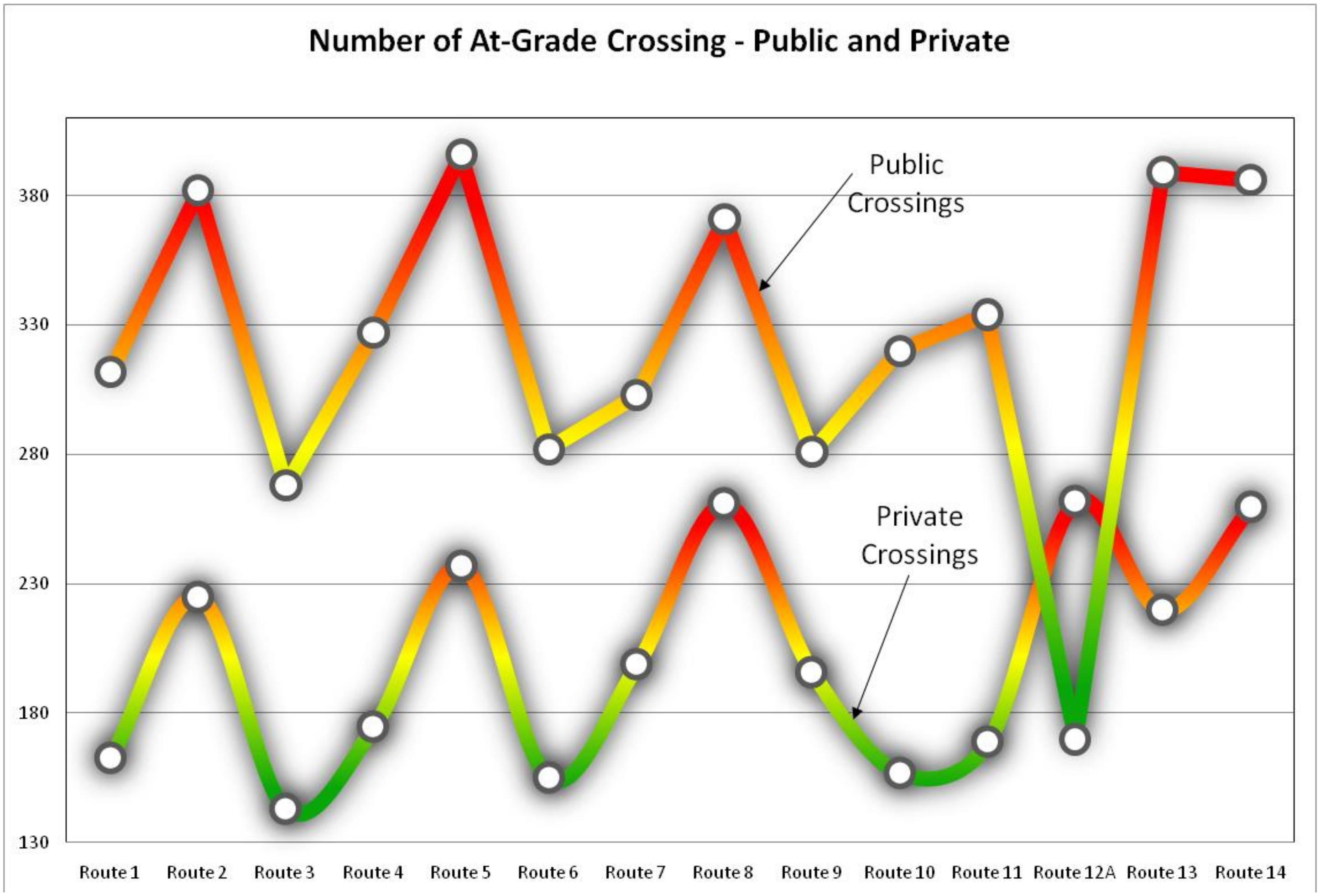
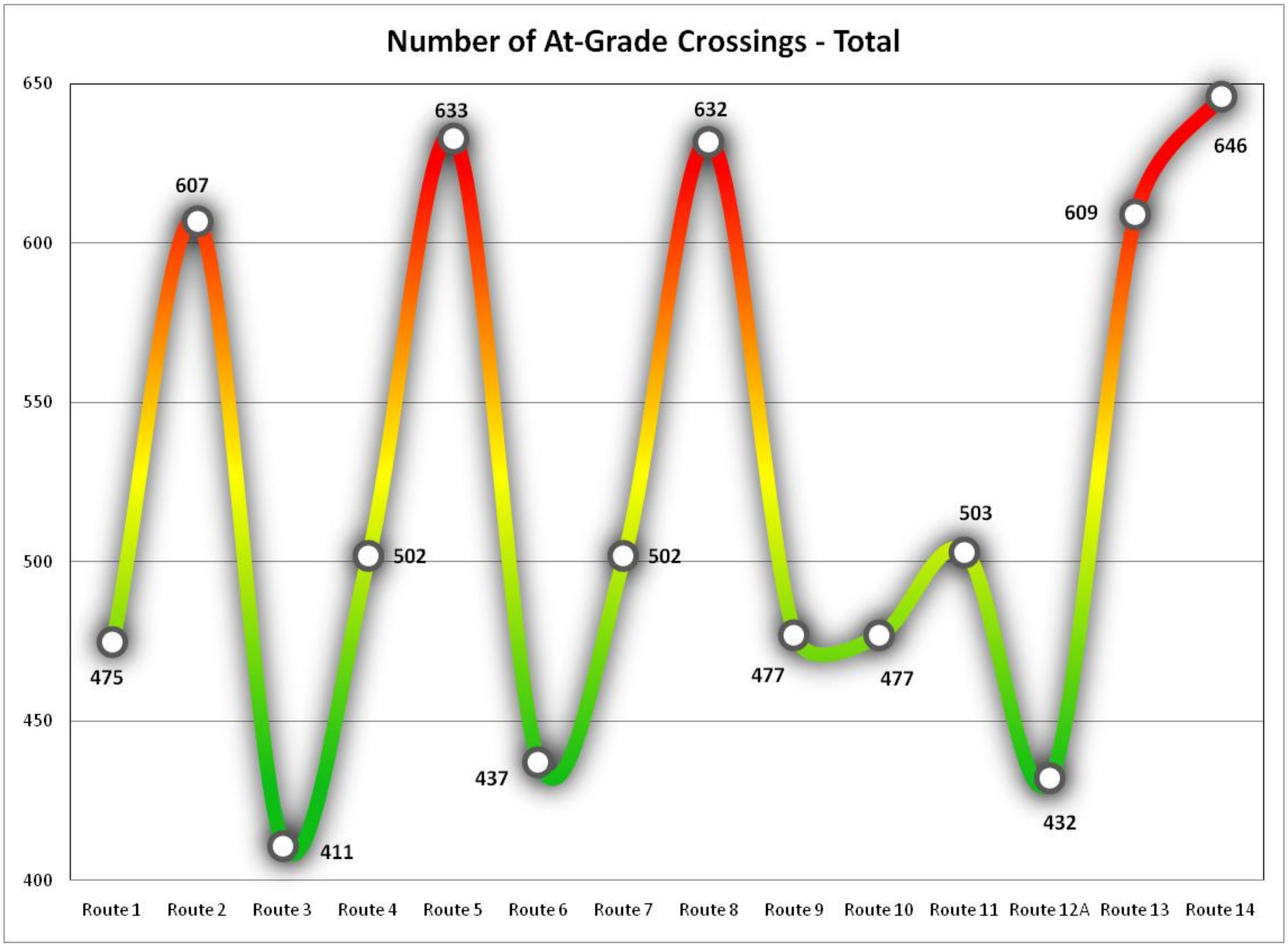


Figure 8-3. Number of At-Grade Crossings - Total



Qualitative Assessment: Routes 1, 3, 4, 6, 7, 9, 10, 11, and 12A have the fewest number of total at-grade crossings, and are therefore safer than the remaining routes. Note that Route 3, the Amtrak-BNSF River route, has the fewest number of total at-grade crossings because the route runs adjacent to the Mississippi River.

8.3 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the Number of Rail-Rail Crossings and the Number of At-Grade Crossings based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall safety rating was assigned to each route based on the number of "green", "yellow", and "red" ratings the measures received. Table 8-3 depicts the color rating for each route for the measures and the overall safety criteria.

Table 8-3. Results of Qualitative Assessment

Route	Number of Rail-Rail Crossings	Number of At-Grade Crossings	Overall Safety Rating
1 –Amtrak Route			
2 – Amtrak-Rochester			
3 – Amtrak-BNSF River			
4 – MWRRI-Madison			
5 – Madison-Rochester			
6 – Madison-BNSF River			
7 – Madison-Prairie			
8 – Madison-Prairie-Rochester			
9 – Madison-Prairie-BNSF River			
10 – Amtrak-Eau Claire			
11 – Madison-Eau Claire-TC			
12A – Wyeville-Eau Claire			
13 – Milwaukee-Fond du Lac-Eau Claire			
14 – Milwaukee-Fond du Lac-Chip-TC			

At the March 11, 2011 workshop, the teams were presented with Number of Rail-Rail Crossings and the Number of At-Grade Crossings data and engaged in discussions regarding the qualitative assessment and color rating of each route. The following captures the qualitative assessment for each route:

- Route 1 – Amtrak Route – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 1. There was consensus among the teams to assess the at-grade crossings based on the total number of crossings, rather than the number of public vs. private crossings separately. The existing Amtrak route has an average number of rail-rail crossings and total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.
- Route 2 – Amtrak-Rochester – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 2. Route 2 has a high number of rail-rail and at-grade crossings compared to the other routes. Overall, this route was

rated red for safety because it does not meet the project purpose of providing safe and reliable service.

- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 3. Route 3 has an average number of rail-rail crossings and a low number of total at-grade crossings compared to the other routes. Overall, the route was rated green for safety.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 4. Route 4 has an average number of rail-rail crossings and total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 5. Route 5 has a high number of rail-rail and at-grade crossings compared to the other routes. Overall, this route was rated red for safety because it does not meet the project purpose of providing safe and reliable service.

- Route 6 – Madison-BNSF River – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 6. Route 6 has an average number of rail-rail crossings and a low number of total at-grade crossings compared to the other routes. Overall, the route was rated green for safety.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 7. Route 7 has an average number of rail-rail crossings and total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 8. Route 8 has a high number of rail-rail and at-grade crossings compared to the other routes. Overall, this route was rated red for safety because it does not meet the project purpose of providing safe and reliable service.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 9. Route 9 has an average number of rail-rail crossings and total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 10. Route 10 has a high number of rail-rail crossings and an average number of total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 11. Route 11 has a high number of rail-rail crossings and an average number of total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 12A – Wyeville-Eau Claire - At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 12A. Route 12A has a high number of rail-rail crossings and a low number of total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire - At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 13. Route 13 has a low number of rail-rail crossings and a high number of total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed the number of rail-rail and at-grade crossings for Route 14. Route 14 has an average number of rail-rail crossings and a high number of total at-grade crossings compared to the other routes. Overall, the route was rated yellow for safety.

9.0 RELIABILITY

Reliability identifies the most common non-casualty variables involved in railroad operations that can impact the operating and schedule performance of trains on a route. These variables include the quantity of freight conflicts along a route, the freight density along a route, the number of handoffs between railroad owners a route has, and the type of train control a route has.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The reliability criterion is tied to the project purpose of providing safe and reliable service, and the project need for a reliable new travel mode to attract riders from existing travel modes. If a potential passenger rail alternative does not meet the project purpose or project need, the route will be eliminated from further analysis.

9.1 Quantity of Freight Conflicts

Freight conflicts along a route include yards, terminal, and junction areas where freight train activity occurs or could occur. Sometimes the rail freight traffic involves the switching of major industries which are the railroad's customers. Other times, the rail freight traffic may involve yard switch engines, local freight trains, and complete freight train movements in and out of towns, freight classification yards, junctions and/or railroad crew change points. In all of these cases, the freight railroads are using their tracks to serve their freight customers. The significance of these locations is that, if not properly addressed in the planning stage, these locations can represent "bottlenecks" to the movement of high-speed rail passenger trains. Generally, it is better for a route to have fewer freight conflicts and fewer severe conflicts.

Three categories have been established to classify the freight conflicts along the routes. Category A includes smaller town sidings or yards and key junctions with a lower level of freight activity. Category B includes active mainline yards and terminals. Category C includes major terminal areas. Freight conflicts associated with Category C are more severe than freight conflicts associated with Categories A and B. Freight conflicts associated with Category B are more severe than freight conflicts associated with Category A. All of the yard, terminal and junction areas between Milwaukee and St. Paul, except those in the Milwaukee-Madison Sub-segment, were evaluated using the MWRRI Capital Cost Methodology and have been categorized as follows:

Category A:

- New Lisbon, WI
- Camp Douglas, WI

- Adams, WI
- Wyeville, WI
- Hastings-St. Croix, MN
- Rochester, MN
- Junction City, WI
- Owen, WI
- Withrow, MN
- Cardigan Jct., MN

Category B:

- Madison, WI (Only the M&P Sub in Madison)
- Portage, WI (Columbia-Portage Jct.-West Portage)
- La Crosse, WI - La Crescent, MN
- Winona, MN
- Red Wing, MN
- Crawford, WI - Prairie du Chien, WI
- Eau Claire, WI (Altoona Jct.-Eau Claire-MP 85)
- East St. Paul, MN (Hazel Park Jct. to CP Westminster Street)
- Oshkosh, WI
- Neenah, WI
- Stevens Point, WI
- Marshfield, WI
- Chippewa Falls, WI
- Owatonna, MN
- Northfield, MN

Category C:

- North Milwaukee, WI (Grand Ave. Jct.)
- Fond du Lac, WI - North Fond du Lac, WI

- Roseport, MN - South St. Paul, MN-SPUD
- Soo Jct., MN - CP Westminster Street, MN - SPUD
- Newport, MN - Hoffman Avenue, MN - SPUD

In order to judge the severity of the conflicts, a 1 has been assigned to Category A conflicts; 2 to Category B; and 3 to Category C. Therefore, the level of severity of the freight conflicts is shown in parentheses next to the "quantity of total freight conflicts" in the last column of the table.

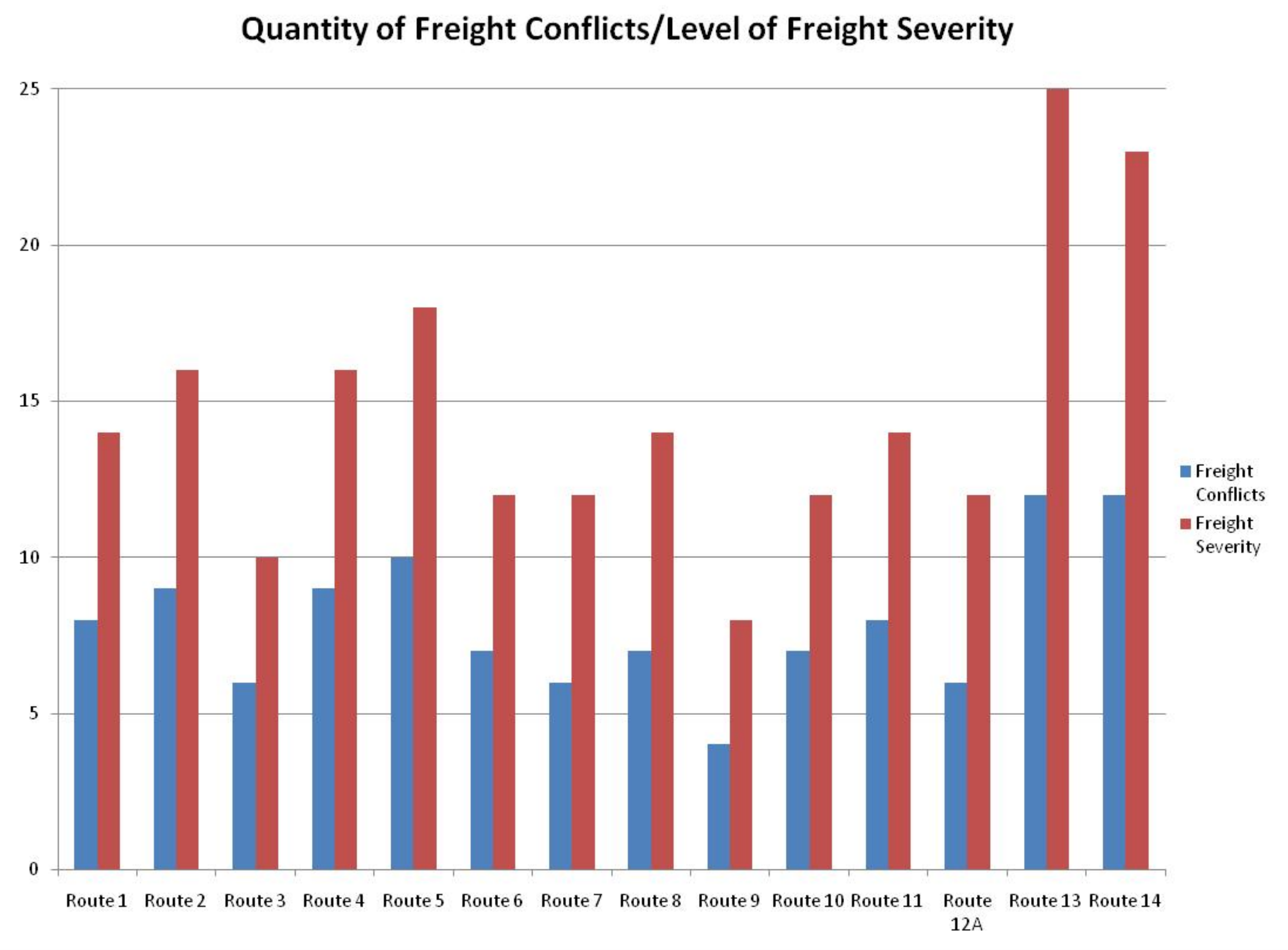
Normative Statement: Routes with fewer freight conflicts and fewer severe conflicts are better than routes with more freight conflicts and more severe conflicts.

The quantity of freight conflicts and the level of freight severity for each route are shown in Table 9-1 and Chart 9-1.

Table 9-1. Quantity of Freight Conflicts

Route	Quantity of Category A Freight Conflicts	Quantity of Category B Freight Conflicts	Quantity of Category C Freight Conflicts	Quantity of Total Freight Conflicts (Level of Severity)
1 –Amtrak Route	3	4	1	8 (14)
2 – Amtrak-Rochester	3	5	1	9 (16)
3 – Amtrak-BNSF River	3	2	1	6 (10)
4 – MWRRI-Madison	3	5	1	9 (16)
5 – Madison-Rochester	3	6	1	10 (18)
6 – Madison-BNSF River	3	3	1	7 (12)
7 – Madison-Prairie	1	4	1	6 (12)
8 – Madison-Prairie-Rochester	1	5	1	7 (14)
9 – Madison-Prairie-BNSF River	1	2	1	4 (8)
10 – Amtrak-Eau Claire	3	3	1	7 (12)
11 – Madison-Eau Claire-TC	3	4	1	8 (14)
12A – Wyeville-Eau Claire	2	2	2	6 (12)
13 – Milwaukee-Fond du Lac-Eau Claire	2	7	3	12 (25)
14 – Milwaukee-Fond du Lac-Chip-TC	4	5	3	12 (23)

Chart 9-1. Quantity of Freight Conflicts and Level of Freight Severity



Qualitative Assessment: Routes 3 and 9 have the lowest quantity of freight conflicts and the lowest level of freight severity. Routes 13 and 14 have the greatest number of freight conflicts and the greatest number of severe freight conflicts.

9.2 Freight Density

Freight density is the measurement of the amount of trains per day that move over a segment of railroad. Freight density increases proportionally with the number of trains running on a route, and inversely with the number of tracks within a route. A single track route with 40 trains per day would have a greater "freight density" than a double track route with the same number of trains.

Freight density can affect operations on a rail line, especially when trains with various speeds and priorities are traveling in the same direction or in both directions on a route. For example, there are times where freight trains traveling in the same direction move at 45 and 60 MPH, and passenger trains move at 79 and 110 MPH on the route. The faster freight trains will need to overtake the slower ones to maintain their schedules. The passenger trains can be expected to overtake the slower and faster freight trains. The same situation may occur in the opposing direction (on the other track) at the same time. In such cases, depending on the train density, even two-Main-Track-CTC with freight sidings may be insufficient to move the required volume of trains without delay.

Therefore, well-coordinated train operations are very important to the success of the passenger and freight railroad operations. The most reliable train operations are those which are carefully scheduled to operate on schedule in a specific time slot. To accomplish this, passenger and freight train schedules must be coordinated between railroads and operators. Plans and preparations must be made in all departments and with all partners to accomplish the required logistics and support the scheduled operations.

It is imperative to have well-coordinated train operations in order to efficiently run freight and passenger trains on the same track. However, it will be much more difficult to achieve well-coordinated operations on routes with high freight density than routes with lower freight density. The normative statement takes this into account and only evaluates freight density, since it is not possible at this level of evaluation to assess how well-coordinated operations will be with a given freight carrier.

Normative Statement: Routes with lower freight density are better than routes with higher freight density.

Freight density data was obtained from Wisconsin through the WisDOT Rail Crossing Information System and from Minnesota through the Office of Freight and Commercial Vehicle Operations. The data was provided in units of trains per day. This data was inputted into RCAAT™ for the purposes of generating a table and chart depicting the data.

Graphs depicting the freight density by milepost for each route are included in Appendix N.

Qualitative Assessment: Routes 7 and 8 have high freight density because each utilizes the BNSF River Route between Prairie du Chien and La Crosse (approximately 42 miles) – a stretch of track with over 40 trains per day. Additionally, Routes 3 and 6 utilize the BNSF River Route between La Crosse and Hastings (approximately 105 miles). This section of BNSF track also runs over 40 trains per day. Route 9 has the greatest overall freight density because it utilizes BNSF between Prairie du Chien and Hastings – a stretch of approximately 145 miles. Routes 10, 11, and 12A have the lowest freight densities and are better than the remaining routes.

9.3 Handoffs Between Owning Railroads

Locations where the control or dispatching of a train moves from one railroad to another are called handoffs. Since each handoff presents the opportunity for a delay, a route with fewer handoffs would have the advantage. The number of handoffs between Class I and Class I, Class I and Regional, and Regional and Regional railroads are discussed below. The assessment of the overall number of handoffs between railroads occurs during the Qualitative Assessment by the project stakeholders.

9.3.1 Quantity of Handoffs From Class I Railroad to Class I Railroad

Because Class I railroads generally have better communications and a greater availability of assets, handoffs between one Class I railroad and another Class I railroad will provide the most efficient of the handoffs. However, the least amount of handoffs provides the most efficient operations.

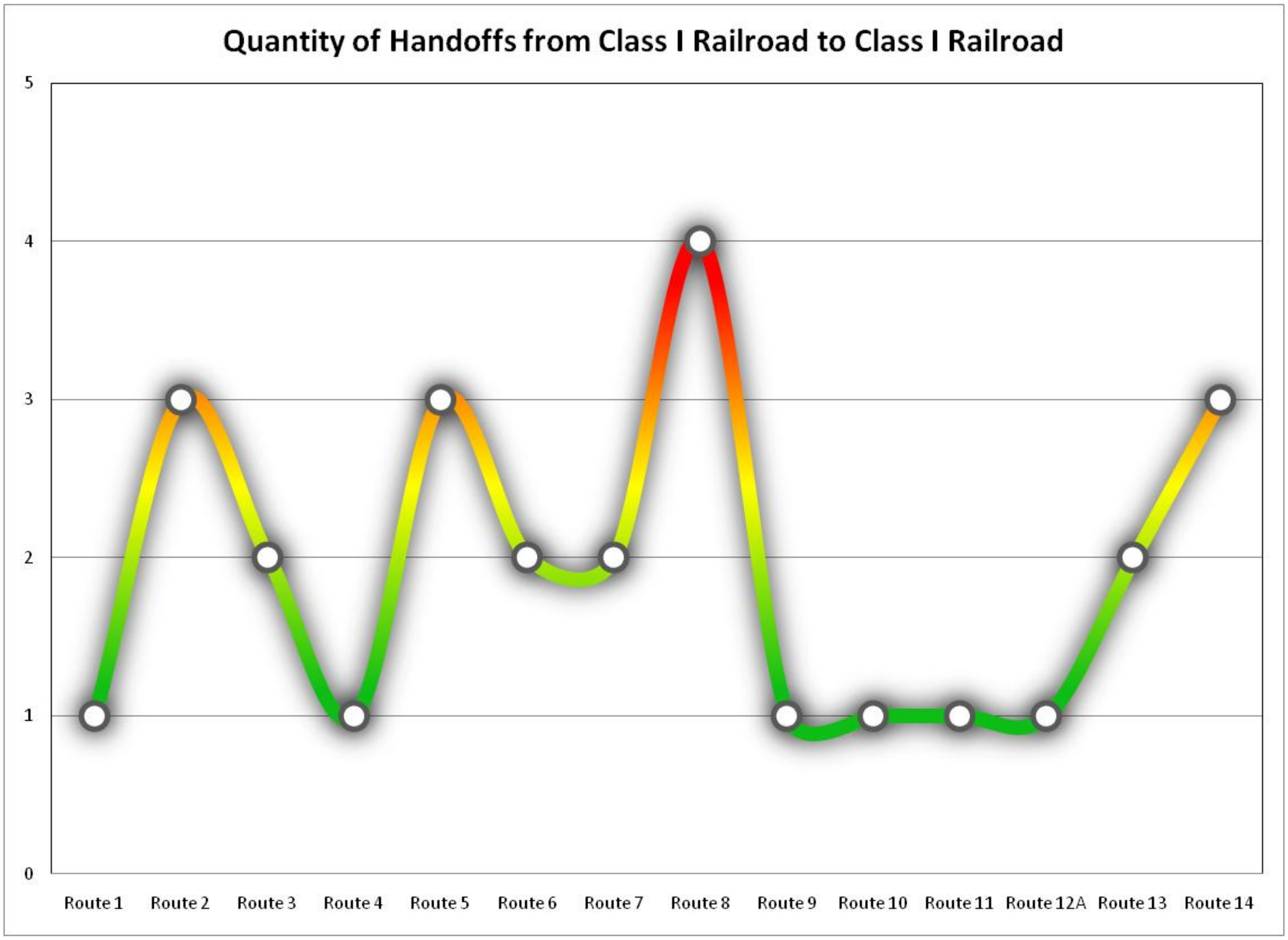
Normative Statement: Routes with fewer Class I-Class I handoffs are better than routes with a greater number of Class I-Class I handoffs.

Table 9-2 and Chart 9-2 depict the number of Class I-Class I handoffs.

Table 9-2. Quantity of Handoffs from Class I Railroad to Class I Railroad

Route	Quantity of Handoffs from Class I Railroad to Class I Railroad
1 –Amtrak Route	1
2 – Amtrak-Rochester	3
3 – Amtrak-BNSF River	2
4 – MWRRI-Madison	1
5 – Madison-Rochester	3
6 – Madison-BNSF River	2
7 – Madison-Prairie	2
8 – Madison-Prairie-Rochester	4
9 – Madison-Prairie-BNSF River	1
10 – Amtrak-Eau Claire	1
11 – Madison-Eau Claire-TC	1
12A – Wyeville-Eau Claire	1
13 – Milwaukee-Fond du Lac-Eau Claire	2
14 – Milwaukee-Fond du Lac-Chip-TC	3

Chart 9-2. Quantity of Handoffs from Class I Railroad to Class I Railroad



Qualitative Assessment: Route 8 has the greatest number of Class I to Class I handoffs. Routes 1, 4, 9, 10, 11, and 12A each have 1 Class I-Class I handoff. These routes are the better than the remaining routes.

9.3.2 Quantity of Handoffs From Class I Railroad to Regional Railroad or Regional Railroad to Regional Railroad

Handoffs between a Class I railroad and a regional railroad are more likely to incur delays than a handoff between two Class I railroads. Handoffs between two regional railroads are the least efficient type of handoffs.

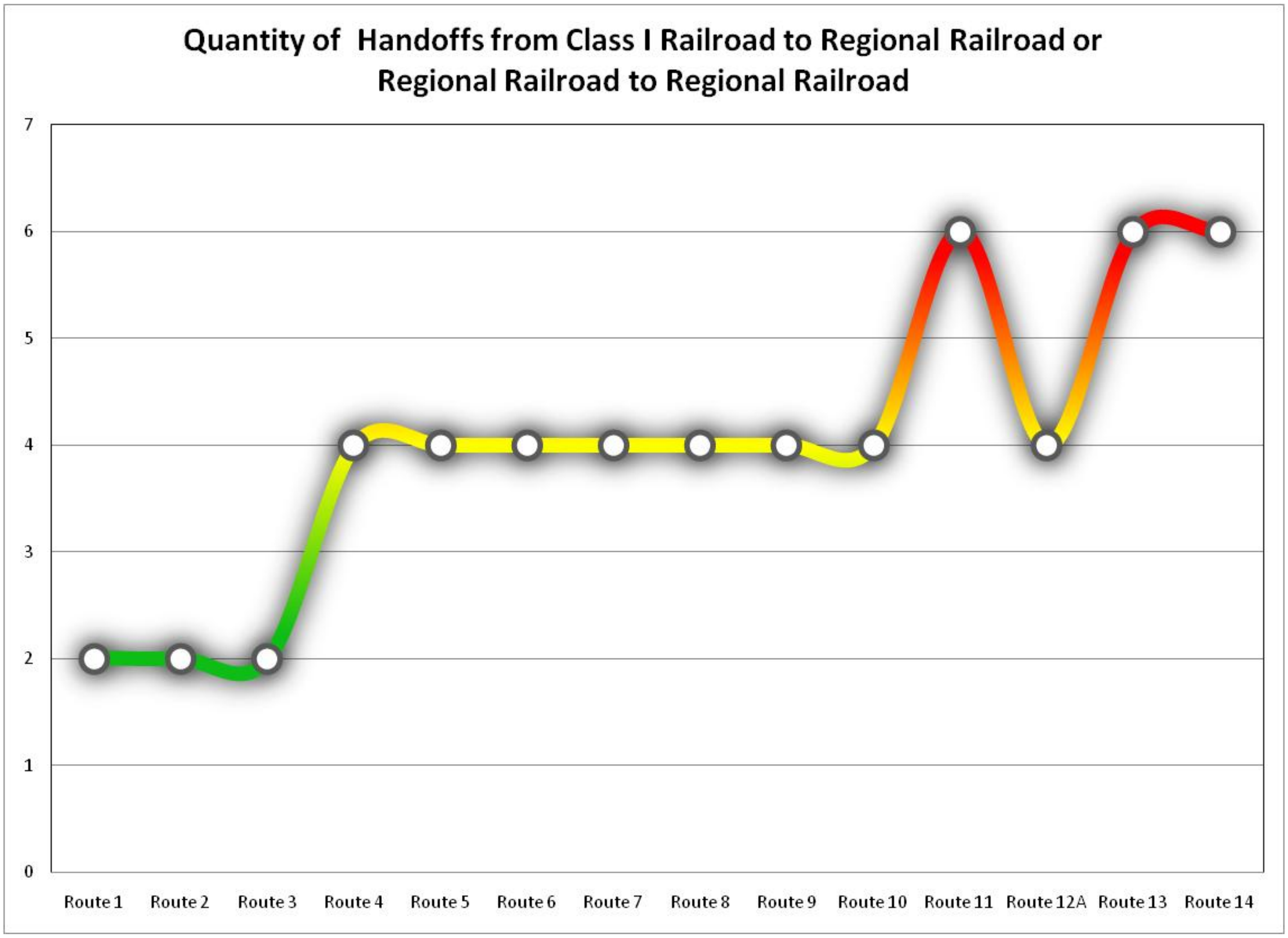
Normative Statement: Routes fewer Class I-Regional or Regional-Regional handoffs are better than routes with a greater number of Class I-Regional or Regional-Regional handoffs.

Table 9-3 and Chart 9-3 depict the number of Class I-regional and regional-regional railroad handoffs.

Table 9-3. Quantity of Handoffs from Class I Railroad to Regional Railroad or Regional Railroad to Regional Railroad

Route	Quantity of Handoffs from Class I to Regional or Regional to Regional
1 – Amtrak Route	2
2 – Amtrak-Rochester	2
3 – Amtrak-BNSF River	2
4 – MWRRI-Madison	4
5 – Madison-Rochester	4
6 – Madison-BNSF River	4
7 – Madison-Prairie	4
8 – Madison-Prairie-Rochester	4
9 – Madison-Prairie-BNSF River	4
10 – Amtrak-Eau Claire	4
11 – Madison-Eau Claire-TC	6
12A – Wyeville-Eau Claire	4
13 – Milwaukee-Fond du Lac-Eau Claire	6
14 – Milwaukee-Fond du Lac-Chip-TC	6

Chart 9-3. Quantity of Handoffs from Class I Railroad to Regional Railroad or Regional Railroad to Regional Railroad



Qualitative Assessment: Routes 11, 13, and 14 have the greatest number of Class I to regional or regional-regional handoffs. Routes 4, 5, 6, 7, 8, 9, and 10 are better than Routes 11, 13, and 14. Routes 1, 2, and 3 have the fewest number of handoffs and are better than the remaining routes.

9.4 Train Control

A dispatching system is the type of control system a railroad uses to authorize and prioritize train movements along a route. The dispatching system in use directly affects the efficiency of the route and the utilization of its physical capacity.

Centralized Traffic Control (CTC) is a type of signal system in which the track turnouts and signals are controlled by a train dispatcher or CTC operated located at a remote control center. The dispatcher or operator may use the CTC system to select routes, align switches, and set signals authorizing movements in advance of a train's arrival. This system allows for more efficient operation along a route. CTC is the system that has the greatest ability to achieve the full productivity of a rail on which it is installed. Routes with a greater percentage of miles of track with CTC are more reliable.

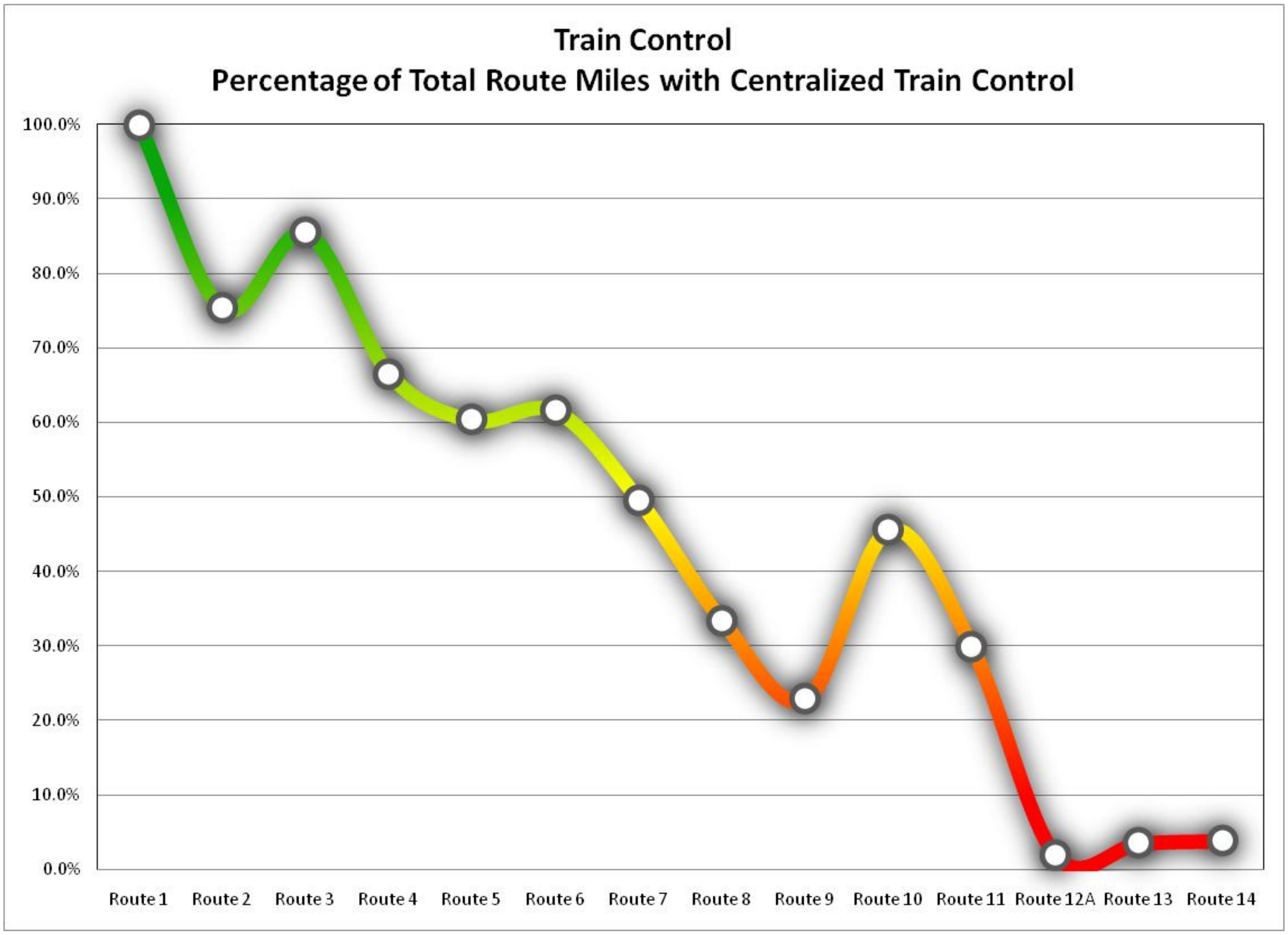
Normative Statement: Routes with a greater percentage of miles of track with CTC are better than routes with a lower percentage of miles of track with CTC.

This data was inputted into RCAAT™ for the purposes of generating a table and chart depicting the data. Table 9-4 and Chart 9-4 depict the number of miles and percentage of total route miles with CTC.

Table 9-4. Train Control

Route	Number of Miles of Track with CTC	% of Total Route Miles with CTC
1 – Amtrak Route	334.80	99.8%
2 – Amtrak-Rochester	291.11	75.3%
3 – Amtrak-BNSF River	287.73	85.4%
4 – MWRRI-Madison	234.99	66.5%
5 – Madison-Rochester	244.12	60.3%
6 – Madison-BNSF River	218.28	61.5%
7 – Madison-Prairie	185.63	49.5%
8 – Madison-Prairie-Rochester	142.03	33.3%
9 – Madison-Prairie-BNSF River	85.97	22.8%
10 – Amtrak-Eau Claire	150.9	45.6%
11 – Madison-Eau Claire-TC	103.91	29.8%
12A – Wyeville-Eau Claire	6.21	1.8%
13 – Milwaukee-Fond du Lac-Eau Claire	13.00	3.5%
14 – Milwaukee-Fond du Lac-Chip-TC	14.24	3.8%

Chart 9-4. Train Control



Qualitative Assessment: Routes 1, 2, and 3 have the greatest percentage of miles of track with CTC. Routes 1, 2, and 3 are better than the remaining routes. Routes 13 and 14 have the least percentage of miles of track with CTC. These routes are the least desirable.

9.5 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the Quantity of Freight Conflicts, Freight Density, Quantity of Handoffs from Class I Railroad to Class I Railroad, Quantity of Handoffs from Class I to Regional or Regional to Regional railroad, and Train Control based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall reliability rating was assigned to each route based on the number of “green”, “yellow”, and “red” ratings the measures received. Table 9-5 depicts the color rating for each route for the measures and the overall reliability criteria.

Table 9-5. Results of Qualitative Assessment

Route	Number of Freight Conflicts	Freight Density	Handoffs from Class 1 – Class 1	Handoffs from Class 1 – Regional	Train Control (% with CTC)	Overall Reliability Rating
1 –Amtrak Route						
2 – Amtrak-Rochester						
3 – Amtrak-BNSF River						
4 – MWRRI-Madison						
5 – Madison-Rochester						
6 – Madison-BNSF River						
7 – Madison-Prairie						
8 – Madison-Prairie-Rochester						
9 – Madison-Prairie-BNSF River						
10 – Amtrak-Eau Claire						
11 – Madison-Eau Claire-TC						
12A – Wyeville-Eau Claire						
13 – Milwaukee-Fond du Lac-Eau Claire						
14 – Milwaukee-Fond du Lac-Chip-TC						

At the March 11, 2011 workshop, the teams were presented with the reliability data and engaged in discussions regarding the qualitative assessment and color rating of each route. The teams came to the consensus that train control is not a discriminator at this phase because CTC will be required for all railroads that are installing PTC. Additionally, the cost is low in comparison to the overall cost of the project. Therefore, train control was not assessed. The following captures the overall qualitative assessment for each route:

- Route 1 – Amtrak Route - At the workshop, the teams assessed the reliability measures for Route 1. The route has good reliability in that there are few handoffs, a lower amount of freight conflicts, and almost 100% CTC. However, the route's reliability is significantly impacted by Grand Crossing in La Crosse, WI. At Grand Crossing, the Canadian Pacific (CP) line crosses the BNSF line. Reliability is reduced for CP because the La Crosse Amtrak Station and four single-track bridges occur in sequence west of Grand Crossing. Passenger operations on CP are affected in several ways:

- Westbound (from Milwaukee) trains may wait for eastbound freight and/or passenger trains to cross the four single-track bridges and clear Grand Crossing
- Eastbound trains (from Twin Cities) may wait for eastbound freight and/or passenger trains to cross the four single-track bridges and clear Grand Crossing
- Additional delays may be incurred for eastbound trains if freight trains are stacked on the west side of the Mississippi River waiting to cross
- Furthermore, flooding along the Mississippi River can affect train operations.

Route 1 is rated green for reliability because the number of handoffs was low, and the workshop participants had confidence that the number of freight conflicts and freight density could be mitigated." In the final Alternatives Selection Report, reasons for the rating will be amplified for the remaining routes.

- Route 2 – Amtrak-Rochester – At the workshop, the teams assessed the reliability measures for Route 2. Route 2 has few handoffs and a medium amount of freight conflicts. Additionally, Route 2 has the same reliability issues as Route 1 at Grand Crossing. Furthermore, snow drifting on the CP (former DM&E) between Winona and Rochester reduces the reliability as well. Because the CP is not built up high on an embankment with deep ditches, the snow tends to settle on the track and can affect train operations. Overall, the route is rated yellow for reliability because the number of freight conflicts, the freight density and the number of Class I-Class I handoffs are average.

- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed the reliability measures for Route 3. Route 3 has good reliability because there are few handoffs and a lower amount of freight conflicts. However, the handoff between westbound Canadian Pacific and northbound BNSF in La Crosse reduces the reliability because the BNSF has very high freight density. Additionally, flooding occurs along the Mississippi River, which can affect train operations for the BNSF River route. Overall, this route is rated yellow for reliability because even though the number of freight conflicts and Class I-Regional handoffs were good, the freight density was poor. Overall, the Route is average.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed the reliability measures for Route 4. Route 4 has good reliability because there are few freight conflicts and a lower number of freight conflicts. However, the reliability is reduced because Route 4 has the same reliability issues as Route 1 at Grand Crossing. Additionally, snow drifting between Madison and Portage and flooding along the Mississippi river can affect train operations as described above. This route is rated yellow for reliability because the number of freight conflicts, freight density and number of handoffs between Class I and regional railroads are average.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed the reliability measures for Route 5. Route 5 has a higher number of freight conflicts and a greater number of handoffs. Additionally, Route 5 has the same reliability issues as Route 1 at Grand Crossing. Furthermore, snow drifting between Madison and Portage and Winona and Rochester can affect train operations as described above. The route is rated yellow for reliability because all criteria were average.

- Route 6 – Madison-BNSF River – At the workshop, the teams assessed the reliability measures for Route 6. Route 6 has good reliability because it has an average number of handoffs and a lower amount of freight conflicts. However, as discussed under Route 3, the high freight density on BNSF reduces the reliability. Additionally, snow drifting between Madison and Rochester and Mississippi River flooding can affect train operations as described above. This route is rated yellow for reliability because the number of freight conflicts, handoffs between Class I and Class I and Class I and regional are average.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed the reliability measures for Route 7. Route 7 has average reliability because it has a lower number of freight conflicts and an average number of handoffs. However, the handoff between northbound BNSF and westbound CP in La Crosse reduces the reliability significantly for the same reasons described for Route 1. Additionally, BNSF freight traffic is very high between Prairie du Chien and La Crosse, causing operational difficulties. Furthermore, snow drifting between Madison and Prairie du Chien and Mississippi River flooding can affect train operations as described above. This route is rated yellow for reliability because the number of freight conflicts, handoffs between Class I and Class I and Class I and regional are average.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed the reliability measures for Route 8. Route 8 has average reliability because it has a lower number of freight conflicts and a higher number of handoffs. Additionally, the handoff between northbound BNSF and westbound CP in La Crosse reduces the reliability significantly for the same reasons described for Route 1. Furthermore, BNSF freight traffic is very high between Prairie du Chien and La Crosse, causing operational difficulties. Finally, snow drifting between Madison and Prairie du Chien and Mississippi River flooding can affect train operations as described above. The route is rated yellow for reliability because the number of freight conflicts and handoffs from Class I to regional railroads are average.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed the reliability measures for Route 9. Route 9 has average reliability because it has a lower number of freight conflicts and a lower number of handoffs. However, as discussed under Route 3, the high freight density on BNSF reduces the reliability. Furthermore, snow drifting between Madison and Prairie du Chien and Mississippi River flooding can affect train operations as described above. Overall, this route is rated yellow for reliability because while the number of freight conflicts and handoffs from Class I- Class I are good, the freight density is poor. Overall, the route is average.

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed the reliability measures for Route 10. Route 10 has good reliability because it has a lower number of freight conflicts and handoffs. There are no flooding and weather-related issues with this route. The route is rated green for reliability because the freight density and handoffs from Class I-Class I are good.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed the reliability measures for Route 11. Route 11 has an average number of freight conflicts and a lower number of handoffs. However, snow drifting between Madison and Portage can affect train reliability as described above. This route is rated yellow for reliability because even though the freight density and handoffs between Class I and Class I railroad are good, the handoffs from Class I-regional are poor. Overall, the route is average.

- Route 12A – Wyeville-Eau Claire - At the workshop, the teams assessed the reliability measures for Route 12A. Route 12A has low freight density and handoffs. Overall, this route is rated green for reliability because the freight density and handoffs from Class I-Class I are good.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – At the workshop, the teams assessed the reliability measures for Route 13. Route 13 has a high number of freight conflicts and handoffs. Additionally, snow drifting from Neenah, WI west along the route affects train operations as described above. Furthermore, The UPRR handles unit coal trains from Wyoming's Powder River Basin to St. Paul, and then to Hudson using the St. Croix River swing bridge in Hudson. Once the train clears the junction switch at Lakeland Junction, the train makes a reverse move from the main track at Hudson north up the former CMStP&P branch to the electrical generating station at Stillwater, MN. The movements are made at a speed of approximately 5 MPH and occupy the UPRR's single main track in the vicinity of the river bridge for a period of about one hour. While these loaded and empty coal train movements are occurring, no other trains may move through this bottleneck location. This is a severe reliability issue. Overall, this route is rated red for reliability because it does not meet the project purpose of providing safe and reliable service and the project need for new travel modes to be reliable to attract riders from existing travel modes.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed the reliability measures for Route 14. Route 14 has a high number of freight conflicts and handoffs. Additionally, snow drifting from Neenah, WI west along the route affects train operations as described above. Overall, this route is rated yellow for reliability.

10.0 SYSTEM CONNECTIVITY

The Milwaukee-Twin Cities High-Speed Passenger Rail Corridor Program is envisioned as a significant element within a system of transportation options, connecting major population centers and existing or future intermodal facilities within the states of Minnesota and Wisconsin as well as with adjoining states[17].

System connectivity is provided through intermodal facilities with natural connections between rail travel and auto, bus, or air travel. These locations exist where a rail line intersects a city with an existing intercity passenger rail or bus service, intersects a city with existing public transit systems and/or intersects a city with a commercial airport.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The system connectivity criterion is tied to the project purpose of improving overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans, and the project need that intermodal connectivity among existing transportation systems is limited. If a potential passenger rail alternative does not meet the project purpose or project need, the route will be eliminated from further analysis.

The following sections describe the existing and planned modal connections at the termini in Milwaukee and Minneapolis/St. Paul, and along each route. The modal connections discussed in this section include:

- Commuter Rail;
- Inter-city passenger rail;
- Light Rail;
- Bus;
- Highway;
- Airport; and
- Bike paths/trails

Information was gathered from the Minnesota Comprehensive Statewide Rail Plan Final Report, published in February 2010, the Wisconsin Rail Plan 2030 draft report, issued in October 2010, and *Connections 2030*, Wisconsin's statewide long-range multi-modal plan adopted in 2009. Other documents used in this report are referenced by footnote.

[17] Draft Purpose and Need Statement, January 2010

Normative Statement: Routes with a greater number of intermodal connections are better than routes with a fewer number of intermodal connections.

10.1 Intermodal Connections at the Termini

This information applies to all routes and summarizes the intermodal connections at the termini, Milwaukee, WI and Minneapolis/St. Paul, MN.

10.1.1 Commuter Rail

Existing

Northstar Commuter Rail Line

The Northstar Commuter Rail Line is a commuter rail service linking Big Lake in the northwest Metro Twin Cities area to downtown Minneapolis (44 miles) with weekday peak, reverse commute, and limited midday service. Northstar operates in the State Trunk Highway 10/I-94 corridor on the BNSF mainline, continuing to St. Cloud, Fargo, and Seattle[18].

Planned

Twin Cities Connection

A rail link has been planned to connect Minneapolis and St. Paul. A connection between the Twin Cities will provide for expanded Amtrak service on the Empire Builder, intercity rail stations, and future high-speed rail service[19]. Mn/DOT applied for a TIGER II grant in the fall of 2010 to fund the detailed planning level analysis of routes between St. Paul Union Depot and MTI, environmental analysis, and preliminary engineering.

Northstar Commuter Rail Extension

An initial feasibility study has been commissioned by Anoka County, a member of the Northstar Corridor joint powers board, to study an extension of Northstar Commuter Rail from Cambridge, MN to Minneapolis, MN on the BNSF route that would potentially also host the NLX high-speed rail service to Duluth[20].

Red Rock Corridor

An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect Hastings, MN, in the southeast Metro region of the Twin Cities, to St. Paul and Minneapolis downtowns. This project is currently in the station planning phase[21].

Gateway Corridor

An Alternatives Analysis was initiated in late 2010 to consider commuter service from Eau Claire and Hudson, WI, to the Twin Cities. One of the four modal alternatives being studied utilizes the Union Pacific mainline from St. Paul through Eau Claire, WI. This

[18] http://northstartrain.org
[19] Minnesota State Rail Plan, February 2010
[20] Minnesota State Rail Plan, February 2010
[21] www.redrockrail.org

corridor is an inter-city passenger rail corridor recommended in the Minnesota State Rail Plan and a potential route for high-speed service between Milwaukee and the Twin Cities.

Kenosha-Racine-Milwaukee

A commuter link has been planned to connect Kenosha, Racine, and Milwaukee to one another and to northeast Illinois and Chicago. A Draft Environmental Impact Statement (DEIS) was prepared by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) to assess a full range of commuter rail and bus alternatives, the affected environment, and the environmental impacts of each alternative in the corridor. The Southeastern Regional Transit Authority submitted an application to the FTA to allow the project to enter into Preliminary Engineering under the FTA's "New Starts" funding program in June 2010[22].

10.1.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*

Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 1 include Milwaukee, WI, Columbus, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, La Crosse, WI, Winona, MN, and Red Wing, MN. Currently, Amtrak provides one eastbound and one westbound train daily.

Amtrak *Hiawatha Service*

Amtrak provides frequent corridor rail service through the Amtrak *Hiawatha Service* which provides service between Chicago and Milwaukee. Amtrak provides seven round trips per day Monday-Saturday and six round trips on Sunday. The trains make the trip between Chicago Union Station and Milwaukee Intermodal Station in 89 minutes. The train makes intermediate stops at Milwaukee's General Mitchell International Airport, Sturtevant (Racine), and Glenview.

Planned

Twin Cities Central Business Districts Connection

Planning calls for all high speed, intercity, and commuter services to have access to and serve both the St. Paul Central Business District, through St. Paul Union Depot (SPUD), and Minneapolis Central Business District, through the Minneapolis Transportation Interchange (MTI). This will be accomplished through the upgrade of approximately 14 miles of freight mainline on one of two available routes connecting the two hubs to Class 4 track with appropriate capacity, interlockings, and signaling to allow up to 79 MPH top speeds and 20 minute or less platform to platform travel times[23]. Mn/DOT applied for a TIGER II grant in the fall of 2010 to fund the detailed planning level analysis of routes between St. Paul Union Depot and MTI.

[22] http://maps.sewrpc.org/KRMonline/

[23] Minnesota State Rail Plan, February 2010

Northern Lights Express

The Northern Lights Express is a planned high-speed passenger rail corridor with top speeds of 110 mph between the Twin Cities and Duluth, MN. This project has been funded by the Minnesota Department of Transportation to complete the planning phase[24].

Rochester High-Speed Rail Connection

Preliminary feasibility studies and the Minnesota State Rail Plan recommend this corridor linking the state's third largest city and major, high growth regional trade center with the Twin Cities, at an approximate distance of 90 miles. The conceptual development work calls for a partial Greenfield route designed for initial speeds of 110 MPH with the capacity and eventual upgrade for 150-200 MPH top speeds. This line also in concept would provide a link with the Minneapolis-St. Paul International Airport (MSP) to Rochester and the rest of the high-speed and regional rail network, including Milwaukee to the Twin Cities corridor. The intentional high-speed design characteristics of the Greenfield route would in concept also lay the possible foundation for a phase two high speed link to the Chicago area.

River Cities Corridor

Independent of the high speed link between Milwaukee and the Twin Cities, the Minnesota State Rail Plan discussed and evaluated corridor service on the west bank of the Mississippi River linking the population centers on this route from La Crosse, WI/La Crescent, MN, to Minneapolis St. Paul with frequent service and speeds up to 90 MPH. This conceptually would include the cities of Winona, Wabasha, Red Wing, and Hastings, and be fully coordinated with Red Rock Commuter Rail, Amtrak Empire Builder service, and appropriately feed to any high speed service between the major termini.

Eau Claire Corridor

Intercity rail service at speeds of 90-110 MPH with four to eight trips daily to and from Eau Claire and the Twin Cities is recommended as part of the regional network in the Minnesota State Rail Plan, connecting this northwestern Wisconsin regional trade center to the rest of the regional rail network, the high speed core route, and multi-modal connections. This recognizes the regional connectedness of this population center to the Twin Cities for economic and transportation effectiveness, and the strong travel demand in the I-94 corridor.

St. Cloud Corridor

St. Cloud Intercity Service is planned to offer frequent all-day service with 90 MPH top speeds in the State Trunk Highway 10/I-94 corridor between St. Cloud and the Twin Cities, fully coordinated with Northstar Commuter Rail service on the inner portion of the route, and Fargo/Moorhead intercity service operating beyond St. Cloud on this route at lower frequencies.

Fargo/Moorhead Corridor

[24] Minnesota State Rail Plan, February 2010

Fargo, ND/Moorhead, MN, Intercity Service is planned to offer four daily trips to and from this bi-state regional trade center in the I-94 corridor through St. Cloud to the Twin Cities with top speeds up to 90 MPH. This service, envisioned in the Minnesota State Rail Plan, would be fully integrated with St. Cloud Intercity and Northstar Commuter rail services.

Mankato Corridor
Intercity service is proposed in the Minnesota State Rail Plan to link this southwestern regional trade center with the Twin Cities with 90 MPH top speeds and up to eight trips daily along the corridor.

Little Crow Route
An inter-city rail link has been planned to connect the Twin Cities, MN, Willmar, MN, and Sioux Falls, SD to one another via the Little Crow route. This project is in the early planning phase[25].

Dan Patch Rail Corridor
An inter-city rail link has been planned to connect the Twin Cities, MN, Northfield, MN, Albert Lea, MN and Kansas City, MO to one another via the Dan Patch rail corridor alignment. This project is in the early planning phase[26].

10.1.3 Light Rail Transit

Existing

Hiawatha Line Light Rail
In 2004, Minnesota opened its first LRT line traveling along the Hiawatha Avenue Corridor. The 12-mile LRT line connects the Minneapolis Transportation Interchange in downtown Minneapolis with the Minnesota Veterans Administration, the Minneapolis/St. Paul International Airport, and the Mall of America in Bloomington with a travel time of 40 minutes. The line, which currently operates 27 light-rail vehicles, has exceeded year 2020 ridership projections.

Planned

Central Corridor LRT
Central Corridor is a planned LRT facility connecting downtown St. Paul, the University of Minnesota and downtown Minneapolis. The western terminus of this line is planned for the Minneapolis Transportation Interchange to facilitate connectivity with Northstar Commuter Rail, Hiawatha LRT and other planned LRT corridors and future passenger and high-speed rail. The eastern terminus of the corridor lies at the front door of Union Depot, a planned multi-modal facility for the eastern portion of the metro area. Construction on the Central Corridor project is scheduled to begin during 2010.

Southwest Corridor LRT
The Southwest Corridor LRT route is currently under environmental review. This corridor extends from the Minneapolis Transportation Interchange to the southwest suburbs. An

[25] Minnesota State Rail Plan, February 2010
[26] Minnesota State Rail Plan, February 2010

Environmental Impact Statement has been produced for the project and will be released for public comment in 2010.

Bottineau Transitway

An Alternatives Analysis is underway to study LRT alternatives for the Bottineau Transitway (extending northwest from the Minneapolis Transportation Interchange). A Universe of Alternatives has been identified and analyses have begun to further develop alternatives[27]. Additionally, an Alternatives Analysis is underway to study LRT alternatives for the Rush Line Corridor (extending north from the St. Paul Union Depot)[28].

Milwaukee Streetcar

The Milwaukee Streetcar route is fully funded for final design and construction and will complete Preliminary Engineering in early 2011. Final design is expected to be complete in late 2011 with construction complete in the summer of 2013. The streetcar will have a stop at the Milwaukee Intermodal Station and will connect with other areas of downtown Milwaukee[29].

10.1.4 Bus Rapid Transit

Existing

There are no existing bus rapid transit lines within the terminal areas.

Planned

Cedar Avenue Bus Rapid Transit

The Cedar Avenue Bus Rapid Transit runs from the southern suburbs of Lakeville, Apple Valley and Eagan to the Mall of America and downtown Minneapolis. The project is in final design and construction is anticipated to begin as early as 2011[30].

10.1.5 Urban Bus Transit

Existing

Metro Transit

Metro Transit, serving the Twin Cities, is one of the country's largest transit systems, providing roughly 95 percent of the 73 million bus trips taken annually in the Twin Cities. The remaining 5 percent of the trips are supplied by suburban opt-out providers. Each weekday customers board Metro Transit buses and trains an average of 240,000 times. Metro Transit operates the Hiawatha light-rail line, 118 bus routes — 63 are local-service routes and 46 are express routes and 9 contract service routes, using a fleet of 821 buses. The majority of the company's fleet (681) is made up of standard 40-foot buses while 140 are articulated ("accordion") buses. All Metro Transit buses are equipped with

[27] www.bottineautransitway.org
[28] www.rushline.org
[29] http://www.milwaukeeconnector.com/home.html
[30] http://www.co.dakota.mn.us/EnvironmentRoads/Transit/Cedar/default.htm

wheelchair lifts or ramps and racks for bicycles. All trains feature step-free boarding, bicycle racks and luggage storage areas[31].

Maple Grove Transit

The Maple Grove Transit (MGT) offers commuter service between the City of Maple Grove, a suburb of Minneapolis, and downtown Minneapolis. MGT operates 42 round trips on 6 routes[32].

Plymouth Metrolink

Plymouth Metrolink offers commuter service between the City of Plymouth, a suburb of Minneapolis, and downtown Minneapolis. Metrolink operates 14 routes within the Plymouth area. Key destinations within the system include various office parks, University of Minnesota, the Reserve Transit Station, and downtown Minneapolis[33].

Southwest Transit

Southwest Transit provides commuter service between the cities of Chaska, Chanhassen, and Eden Prairie, all of which are southwestern suburbs of Minneapolis, and downtown Minneapolis. SWT operates 8 routes to downtown Minneapolis with key destinations that include various shopping malls, residential areas, and the SouthWest Station[34].

Anoka County Traveler

The Anoka County Traveler operates commuter service throughout portions of Anoka, Blaine, Columbia Heights, Coon Rapids, and Fridley. Anoka County Traveler operates 4 routes between Anoka County communities and downtown Minneapolis. Key destinations within the system include various shopping centers, the Anoka County Government Center, various schools, the Northstar Coon Rapids Station, and downtown Minneapolis[35].

Milwaukee County Transit System

The Milwaukee County Transit System operates 50 routes serving downtown Milwaukee and Milwaukee County. Key destinations within the system include downtown Milwaukee, Marquette University, University of Wisconsin-Milwaukee, various museums, and other tourist attractions[36]. The system also operates commuter services to Ozaukee County.

<u>Planned</u>

There are no planned urban bus transit lines within the terminal areas.

10.1.6 Inter-city/Regional Bus

[31] http://www.metrotransit.org/

[32] http://www.ci.maple-grove.mn.us/content/3485/default.aspx

[33] http://plymouthmn.gov/index.aspx?page=235

[34] http://www.swtransit.org/

[35] http://ww2.anokacounty.us/v3_transit/traveler.aspx

[36] http://www.ridemcts.com/

Existing

Minneapolis/St. Paul

Inter-city buses provide service from the Hawthorne Transportation center in downtown Minneapolis, the Greyhound station in St. Paul, and the Minneapolis-St. Paul International Airport. Inter-city bus services that now use the Greyhound station in St. Paul are planned to move to the St. Paul Union Depot in 2012, which will be a stop on the high-speed rail corridor.

The following lists inter-city bus services to/from Minneapolis/St. Paul. Only major cities/stops are listed, as most routes have many more stops.

- Jefferson Lines:
  - Minneapolis/St. Paul-Duluth
  - Minneapolis/St. Paul-St. Cloud-Fargo
  - Minneapolis/St. Paul-Rochester-Winona-La Crosse-Madison-Milwaukee
  - Minneapolis/St, Paul-Eau Claire-Wausau-Green Bay-Milwaukee
  - Minneapolis/St, Paul-Mason City-Des Moines-Kansas City
  - Minneapolis/St, Paul-Mankato-Sioux Falls
- Greyhound:
  - Minneapolis-Eau Claire-Tomah-Madison-Milwaukee-Chicago
  - Minneapolis-St. Paul-Duluth
- Megabus:
  - Minneapolis-St. Paul-Milwaukee-Chicago
  - Minneapolis/St. Paul-Madison

Milwaukee

Inter-city and regional buses provide service to/from the Milwaukee Intermodal Station (also served by Amtrak) and the Badger Bus Depot in downtown Milwaukee. The following lists inter-city bus services to/from the Milwaukee area. Only major cities/stops are listed, most routes have many more stops.

- Badger Coach:
  - Milwaukee to Madison
  - Milwaukee, Madison, La Crosse, Minneapolis
- Greyhound:

  - Minneapolis, St. Paul, Eau Claire, Madison, Milwaukee, Chicago
  - Madison, Milwaukee, Chicago
  - Green Bay, Appleton, Oshkosh, Milwaukee, Chicago
  - Milwaukee, Kenosha, Chicago
- Indian Trails:
  - Milwaukee, Sheboygan, Manitowoc, Green Bay, Escanaba (MI), Marquette (MI), Houghton (MI)*
- Jefferson Lines:
  - Milwaukee, Sheboygan, Manitowoc, Green Bay, Shawano, Wausau, Eau Claire, Menominee, Hudson, St. Paul (MN), Minneapolis (MN)*
  - Milwaukee, Madison, Sparta, La Crosse, Winona (MN), Rochester (MN), St. Paul (MN), Minneapolis, MN
- Lamers Bus Lines:
  - Milwaukee, Fond du Lac, Oshkosh, Appleton, Stevens Point, Wausau*
- Megabus:
  - Minneapolis (MN), Milwaukee, Chicago (IL)
- Wisconsin Coach Lines:
  - Airport Express - Waukesha, Milwaukee (downtown & Mitchell Airport), Racine, Kenosha, Chicago, IL (O'Hare airport)
  - Milwaukee, Racine, Kenosha
  - Whitewater, Milwaukee (limited weekend service only)

*Amtrak Thruway service

Planned

There are no planned inter-city/regional bus lines within the terminal areas.

10.1.7 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[37]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways within the terminal areas:

[37] Draft Purpose and Need Statement, January 2010

- Milwaukee (I-94, I-794, I-43, US 41, US 45)
- St. Paul (I-94, I-35E, US 52, US 10)
- Minneapolis (I-94, I-394, I-35W, US 12)

Planned

There are no planned highways within the terminal areas.

10.1.8 Airports

Existing

General Mitchell International Airport
The General Mitchell International Airport (MKE) is located 5 miles south of downtown Milwaukee. Public transportation options to and from MKE include Badger Coaches bus service, Coach USA bus service, and the Milwaukee County Transit System bus service[38]. Additionally, Amtrak's *Hiawatha* Line connects the airport to Sturtevant, Glenview, IL, Chicago Union Station, and the Milwaukee Intermodal Station via Canadian Pacific Railroad track with 7 daily round trips (6 on Sunday) in each direction.

Minneapolis-St. Paul International Airport
Minneapolis-St. Paul International Airport (MSP) is located approximately 12 miles southwest of downtown St. Paul. Light rail transit via the Hiawatha line provides service from MSP to downtown Minneapolis and MTI. Additionally, Metro Transit provides bus service to and from MSP[39]. No existing freight track or track right-of-way connects the airport to downtown Minneapolis or St. Paul.

Planned

There are no planned airports within the terminal areas.

10.1.9 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails within the terminal areas:

- Milwaukee – Hank Aaron State Trail and Oak Leaf Trail
- St. Paul - Gateway State Trail and Bruce Vento Trail
- Minneapolis – Minnesota Valley State Trail, Cedar Lake Trail, and Bassett's Creek Trail[40]

Planned

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38 http://www.mitchellairport.com/ground_transport.html
39 http://www.mspairport.com/GroundTransportation.aspx
40 www.traillink.com

There are no planned bike paths or trails within the terminal areas.

10.1.10 Summary of System Connectivity for the Terminal Areas

Table 10-1 summarizes the number of intermodal connections within the terminal areas. The number of intermodal connections is quantified differently for each mode type:

- Commuter Rail – the number of different commuter rail lines within the terminal areas
- Inter-City Passenger Rail – the number of different inter-city passenger rail lines within the terminal areas
- Light Rail – the number of different light rail lines within the terminal areas
- Urban/Local Bus – the number of different urban bus lines within the terminal areas
- Inter-City/Regional Bus – the number of different inter-city/regional bus routes within the terminal areas
- Highways – the total number of major highway connections within the terminal areas
- Airports – the number of different airports within the terminal areas
- Bike Paths/Trails – the number of different communities within the terminal areas

Table 10-1. System Connectivity - Terminal Areas

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	1	5
Inter-City Passenger Rail	2	10
Light Rail	1	4
Urban/Local Bus	6	N/A
Inter-city/Regional Bus	24	N/A
Highways	13	N/A
Airports	2	N/A
Bike Paths/Trails	3	N/A

10.2 Intermodal Connections along Routes between the Termini

The information in this section is presented by route.

10.2.1 Route 1 – Existing Amtrak

10.2.1.1 Commuter Rail

Existing

There are no existing commuter rail lines outside of the terminal areas.

Planned

Red Rock Corridor

The Red Rock Corridor is a commuter rail line planned to connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 1. See section 10.1.1 for a description of the Red Rock Corridor.

10.2.1.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*

Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 1 include Milwaukee, WI, Columbus, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, La Crosse, WI, Winona, MN, and Red Wing, MN See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines outside of the terminal areas.

10.2.1.3 Light Rail Transit

There are no existing or planned light rail transit lines outside of the terminal areas.

10.2.1.4 Local Bus Transit

Existing

Waukesha Metro Transit

Waukesha Metro Transit operates 17 routes throughout the western suburbs of Waukesha and Brookfield and provides connections to Milwaukee via transfers with the Milwaukee County Transit System. Key destinations within the system include downtown Waukesha and Brookfield, residential areas, schools, and downtown Milwaukee[41].

La Crosse Municipal Transit Utility

The La Crosse Municipal Transit Utility operates 8 fixed-routes and 2 flex-routes to La

[41] www.waukeshametro.org

Crosse, French Island, and La Crescent, MN. Key destinations within the system include the La Crosse Amtrak Station, the La Crosse transit center, the La Crosse Municipal Airport, and several shopping centers and Universities[42].

Winona Transit Service

The Winona Transit Service operates four routes to Winona and Goodview, MN. Key destinations within the system include several Universities, shopping centers, a hospital, and the Winona Amtrak Station[43].

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) operates 25 bus routes in the Minnesota Valley Area of Minnesota. Minnesota Valley includes the cities of Apple Valley, Burnsville, Eagan, Rosemount, and Savage. The MVTA connects these communities to each other, to the Mall of America, to downtown St. Paul, and to the Hiawatha Light Rail Line which connects to downtown Minneapolis[44].

Additional Local Transit Services

The cities of Watertown, Portage, and Tomah along Route 1 have shared-ride taxi service. Hiawathaland Transit provides local bus service in the Red Wing area[45].

Planned

There are no planned local bus routes within the communities along Route 1.

10.2.1.5 Inter-City Bus

Existing

Route 1 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 1 are listed below.

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis

42 http://www.cityoflacrosse.org/index.aspx?NID=19

43 http://www.dwebsite.com/dwcenterprise/se3bin/clientgenie.cgi?websitename=school1000178&statusFlag=goGenie &geniesite=16&myButton=g5plugin&db=g16_b157

44 http://www.mvta.com/

45 http://www.threeriverscap.org/programs_transp.html

(Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 1 include:

- Portage (Madison-Wausau line)
- Columbus (Madison-Green Bay line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)
- Sparta (Madison-La Crosse line)[46]

Amtrak Thruway Bus Service

Amtrak provides thruway bus service to connect Amtrak rail stations with other communities that are not directly served by passenger trains[47]. Columbus is planned to be an Amtrak Thruway stop on one of the planned inter-city bus routes in Wisconsin.

10.2.1.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[48]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 1 outside of the terminal areas:

- Watertown (I-94, US 26)
- Columbus (US 151, WI 60, WI 89)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90, I-94, WI 131, US 12)

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46 Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

47 www.amtrak.com

48 Draft Purpose and Need Statement, January 2010

- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Winona (US 61, US 14)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 1.

10.2.1.7 Airports

Existing

La Crosse Municipal Airport
The La Crosse Municipal Airport (LSE) is located approximately 6 miles north of downtown La Crosse. The La Crosse Municipal Transit Utility provides public transportation options to and from LSE[49].

Planned

There are no planned airports within communities along Route 1.

10.2.1.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 1:

- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail
- Camp Douglas – Omaha Trail[50]
- Winona – Mississippi River Trail
- Red Wing – Mississippi River Trail, Goodhue Pioneer Trail, and Cannon Valley Trail
- Hastings – Mississippi River Trail[51]

Planned

There are no planned bike paths/trails within communities along Route 1.

[49] http://www.cityoflacrosse.org/index.aspx?NID=7
[50] www.wisconsinbiking.com
[51] www.traillink.com

10.2.1.9 Summary of System Connectivity for Route 1

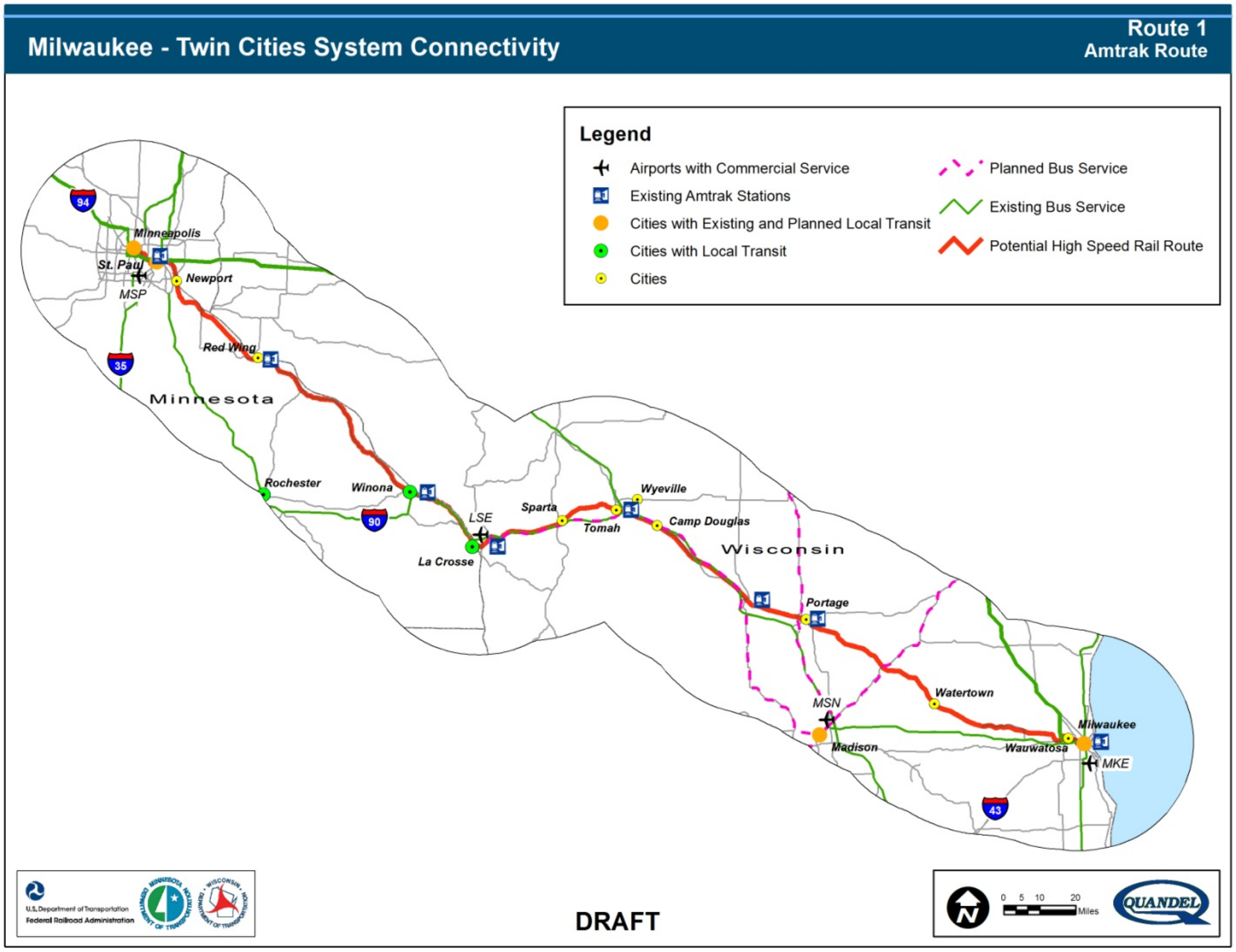
Table 10-2 and Figure 10-1 summarize the number of intermodal connections for each type of mode along Route 1. The number of intermodal connections for each route is quantified differently for each mode type:

- Commuter Rail – the number of different commuter rail lines within communities along a route
- Inter-City Passenger Rail – the number of communities along a route that have inter-city passenger rail lines
- Light Rail – the number of different light rail lines within communities along a route
- Urban/Local Bus – the number of different communities with urban/local bus transit lines
- Inter-City/Regional Bus – the number of different communities with inter-city bus lines along a route
- Highways – the total number of major highway connections within communities along a route
- Airports – the number of different airports within communities along a route
- Bike Paths/Trails – the number of different communities with bike paths/trails along a route

Table 10-2. System Connectivity – Route 1

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	8	N/A
Light Rail	N/A	N/A
Urban/Local Bus	4	N/A
Inter-city Bus	5	2
Highways	25	N/A
Airports	1	N/A
Bike Paths/Trails	6	N/A

Figure 9-1. System Connectivity – Route 1



10.2.2 Route 2 – Amtrak-Rochester

10.2.2.1 Commuter Rail

Existing

There are no existing commuter rail lines outside of the terminal areas.

Planned

There are no planned commuter rail lines outside of the terminal areas.

10.2.2.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 2 include Milwaukee, WI, Columbus, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, and La Crosse, WI[52]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

Dan Patch Rail Corridor
An inter-city rail link has been planned to connect the Twin Cities, MN, Northfield, MN, Albert Lea, MN and Kansas City, MO to one another via the Dan Patch rail corridor alignment. See section 10.1.2 for a description of the project.

10.2.2.3 Light Rail Transit

Existing

There are no existing light rail transit lines outside of the terminal areas.

Planned

There are no planned light rail transit lines outside of the terminal areas.

10.2.2.4 Local Bus Transit

Existing

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.5 for a complete description of Waukesha Metro Transit.

La Crosse Municipal Transit Utility
The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse,

52 www.amtrak.com

French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU

Winona Transit Service

The Winona Transit Service (WTS) provides local bus service to Winona and Goodview, MN. See section 10.2.1.4 for a description of WTS.

Rochester City Lines

Rochester City Lines operates 37 total routes within the Rochester area. Key destinations within the system include various shopping centers, several hospitals and medical centers, a University, and the Mayo Clinic[53]. Richfield Bus Company also operates several commuter bus routes from surrounding communities to Rochester.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 2

The cities of Watertown, Portage, and Tomah along Route 2 have shared-ride taxi transit service.

Planned

There are no planned local bus routes within the communities along Route 2.

10.2.2.5 Inter-City Bus

Existing

Route 2 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 2 are listed below.

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)

[53] www.rochesterbus.com

- Rochester: Madison – Sparta - La Crosse – Winona – Rochester -Minneapolis (Jefferson Lines)
- Owatonna: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)
- Northfield: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 2 include:

- Portage (Madison-Wausau line)
- Columbus (Madison-Green Bay line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)
- Sparta (Madison-La Crosse line)[54]

Amtrak Thruway Bus Service
Amtrak provides thruway bus service to connect Amtrak rail stations with other communities that are not directly served by passenger trains[55]. Columbus is planned to be an Amtrak Thruway stop on one of the planned inter-city bus routes in Wisconsin.

10.2.2.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[56]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 2:

- Watertown (I-94, US 26)
- Columbus (US 151, WI 60, WI 89)
- Portage (I-39, I-90/94, WI 33)

[54] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[55] www.amtrak.com

[56] Draft Purpose and Need Statement, January 2010

- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90 I-94, WI 131, US 12)
- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Winona (US 61, US 14)
- Rochester (I-90, US 52, US 14, US 63)
- Owatonna (I-35, US 14, US 218)
- Inver Grove Heights (US 52, I-494)

Planned

There are no planned highways within communities along Route 2.

10.2.2.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Rochester International Airport
The Rochester International Airport (RST) is located approximately 8 miles south of downtown Rochester. Transportation options to and from RST include taxi service and rental car service[57].

Planned

There are no planned airports within communities along Route 2.

10.2.2.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 2:

- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail

57 http://www.rochesterintlairport.com/

- Camp Douglas – Omaha Trail[58]
- Winona – Mississippi River Trail
- Hastings – Mississippi River Trail[59]

Planned

There are no planned bike paths/trails within communities along Route 2.

10.2.2.9 Summary of System Connectivity for Route 2

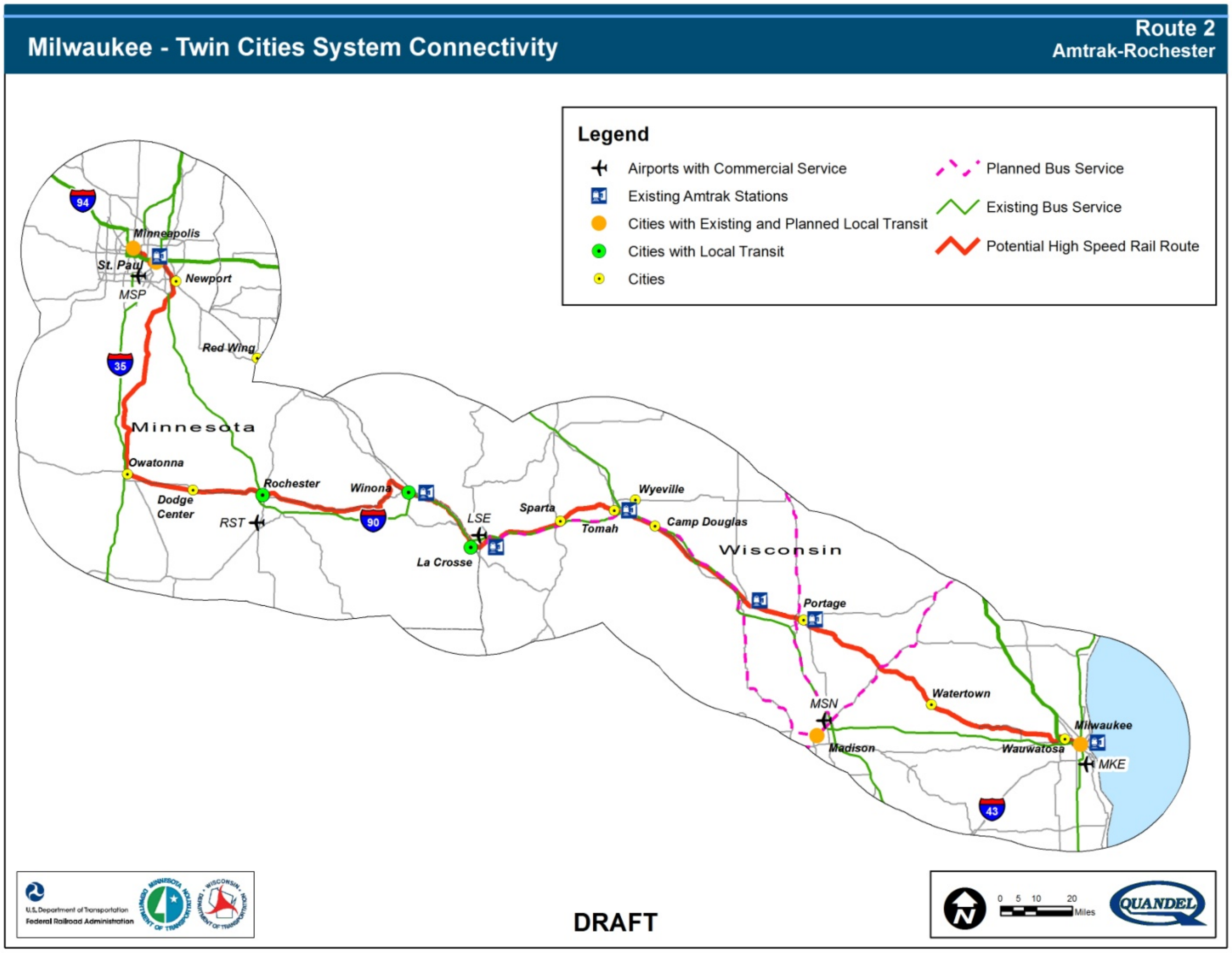
Table 10-3 and Figure 10-2 summarize the number of intermodal connections for each type of mode along Route 2. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-3. System Connectivity – Route 2

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	N/A
Inter-City Passenger Rail	5	N/A
Light Rail	N/A	N/A
Urban/Local Bus	5	N/A
Inter-city Bus	8	2
Highways	32	N/A
Airports	2	N/A
Bike Paths/Trails	5	N/A

58 www.wisconsinbiking.com
59 www.traillink.com

Figure 10-2. System Connectivity – Route 2



10.2.3 Route 3 – Amtrak-BNSF River

10.2.3.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 3 outside of the terminal areas.

Planned

Red Rock Corridor
The Red Rock Corridor is a commuter rail line planned to connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 3. See section 10.1.1 for a description of the Red Rock Corridor.

10.2.3.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 3 include Milwaukee, WI, Columbus, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, and La Crosse, WI[60]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 3.

10.2.3.3 Light Rail Transit

Existing

There are no existing light rail transit lines outside of the terminal areas.

Planned

There are no planned light rail transit lines outside of the terminal areas.

10.2.3.4 Local Bus Transit

Existing

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

La Crosse Municipal Transit Utility
The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of

[60] www.amtrak.com

the La Crosse MTU.

Minnesota Valley Transit Authority
The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 3
The cities of Watertown, Portage, and Tomah along Route 3 have shared-ride taxi service.

Planned

There are no planned local bus routes within the communities along Route 3.

10.2.3.5 Inter-City Bus

Existing

Route 3 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 3 are listed below.

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 3 include:

- Portage (Madison-Wausau line)
- Columbus (Madison-Green Bay line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)

- Sparta (Madison-La Crosse line)[61]

Amtrak Thruway Bus Service
Amtrak provides thruway bus service to connect Amtrak rail stations with other communities that are not directly served by passenger trains. Columbus is planned to be an Amtrak Thruway stop on one of the planned inter-city bus routes in Wisconsin.

10.2.3.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[62]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 3:

- Watertown (I-94, US 26)
- Columbus (US 151, WI 60, WI 89)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90, I-94, WI 131, US 12)
- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Prescott (US 10, WI 35, WI 29)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 3.

10.2.3.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

[61] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[62] Draft Purpose and Need Statement, January 2010

Planned

There are no planned airports within communities along Route 3.

10.2.3.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 3:

- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail
- Camp Douglas – Omaha Trail[63]
- Hastings – Mississippi River Trail[64]

Planned

There are no planned bike paths/trails within communities along Route 3.

10.2.3.9 Summary of System Connectivity for Route 3

Table 10-4 and Figure 10-3 summarize the number of intermodal connections for each type of mode along Route 3. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

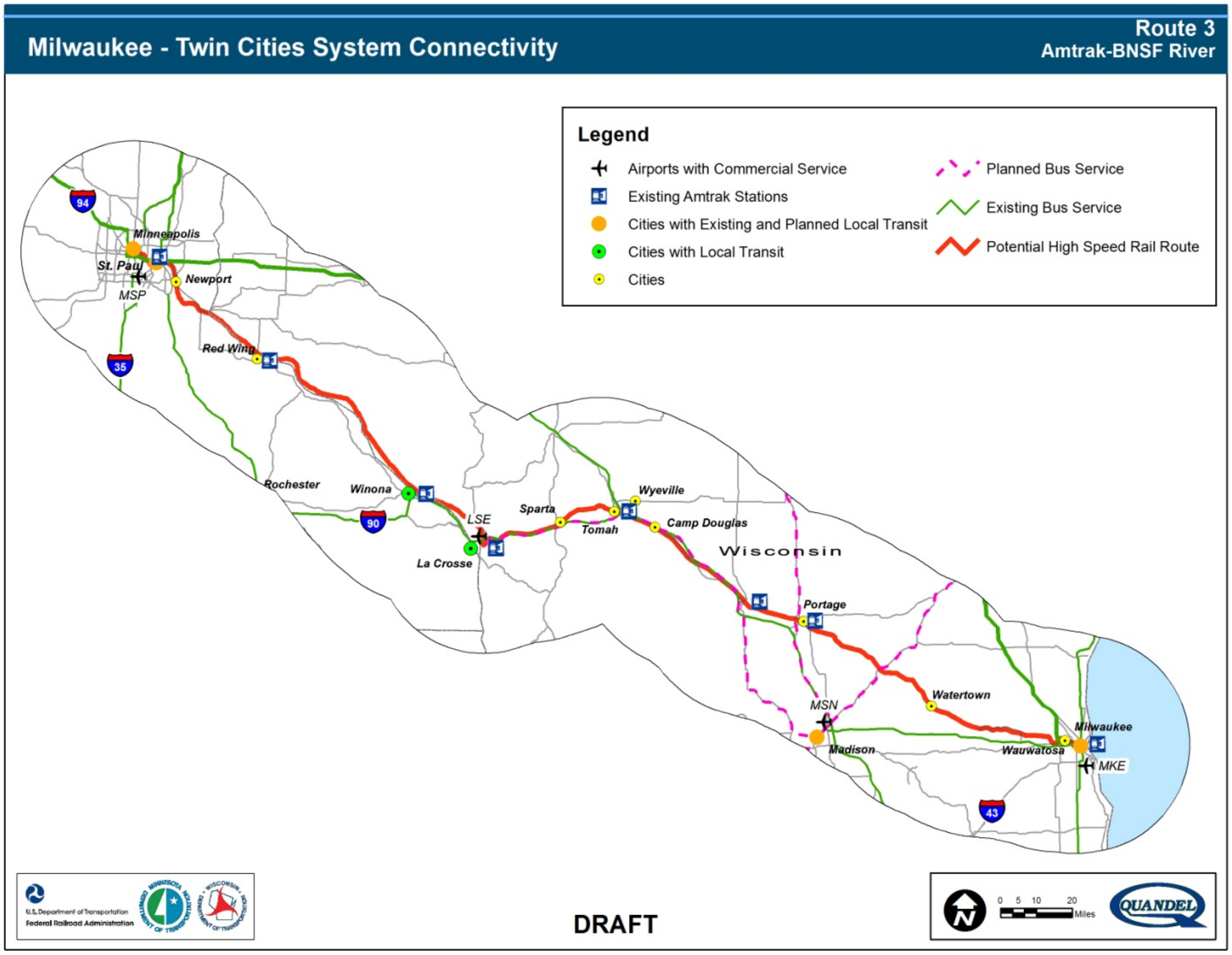
Table 10-4. System Connectivity – Route 3

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	5	N/A
Light Rail	N/A	N/A
Urban/Local Bus	3	N/A
Inter-city Bus	4	2
Highways	26	N/A
Airports	1	N/A
Bike Paths/Trails	4	N/A

63 www.wisconsinbiking.com

64 www.traillink.com

Figure 10-3. System Connectivity – Route 3



10.2.4 Route 4 – MWRRI-Madison

10.2.4.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 4 outside of the terminal areas.

Planned

Red Rock Corridor
An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 4. See section 10.1.1 for a complete description of the project.

Dane County
Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. A Draft Environmental Impact Statement is being prepared and an application in the FTA New Starts program to begin preliminary engineering is planned[65].

10.2.4.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 4 include Milwaukee, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, and La Crosse, WI[66]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 4.

10.2.4.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 4.

Planned

There are no planned light rail transit lines within communities along Route 4.

10.2.4.4 Local Bus Transit

Existing

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65 www.transport2020.net
66 www.amtrak.com

Waukesha Metro Transit

Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit

The Madison Metro Transit, which operates within the Madison area, is the 20th ranked transit service based on ridership per capita, as measured by the National Transit Database Report. Metro operates 65 routes within the Madison area. Key destinations within the system include the University of Wisconsin, the Capital Square, the Dane County Regional Airport, and many hospitals, parks, and shopping centers[67].

La Crosse Municipal Transit Utility

The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Winona Transit Service

The Winona Transit Service provides local bus service to Winona and Goodview, MN. See section 10.2.1.4 for a complete description of the Winona Transit Service.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 4

The cities of Watertown, Portage, and Tomah along Route 4 have shared-ride taxi service. Hiawathaland Transit provides local bus service in the Red Wing area[68].

Planned

There are no planned local bus routes within the communities along Route 4.

10.2.4.5 Inter-City Bus

Existing

Route 4 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 4 are listed below.

- Madison:
  - Madison-Milwaukee (Badger)
  - Madison-Milwaukee-Chicago (Greyhound)

[67] http://www.cityofmadison.com/metro/

[68] http://www.threeriverscap.org/programs_transp.html

- Madison-Chicago express (Megabus)
- Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
- Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul (Jefferson Lines)
- Madison-Janesville-Chicago (Van Galder/Coach USA)
- Madison-Minneapolis express (Megabus)

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 4 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)
- Portage (Madison-Wausau line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)
- Sparta (Madison-La Crosse line)[69]

10.2.4.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on

[69] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

roadways is expected to increase significantly by the year 2030[70]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 4:

- Watertown (I-94, US 26)
- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90/94, WI 131, US 12)
- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Winona (US 61, US 14)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 4.

10.2.4.7 Airports

Existing

La Crosse Municipal Airport

See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Dane County Regional Airport

The Dane County Regional Airport (MSN) is located 5 miles northeast of Madison. Public transportation options to and from MSN include the Madison Metro Transit System (bus service)[71]. Canadian Pacific-owned track runs from adjacent to the airport to downtown Madison, but there are no stations or at either location.

10.2.4.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 4:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge

[70] Draft Purpose and Need Statement, January 2010

[71] http://www.msnairport.com/guide/transportation.aspx

State Trail, and Glacial Drumlin State Trail

- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail
- Camp Douglas – Omaha Trail[72]
- Winona – Mississippi River Trail
- Hastings – Mississippi River Trail[73]

Planned

There are no planned bike paths/trails within communities along Route 4.

10.2.4.9 Summary of System Connectivity for Route 4

Table 10-5 and Figure 10-4 summarize the number of intermodal connections for each type of mode along Route 4. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

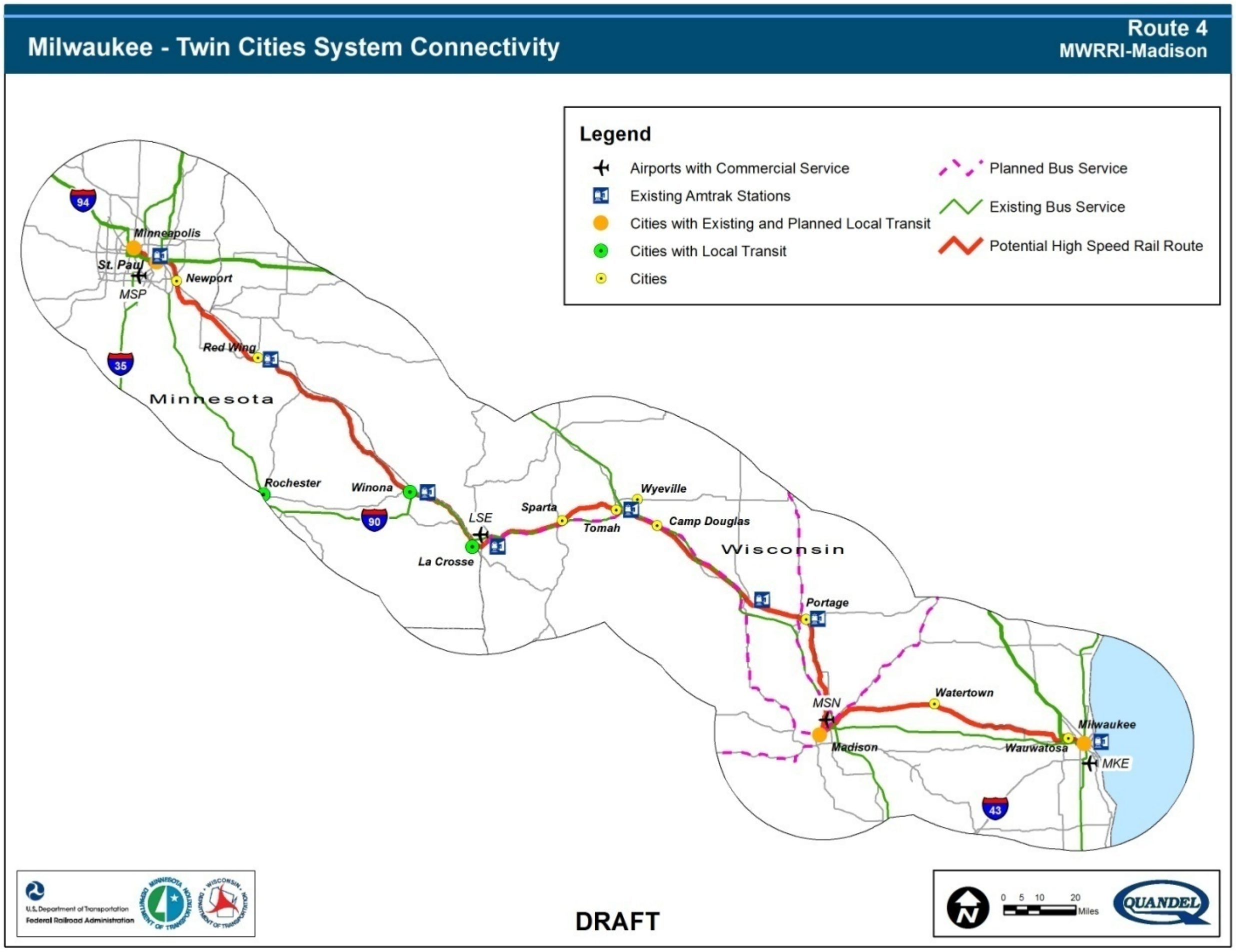
Table 10-5. System Connectivity – Route 4

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	2
Inter-City Passenger Rail	4	N/A
Light Rail	N/A	N/A
Urban/Local Bus	5	N/A
Inter-city Bus	6	1
Highways	26	N/A
Airports	2	N/A
Bike Paths/Trails	6	N/A

[72] www.wisconsinbiking.com

[73] www.traillink.com

Figure 10-4. System Connectivity – Route 4



10.2.5 Route 5 – Madison-Rochester

10.2.5.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 5 outside of the terminal areas.

<u>Planned</u>

Dane County
Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. See section 10.2.4.1 for a description of the Dane County Commuter project.

10.2.5.2 Inter-City Passenger Rail

<u>Existing</u>

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 5 include Milwaukee, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, La Crosse, WI, and Winona, MN[74]. See section 10.1.2 for a complete description of the *Empire Builder* service.

<u>Proposed</u>

Dan Patch Rail Corridor
An inter-city rail link has been planned to connect the Twin Cities, MN, Northfield, MN, Albert Lea, MN and Kansas City, MO to one another via the Dan Patch rail corridor alignment. See section 10.1.2 for a description of the project.

10.2.5.3 Light Rail Transit

There are no existing or planned light rail transit lines within communities along Route 5.

10.2.5.4 Local Bus Transit

<u>Existing</u>

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit
The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

[74] www.amtrak.com

La Crosse Municipal Transit Utility

The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Winona Transit Service

The Winona Transit Service provides local bus service to Winona and Goodview, MN. See section 10.2.1.4 for a complete description of the Winona Transit Service.

Rochester City Lines

Rochester City Lines provides local bus service within the Rochester area. See section 10.2.2.4 for a complete description of Rochester City Lines. Richfield Bus Company also operates several commuter bus routes from surrounding communities to Rochester.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 5

The cities of Watertown, Portage, and Tomah along Route 5 have shared-ride taxi service.

Planned

There are no planned local bus lines within communities along Route 5.

10.2.5.5 Inter-City Bus

Existing

Route 5 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 5 are listed below.

- Madison:
  - Madison-Milwaukee (Badger)
  - Madison-Milwaukee-Chicago (Greyhound)
  - Madison-Chicago express (Megabus)
  - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
  - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul (Jefferson Lines)
  - Madison-Janesville-Chicago (Van Galder/Coach USA)

- o Madison-Minneapolis express (Megabus)

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- Rochester: Madison – Sparta - La Crosse – Winona – Rochester -Minneapolis (Jefferson Lines)
- Owatonna: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)
- Northfield: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 5 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)
- Portage (Madison-Wausau line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)
- Sparta (Madison-La Crosse line)[75]

10.2.5.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on

[75] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

roadways is expected to increase significantly by the year 2030[76]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 5:

- Watertown (I-94, US 26)
- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90, I-94, WI 131, US 12)
- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Winona (US 61, US 14)
- Rochester (I-90, US 52, US 14, US 63)
- Owatonna (I-35, US 14, US 218)
- Inver Grove Heights (US 52, I-494)

Planned

There are no planned highways within communities along Route 5.

10.2.5.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Rochester International Airport
See section 10.2.2.7 for a description of the Rochester International Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

Planned

There are no planned airports within communities along Route 5.

[76] Draft Purpose and Need Statement, January 2010

10.2.5.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 5:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail
- Camp Douglas – Omaha Trail[77]
- Winona – Mississippi River Trail
- Hastings – Mississippi River Trail[78]

Planned

There are no planned bike paths/trails within communities along Route 5.

10.2.5.9 Summary of System Connectivity for Route 5

Table 10-6 and Figure 10-5 summarize the number of intermodal connections for each type of mode along Route 5. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

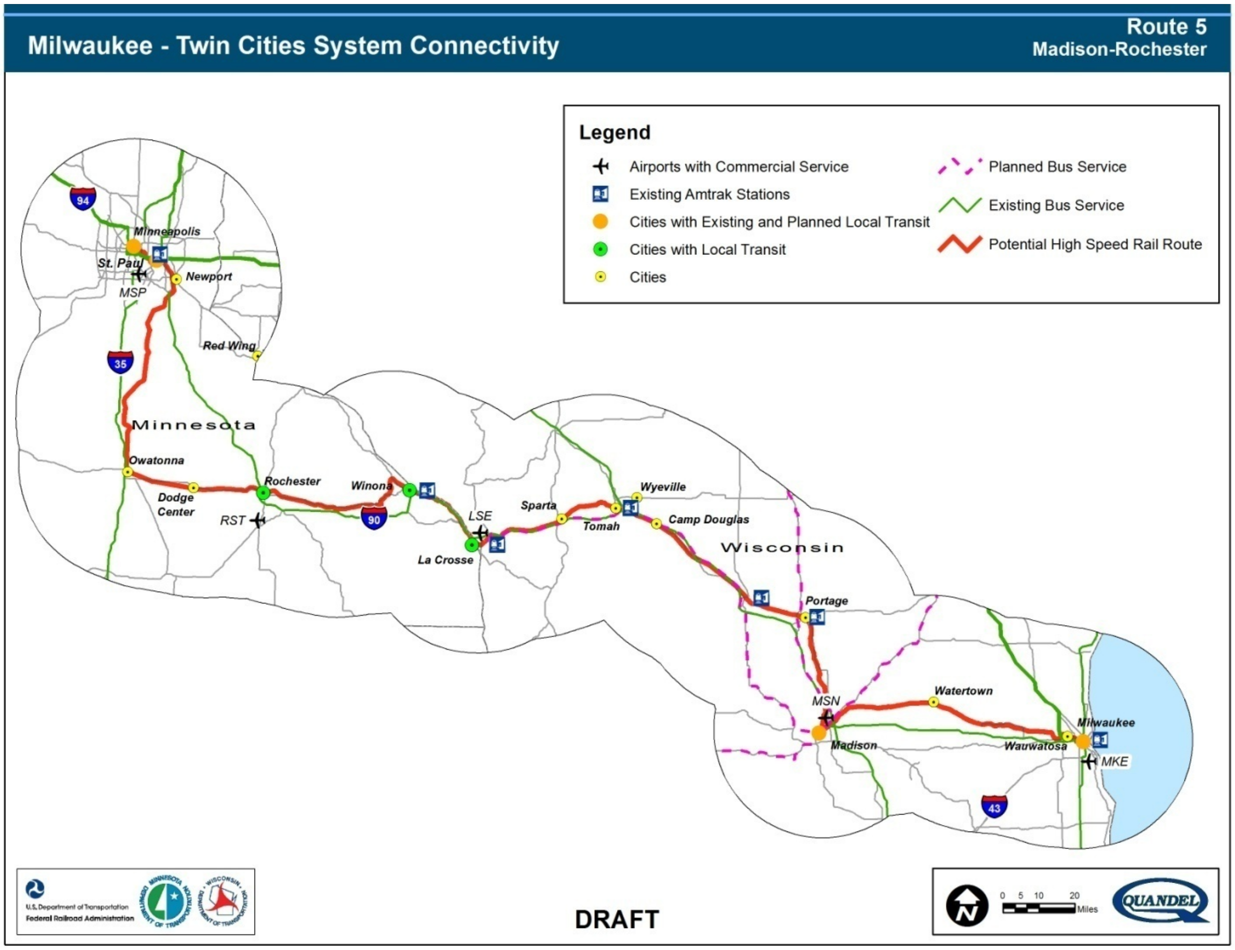
Table 10-6. System Connectivity – Route 5

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	5	N/A
Light Rail	N/A	N/A
Urban/Local Bus	6	N/A
Inter-city Bus	9	1
Highways	34	N/A
Airports	3	N/A
Bike Paths/Trails	6	N/A

77 www.wisconsinbiking.com

78 www.traillink.com

Figure 10-5. System Connectivity – Route 5



10.2.6 Route 6 – Madison-BNSF River

10.2.6.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 6 outside of the terminal areas.

Planned

Red Rock Corridor

An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN[79]. Hastings is a community along Route 6. See section 10.1.1 for a complete description of the project.

Dane County

Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. See section 10.2.4.1 for a description of the Dane County Commuter project.

10.2.6.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*

Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 6 include Milwaukee, WI, Portage, WI, Wisconsin Dells, WI, Tomah, WI, and La Crosse, WI[80]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 6.

10.2.6.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 6.

Planned

There are no planned light rail transit lines within communities along Route 6.

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79 www.redrockrail.org

80 www.amtrak.com

10.2.6.4 Local Bus Transit

Existing

Waukesha Metro Transit

Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit

The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

La Crosse Municipal Transit Utility

The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 6

The cities of Watertown, Portage, and Tomah along Route 6 have shared-ride taxi service.

Planned

There are no planned local bus lines within communities along Route 6.

10.2.6.5 Inter-City Bus

Existing

Route 6 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 6 are listed below.

- Madison:
  - Madison-Milwaukee (Badger)
  - Madison-Milwaukee-Chicago (Greyhound)
  - Madison-Chicago express (Megabus)
  - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
  - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul

(Jefferson Lines)

- Madison-Janesville-Chicago (Van Galder/Coach USA)
- Madison-Minneapolis express (Megabus)

- Wisconsin Dells: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire -Minneapolis/St, Paul
- Tomah: Chicago – Milwaukee – Madison - Wisconsin Dells - Eau Claire - Minneapolis/St, Paul (Greyhound).
- Sparta; Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 6 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)
- Portage (Madison-Wausau line)
- Wisconsin Dells (Madison-La Crosse line)
- Tomah (Madison-La Crosse line)
- Sparta (Madison-La Crosse line)[81]

10.2.6.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[82]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 6:

- Watertown (I-94, US 26)
- Portage (I-39, I-90/94, WI 33)

[81] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[82] Draft Purpose and Need Statement, January 2010

- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Tomah (I-90, I-94, WI 131, US 12)
- Sparta (I-90, WI 27/71)
- La Crosse (I-90, US 53, US 14, WI 35)
- Prescott (US 10, WI 35, WI 29)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 6.

10.2.6.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

Planned

There are no planned airports within communities along Route 6.

10.2.6.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 6:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- La Crosse - Great River Trail and La Crosse River Trail
- Sparta – La Crosse River Trail, Great River Road North Tour, and Elroy-Sparta State Trail
- Camp Douglas – Omaha Trail[83]
- Hastings – Mississippi River Trail[84]

Planned

[83] www.wisconsinbiking.com
[84] www.traillink.com

There are no planned bike paths/trails within communities along Route 6.

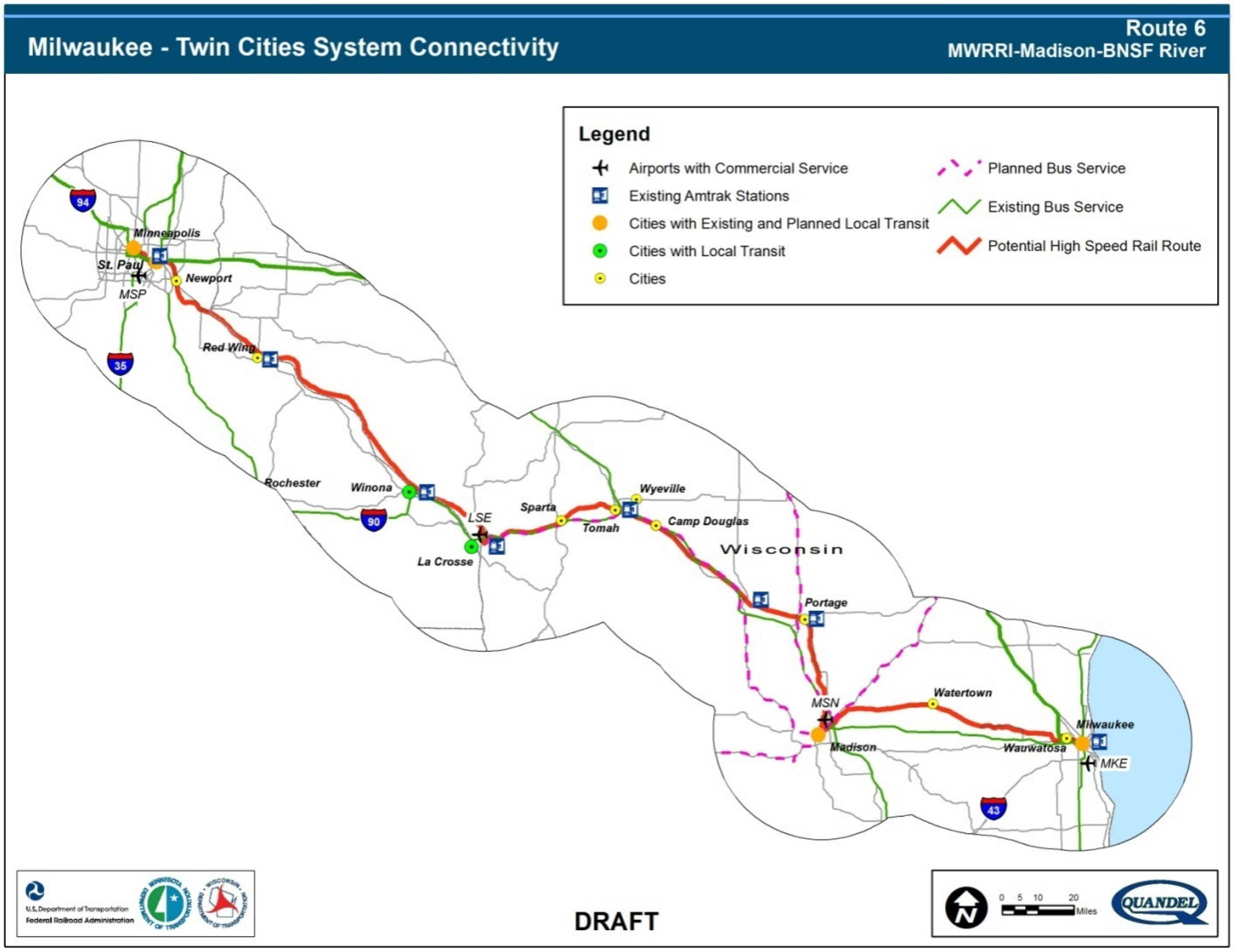
10.2.6.9 Summary of System Connectivity for Route 6

Table 10-7 and Figure 10-6 summarize the number of intermodal connections for each type of mode along Route 6. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-7. System Connectivity – Route 6

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	2
Inter-City Passenger Rail	4	N/A
Light Rail	N/A	N/A
Urban/Local Bus	4	N/A
Inter-city Bus	5	1
Highways	23	N/A
Airports	2	N/A
Bike Paths/Trails	5	N/A

Figure 10-6. System Connectivity – Route 6



10.2.7 Route 7– MWRRI-Madison-Prairie

10.2.7.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 7 outside of the terminal areas.

Planned

Red Rock Corridor
An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 7. See section 10.1.1 for a complete description of the project.

Dane County
Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. See section 10.2.4.1 for a description of the Dane County Commuter project.

10.2.7.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 7 include Milwaukee, WI, La Crosse, WI, Winona, MN, and Red Wing, MN[85]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 7.

10.2.7.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 7.

Planned

There are no planned light rail transit lines within communities along Route 7.

10.2.7.4 Local Bus Transit

Existing

Waukesha Metro Transit

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85 www.amtrak.com

Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit
The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

La Crosse Municipal Transit Utility
The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Winona Transit Service
The Winona Transit Service provides local bus service to Winona and Goodview, MN. See section 10.2.1.4 for a complete description of the Winona Transit Service.

Minnesota Valley Transit Authority
The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 7
Prairie du Chien is served by shared-ride taxi transit.

<u>Planned</u>

There are no planned local bus transit lines within communities along Route 7.

10.2.7.5 Inter-City Bus

<u>Existing</u>

Route 7 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 7 are listed below.

- Madison:
  - Madison-Milwaukee (Badger)
  - Madison-Milwaukee-Chicago (Greyhound)
  - Madison-Chicago express (Megabus)
  - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
  - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul (Jefferson Lines)

  - Madison-Janesville-Chicago (Van Galder/Coach USA)
  - Madison-Minneapolis express (Megabus)

- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)

Planned

- The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 7 include:
- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)[86]

10.2.7.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[87]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 7:

- Watertown (I-94, US 26)
- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Prairie du Chien (US 18, WI 27, WI 35)
- La Crosse (I-90, US 53, US 14, WI 35)
- Winona (US 61, US 14)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 7.

10.2.7.7 Airports

Existing

[86] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[87] Draft Purpose and Need Statement, January 2010

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

Planned

There are no planned airports within communities along Route 7.

10.2.7.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 7:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- La Crosse - Great River Trail and La Crosse River Trail[88]
- Winona – Mississippi River Trail
- Red Wing – Mississippi River Trail, Goodhue Pioneer Trail, and Cannon Valley Trail
- Hastings – Mississippi River Trail[89]

Planned

There are no planned bike paths/trails within communities along Route 7.

10.2.7.9 Summary of System Connectivity for Route 7

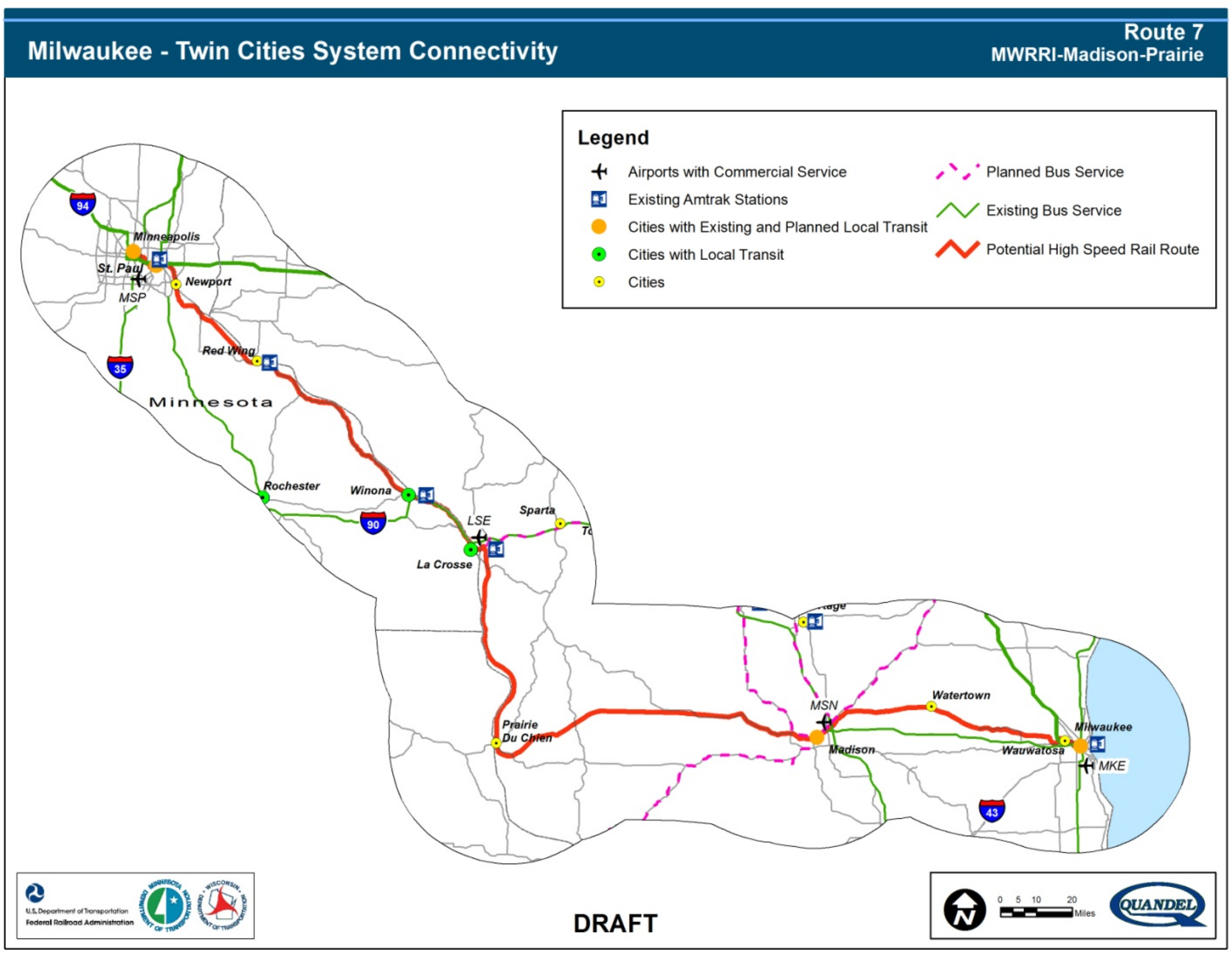
Table 10-8 and Figure 10-7 summarize the number of intermodal connections for each type of mode along Route 7. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

88 www.wisconsinbiking.com
89 www.traillink.com

Table 10-8. System Connectivity – Route 7

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	2
Inter-City Passenger Rail	3	N/A
Light Rail	N/A	N/A
Urban/Local Bus	5	N/A
Inter-city Bus	3	N/A
Highways	18	N/A
Airports	2	N/A
Bike Paths/Trails	5	N/A

Figure 10-7. System Connectivity – Route 7



10.2.8 Route 8– Madison-Prairie-Rochester

10.2.8.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 8 outside of the terminal areas.

Planned

Red Rock Corridor
An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 8. See section 10.1.1 for a complete description of the project.

Dane County
Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. See section 10.2.4.1 for a description of the Dane County Commuter project.

10.2.8.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 8 include Milwaukee, WI, La Crosse, WI, and Winona, MN[90]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

Dan Patch Rail Corridor
An inter-city rail link has been planned to connect the Twin Cities, MN, Northfield, MN, Albert Lea, MN and Kansas City, MO to one another via the Dan Patch rail corridor alignment. See section 10.1.2 for a description of the project.

10.2.8.3 Light Rail Transit

There are no existing or planned light rail transit lines within communities along Route 8.

10.2.8.4 Local Bus Transit

Existing

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha

90 www.amtrak.com

Metro Transit.

Madison Metro Transit

The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

La Crosse Municipal Transit Utility

The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Winona Transit Service

The Winona Transit Service provides local bus service to Winona and Goodview, MN. See section 10.2.1.4 for a complete description of the Winona Transit Service.

Rochester City Lines

Rochester City Lines provides local bus service within the Rochester area. See section 10.2.2.4 for a complete description of Rochester City Lines.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 8

The Prairie du Chien is served by shared-ride taxi transit.

<u>Planned</u>

There are no planned local bus transit lines within communities along Route 8.

10.2.8.5 Inter-City Bus

<u>Existing</u>

Route 8 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 8 are listed below.

- Madison:
    - Madison-Milwaukee (Badger)
    - Madison-Milwaukee-Chicago (Greyhound)
    - Madison-Chicago express (Megabus)
    - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
    - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul

(Jefferson Lines)

- Madison-Janesville-Chicago (Van Galder/Coach USA)
- Madison-Minneapolis express (Megabus)

- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)
- Winona: Madison – Sparta - La Crosse – Winona – Rochester - Minneapolis (Jefferson Lines)
- Rochester: Madison – Sparta - La Crosse – Winona – Rochester -Minneapolis (Jefferson Lines)
- Owatonna: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)
- Northfield: Minneapolis/St. Paul – Northfield – Owatonna - Mason City - Des Moines - Kansas City (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 8 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)[91]

10.2.8.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[92]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 8:

- Watertown (I-94, US 26)
- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Prairie du Chien (US 18, WI 27, WI 35)
- La Crosse (I-90, US 53, US 14, WI 35)

91 Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

92 Draft Purpose and Need Statement, January 2010

- Winona (US 61, US 14)
- Rochester (I-90, US 52, US 14, US 63)
- Owatonna (I-35, US 14, US 218)
- Inver Grove Heights (US 52, I-494)

Planned

There are no planned highways within communities along Route 8.

10.2.8.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Rochester International Airport
See section 10.2.2.7 for a description of the Rochester International Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

Planned

There are no planned airports within communities along Route 8.

10.2.8.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 8:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- La Crosse - Great River Trail and La Crosse River Trail[93]
- Winona – Mississippi River Trail[94]

Planned

There are no planned bike paths/trails within communities along Route 8.

[93] www.wisconsinbiking.com
[94] www.traillink.com

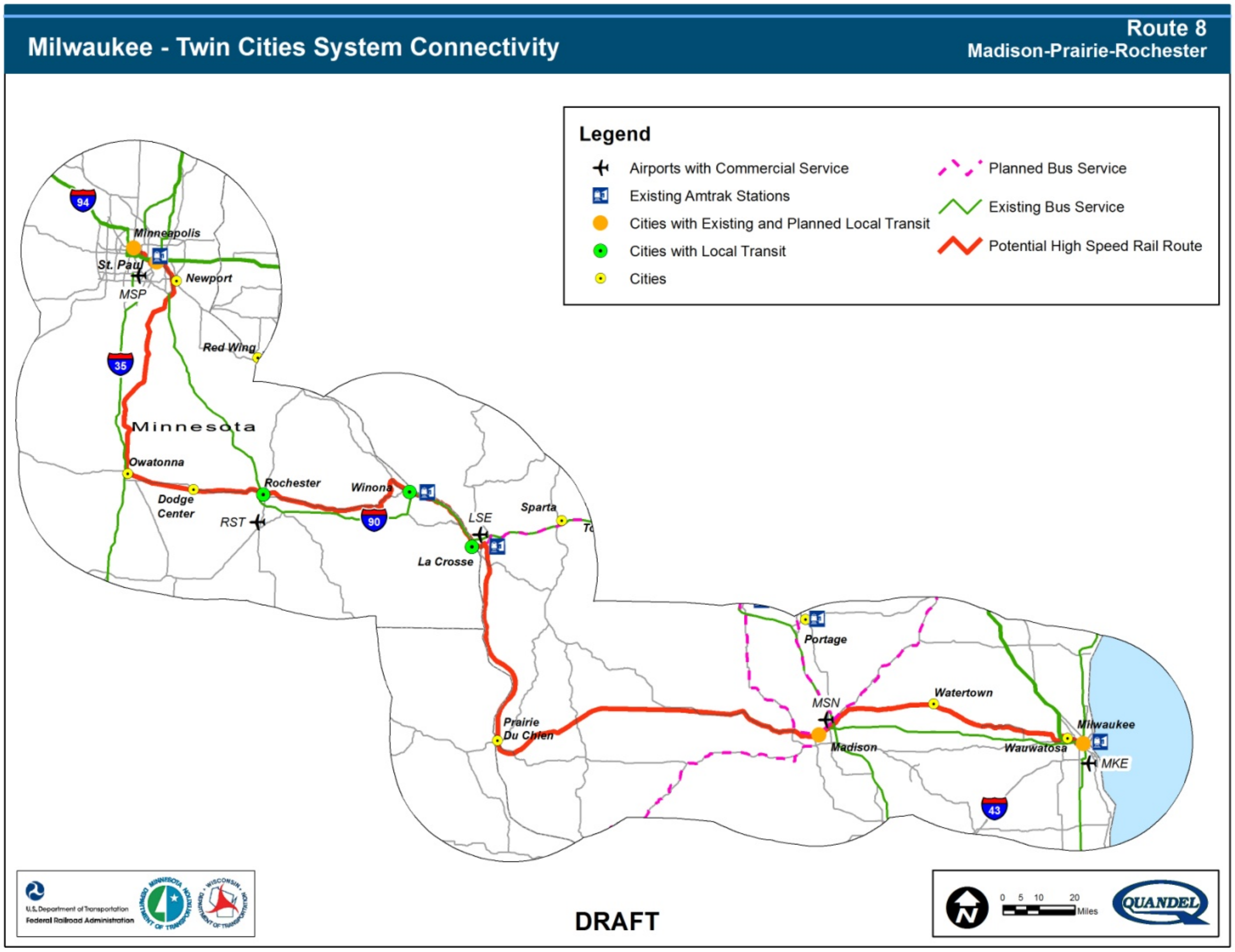
10.2.8.9 Summary of System Connectivity for Route 8

Table 10-9 and Figure 10-8 summarize the number of intermodal connections for each type of mode along Route 8. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-9. System Connectivity – Route 8

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	2
Inter-City Passenger Rail	2	N/A
Light Rail	N/A	N/A
Urban/Local Bus	6	N/A
Inter-city Bus	6	N/A
Highways	15	N/A
Airports	3	N/A
Bike Paths/Trails	3	N/A

Figure 10-8. System Connectivity – Route 8



10.2.9 Route 9 – Madison-Prairie-BNSF River

10.2.9.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 9 outside of the terminal areas.

Planned

Red Rock Corridor

An Alternatives Analysis has been completed for the Red Rock Corridor, a commuter rail line that will connect the Minneapolis Transportation Interchange, St. Paul, MN and Hastings, MN. Hastings is a community along Route 9. See section 10.1.1 for a complete description of the project.

Dane County

Transport 2020 completed an alternatives analysis and selected a locally preferred alternative for commuter rail service between Middleton, WI and Sun Prairie, WI through downtown Madison. See section 10.2.4.1 for a description of the Dane County Commuter project.

10.2.9.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*

Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 9 include Milwaukee, WI and La Crosse, WI[95]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 9.

10.2.9.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 9.

Planned

There are no planned light rail transit lines within communities along Route 9.

10.2.9.4 Local Bus Transit

Existing

[95] www.amtrak.com

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit
The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

La Crosse Municipal Transit Utility
The La Crosse Municipal Transit Utility (MTU) provides local bus service to La Crosse, French Island, and La Crescent, MN. See section 10.2.1.4 for a complete description of the La Crosse MTU.

Minnesota Valley Transit Authority
The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 9
The Prairie du Chien is served by shared-ride taxi transit.

Planned

There are no planned local bus transit routes within communities along Route 9.

10.2.9.5 Inter-City Bus

Existing

Route 9 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 8 are listed below.

- Madison:
    - Madison-Milwaukee (Badger)
    - Madison-Milwaukee-Chicago (Greyhound)
    - Madison-Chicago express (Megabus)
    - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
    - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul (Jefferson Lines)
    - Madison-Janesville-Chicago (Van Galder/Coach USA)
    - Madison-Minneapolis express (Megabus)

- La Crosse: Madison-Sparta-La Crosse-Winona-Rochester-Minneapolis (Jefferson Lines)

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 9 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)[96]

10.2.9.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[97]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 9:

- Watertown (I-94, US 26)
- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Prairie du Chien (US 18, WI 27, WI 35)
- La Crosse (I-90, US 53, US 14, WI 35)
- Prescott (US 10, WI 35, WI 29)
- Newport (US 61, I-494)

Planned

There are no planned highways within communities along Route 9.

10.2.9.7 Airports

Existing

La Crosse Municipal Airport
See section 10.2.1.7 for a description of the La Crosse Municipal Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

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[96] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[97] Draft Purpose and Need Statement, January 2010

Planned

There are no planned airports within communities along Route 9.

10.2.9.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 9:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- La Crosse - Great River Trail and La Crosse River Trail[98]
- Hastings – Mississippi River Trail[99]

Planned

There are no planned bike paths/trails within communities along Route 9.

10.2.9.9 Summary of System Connectivity for Route 9

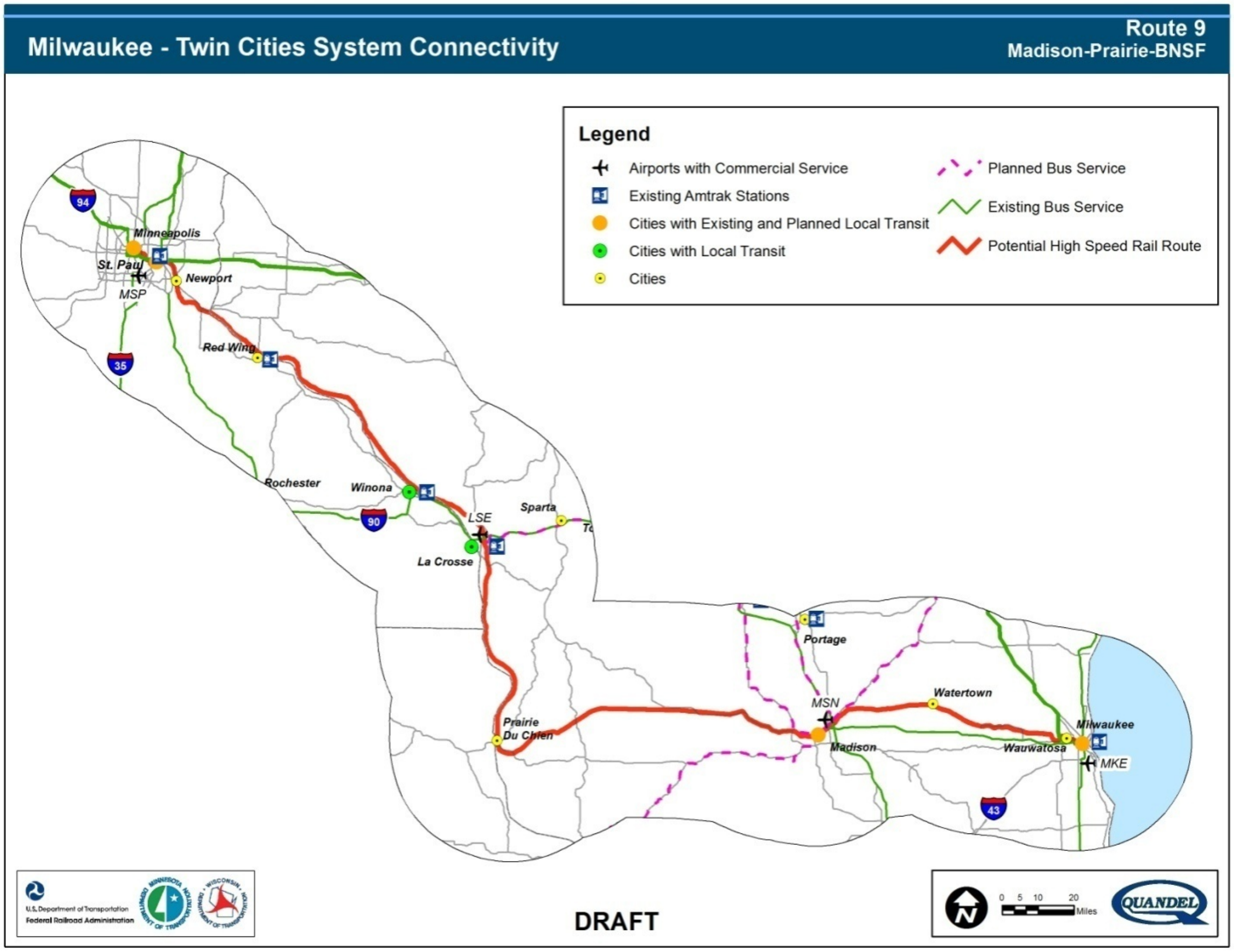
Table 10-10 and Figure 10-9 summarize the number of intermodal connections for each type of mode along Route 9. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-10. System Connectivity – Route 9

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	2
Inter-City Passenger Rail	1	N/A
Light Rail	N/A	N/A
Urban/Local Bus	4	N/A
Inter-city Bus	2	N/A
Highways	19	N/A
Airports	2	N/A
Bike Paths/Trails	3	N/A

98 www.wisconsinbiking.com
99 www.traillink.com

Figure 10-9. System Connectivity – Route 9



10.2.10 Route 10 – Amtrak-Eau Claire

10.2.10.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 10 outside of the terminal areas.

Planned

Gateway Corridor
A commuter rail link has been planned to connect Eau Claire, WI to the Twin Cities, MN. See section 10.1.1 for a complete description of the project.

10.2.10.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 10 include Milwaukee, WI, Columbus, Portage, WI, and Wisconsin Dells, WI[100]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 10.

10.2.10.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 10.

Planned

There are no planned light rail transit lines within communities along Route 10.

10.2.10.4 Local Bus Transit

Existing

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Eau Claire Transit
Eau Claire Transit operates 11 fixed-routes within the Eau Claire area. Eau Claire Transit utilizes a fleet of 22 low-floored, ramp-equipped buses. The 11 routes converge at a central hub – the downtown Transfer Center. The majority of the neighborhood

[100] www.amtrak.com

routes operate on an hourly frequency; while the more heavily traveled routes provide 30 minute service. Key destinations within the system include the downtown Transit Center, Chippewa Valley Regional Airport, the Court House, several malls/shopping centers, several hospitals, and University of Wisconsin-Eau Claire[101].

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 10

The cities of Watertown and Portage along Route 10 have shared-ride taxi transit service.

Planned

There are no planned local bus transit routes within communities along Route 10.

10.2.10.5 Inter-City Bus

Existing

Route 10 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 10 are listed below.

- Wisconsin Dells: Chicago – Milwaukee – Madison – Wisconsin Dells – Eau Claire – Minneapolis/St. Paul (Greyhound)
- Eau Claire:
    - Minneapolis/St. Paul – Eau Claire – Wausau – Green Bay – Milwaukee*
    - Minneapolis/St. Paul - Eau Claire – Madison – Milwaukee - Chicago
- Menomonie: Minneapolis/St. Paul – Menomonie – Eau Claire – Wausau – Green Bay – Milwaukee*
- Hudson: Minneapolis/St. Paul – Hudson – Eau Claire – Wausau – Green Bay – Milwaukee*

*Amtrak Thruway Service

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 10 include:

101 www.eauclairewi.gov/bus

- Columbus (Madison-Columbus – Fond du Lac – Oshkosh – Appleton – Green Bay line)
- Portage (Madison-Portage-Stevens Point-Wausau line)
- Eau Claire (Eau Claire – Duluth/Superior line)[102]

Amtrak Thruway Bus Service
Amtrak provides thruway bus service to connect Amtrak rail stations with other communities that are not directly served by passenger trains[103]. Columbus is planned to be an Amtrak Thruway stop on one of the planned inter-city bus routes in Wisconsin.

10.2.10.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[104]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 10:

- Watertown (I94, US 26)
- Columbus (US 151, WI 60, WI 89)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Black River Falls (I-94, US 12, WI 54, WI 27)
- Eau Claire (I-94, US 53, US 12, WI 29, WI 93, WI 37, WI 312)
- Menomonie (I-94, US 12, WI 29, WI 25)
- Hudson (I-94, US 12, WI 35)

Planned

There are no planned highways within communities along Route 10.

10.2.10.7 Airports

Existing

Chippewa Valley Regional Airport

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[102] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[103] www.amtrak.com

[104] Draft Purpose and Need Statement, January 2010

The Chippewa Valley Regional Airport (EAU) is located approximately 4 miles from downtown Eau Claire and 7 miles from downtown Chippewa Falls. Transportation options to and from (EAU) include Eau Claire City Transit, taxi service, and car rental service[105].

Planned

There are no planned airports within communities along Route 10.

10.2.10.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 10:

- Camp Douglas – Omaha Trail
- Eau Claire – Chippewa River State Trail[106]

Planned

There are no planned bike paths/trails within communities along Route 10.

10.2.10.9 Summary of System Connectivity for Route 10

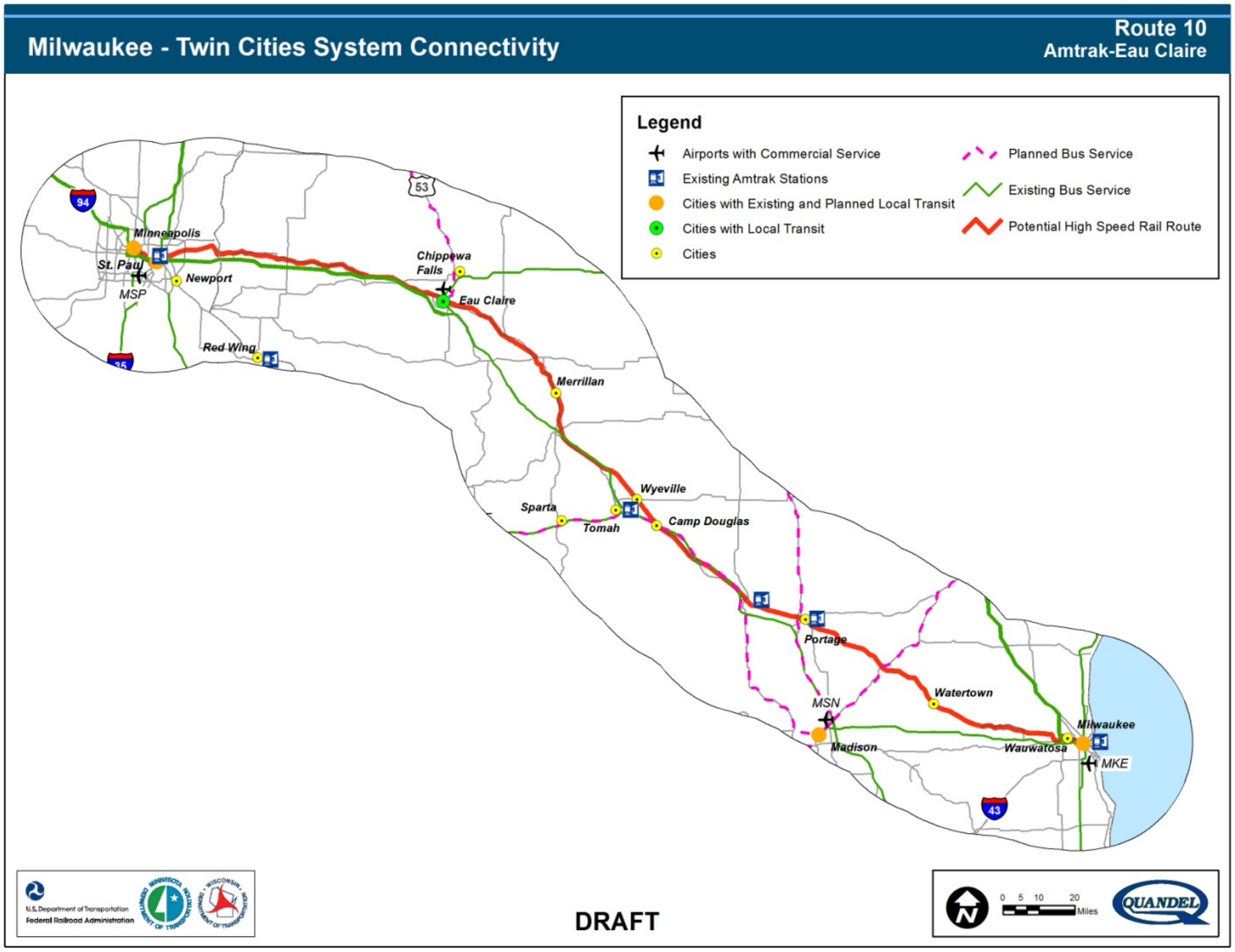
Table 10-11 and Figure 10-10 summarize the number of intermodal connections for each type of mode along Route 10. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-11. System Connectivity – Route 10

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	3	N/A
Light Rail	N/A	N/A
Urban/Local Bus	3	N/A
Inter-city Bus	4	2
Highways	29	N/A
Airports	1	N/A
Bike Paths/Trails	2	N/A

[105] http://chippewavalleyairport.com/
[106] www.wisconsinbiking.com

Figure 10-10. System Connectivity – Route 10



10.2.11 Route 11 – Madison-Eau Claire

10.2.11.1 Commuter Rail

<u>Existing</u>

There are no existing commuter rail lines along Route 11 outside of the terminal areas.

<u>Planned</u>

Gateway Corridor
A commuter rail link has been planned to connect Eau Claire, WI to the Twin Cities, MN. See section 10.1.1 for a complete description of the project.

10.2.11.2 Inter-City Passenger Rail

<u>Existing</u>

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 11 include Milwaukee, WI, Portage, WI and Wisconsin Dells, WI[107]. See section 10.1.2 for a complete description of the *Empire Builder* service.

<u>Planned</u>

There are no planned inter-city passenger rail lines within communities along Route 11.

10.2.11.3 Light Rail Transit

<u>Existing</u>
There are no existing light rail transit lines within communities along Route 11.

<u>Planned</u>
There are no planned light rail transit lines within communities along Route 11.

10.2.11.4 Local Bus Transit

<u>Existing</u>

Waukesha Metro Transit
Waukesha Metro Transit provides local bus service throughout the western suburbs of Waukesha and Brookfield. See section 10.2.1.4 for a complete description of Waukesha Metro Transit.

Madison Metro Transit
The Madison Metro Transit provides local bus service within the Madison area. See section 10.2.4.4 for a complete description of Madison Metro Transit.

[107] www.amtrak.com

Eau Claire Transit
Eau Claire Transit provides local bus service within the Eau Claire area. See section 10.2.10.4 for a description of Eau Claire Transit.

Minnesota Valley Transit Authority
The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Additional Local Transit Services along Route 11
The cities of Watertown and Portage along Route 11 have shared-ride taxi transit service.

Planned

There are no planned local bus transit routes within communities along Route 11.

10.2.11.5 Inter-City Bus

Existing

Route 11 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 11 are listed below.

- Madison:
  - Madison-Milwaukee (Badger)
  - Madison-Milwaukee-Chicago (Greyhound)
  - Madison-Chicago express (Megabus)
  - Chicago-Milwaukee-Madison-Wisconsin Dells-Eau Claire-Minneapolis/St. Paul (Greyhound)
  - Milwaukee-Madison-La Crosse-Winona-Rochester-Minneapolis/St. Paul (Jefferson Lines)
  - Madison-Janesville-Chicago (Van Galder/Coach USA)
  - Madison-Minneapolis express (Megabus)
- Wisconsin Dells: Chicago – Milwaukee – Madison – Wisconsin Dells – Eau Claire – Minneapolis/St. Paul (Greyhound)
- Eau Claire:
  - Minneapolis/St. Paul – Eau Claire – Wausau – Green Bay – Milwaukee*
  - Minneapolis/St. Paul 0 Eau Claire – Madison – Milwaukee - Chicago
- Menomonie: Minneapolis/St. Paul – Menomonie – Eau Claire – Wausau – Green

Bay – Milwaukee*

- Hudson: Minneapolis/St. Paul – Hudson – Eau Claire – Wausau – Green Bay – Milwaukee*

*Amtrak Thruway Service

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 11 include:

- Madison (Madison-Wausau, Madison-Dubuque, Madison-La Crosse, and Madison-Green Bay lines)
- Portage (Madison-Portage-Stevens Point-Wausau line)
- Eau Claire (Eau Claire – Duluth/Superior line)[108]

10.2.11.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[109]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 11:

- Madison (I-90/94/39, US 12, US 18, US 151, US 14)
- Portage (I-39, I-90/94, WI 33)
- Wisconsin Dells (I-90/94, US 12)
- Camp Douglas (I-90/94)
- Black River Falls (I-94, US 12, WI 54, WI 27)
- Eau Claire (I-94, US 53, US 12, WI 29, WI 93, WI 37, WI 312)
- Menomonie (I-94, US 12, WI 29, WI 25)
- Hudson (I-94, US 12, WI 35)

Planned

108 Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

109 Draft Purpose and Need Statement, January 2010

There are no planned highways within communities along Route 11.

10.2.11.7 Airports

Existing

Chippewa Valley Regional Airport
See section 10.2.10.7 for a description of the Chippewa Valley Regional Airport.

Dane County Regional Airport
See section 10.2.4.7 for a description of the Dane County Regional Airport.

Planned

There are no planned airports within communities along Route 11.

10.2.11.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 11:

- Madison - Badger State Trail, Southwest Trail, Capital City Trail, Military Ridge State Trail, and Glacial Drumlin State Trail
- Camp Douglas – Omaha Trail
- Eau Claire – Chippewa River State Trail[110]

Planned

There are no planned bike paths/trails within communities along Route 11.

10.2.11.9 Summary of System Connectivity for Route 11

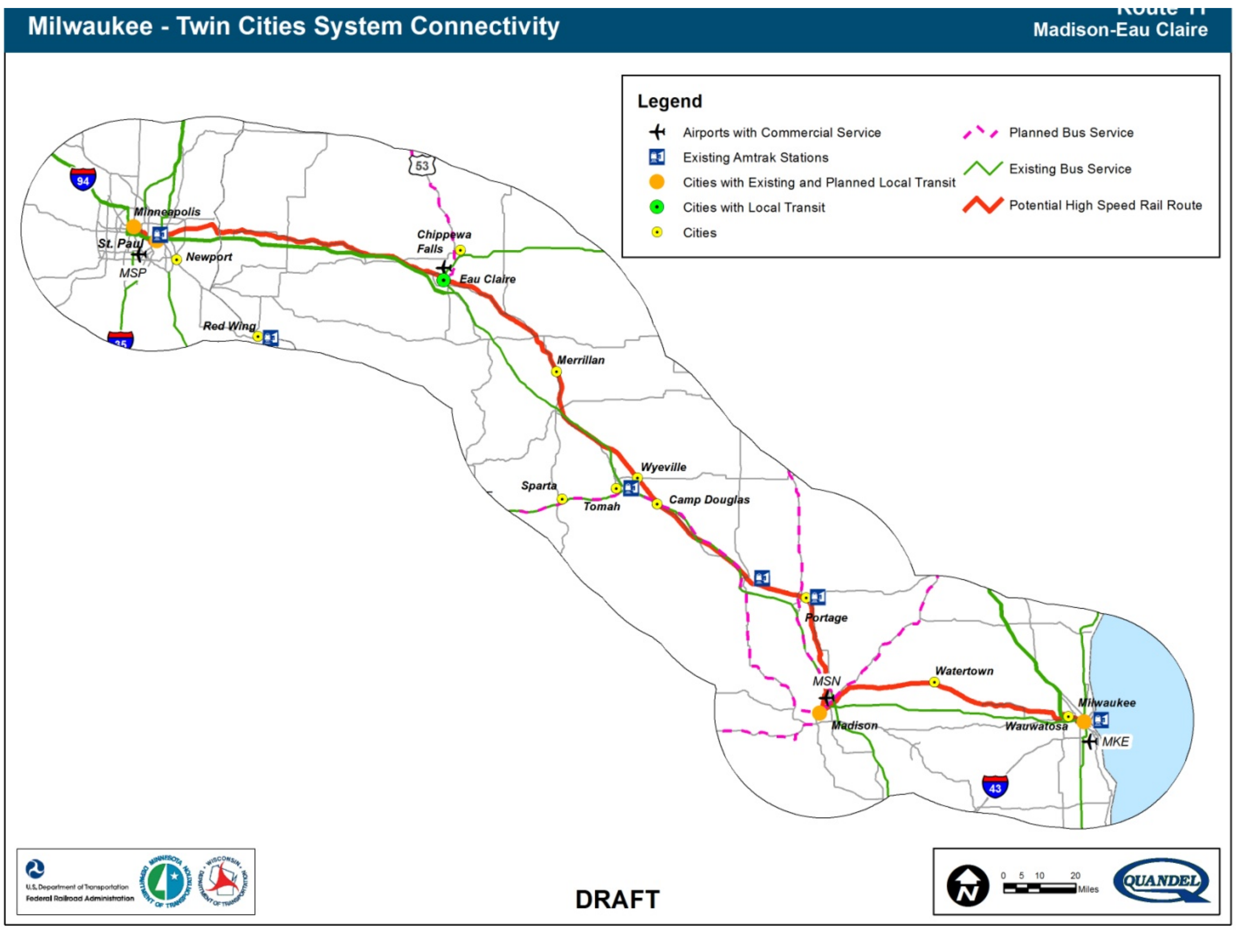
Table 10-12 and Figure 10-11 summarize the number of intermodal connections for each type of mode along Route 11. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

[110] www.wisconsinbiking.com

Table 10-12. System Connectivity – Route 11

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	2	N/A
Light Rail	N/A	N/A
Urban/Local Bus	4	N/A
Inter-city Bus	5	1
Highways	29	N/A
Airports	2	N/A
Bike Paths/Trails	3	N/A

Figure 10-11. System Connectivity – Route 11



10.2.12 Route 12A – Wyeville-Eau Claire

10.2.12.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 12A outside of the terminal areas.

Planned

Gateway Corridor
A commuter rail link has been planned to connect Eau Claire, WI to the Twin Cities, MN. See section 10.1.1 for a complete description of the project.

10.2.12.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 12A include Milwaukee, WI[111]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 12A.

10.2.12.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 12A.

Planned

There are no planned light rail transit lines within communities along Route 12A.

10.2.12.4 Local Bus Transit

Existing

Eau Claire Transit
Eau Claire Transit provides local bus service within the Eau Claire area. See section 10.2.10.4 for a description of Eau Claire Transit.

Minnesota Valley Transit Authority
The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Planned

[111] www.amtrak.com

There are no planned local bus transit routes within communities along Route 12A.

10.2.12.5 Inter-City Bus

Existing

Route 12A crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 12A are listed below.

- Eau Claire:
    - Minneapolis/St. Paul – Eau Claire – Wausau – Green Bay – Milwaukee*
    - Minneapolis/St. Paul - Eau Claire – Madison – Milwaukee - Chicago
- Menomonie: Minneapolis/St. Paul – Menomonie – Eau Claire – Wausau – Green Bay – Milwaukee*
- Hudson: Minneapolis/St. Paul – Hudson – Eau Claire – Wausau – Green Bay – Milwaukee*

*Amtrak Thruway Service

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 12A include:

- Eau Claire (Eau Claire – Duluth/Superior line)[112]

10.2.12.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[113]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 12A:

- Beaver Dam (US 151, WI 33)
- Endeavor (I-39/US 51)
- Necedeh (WI 21, WI 80)

[112] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[113] Draft Purpose and Need Statement, January 2010

- Black River Falls (I-94, US 12, WI 54, WI 27)
- Eau Claire (I-94, US 53, US 12, WI 29, WI 93, WI 37, WI 312)
- Menomonie (I-94, US 12, WI 29, WI 25)
- Hudson (I-94, US 12, WI 35)

Planned

There are no planned highways within communities along Route 12A.

10.2.12.7 Airports

Existing

Chippewa Valley Regional Airport

The Chippewa Valley Regional Airport (EAU) is located approximately 4 miles from downtown Eau Claire and 7 miles from downtown Chippewa Falls. Transportation options to and from (EAU) include Eau Claire City Transit, taxi service, and car rental service[114].

Planned

There are no planned airports within communities along Route 12A.

10.2.12.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 12A:

- Eau Claire – Chippewa River State Trail[115]

Planned

There are no planned bike paths/trails within communities along Route 12A.

10.2.12.9 Summary of System Connectivity for Route 12A

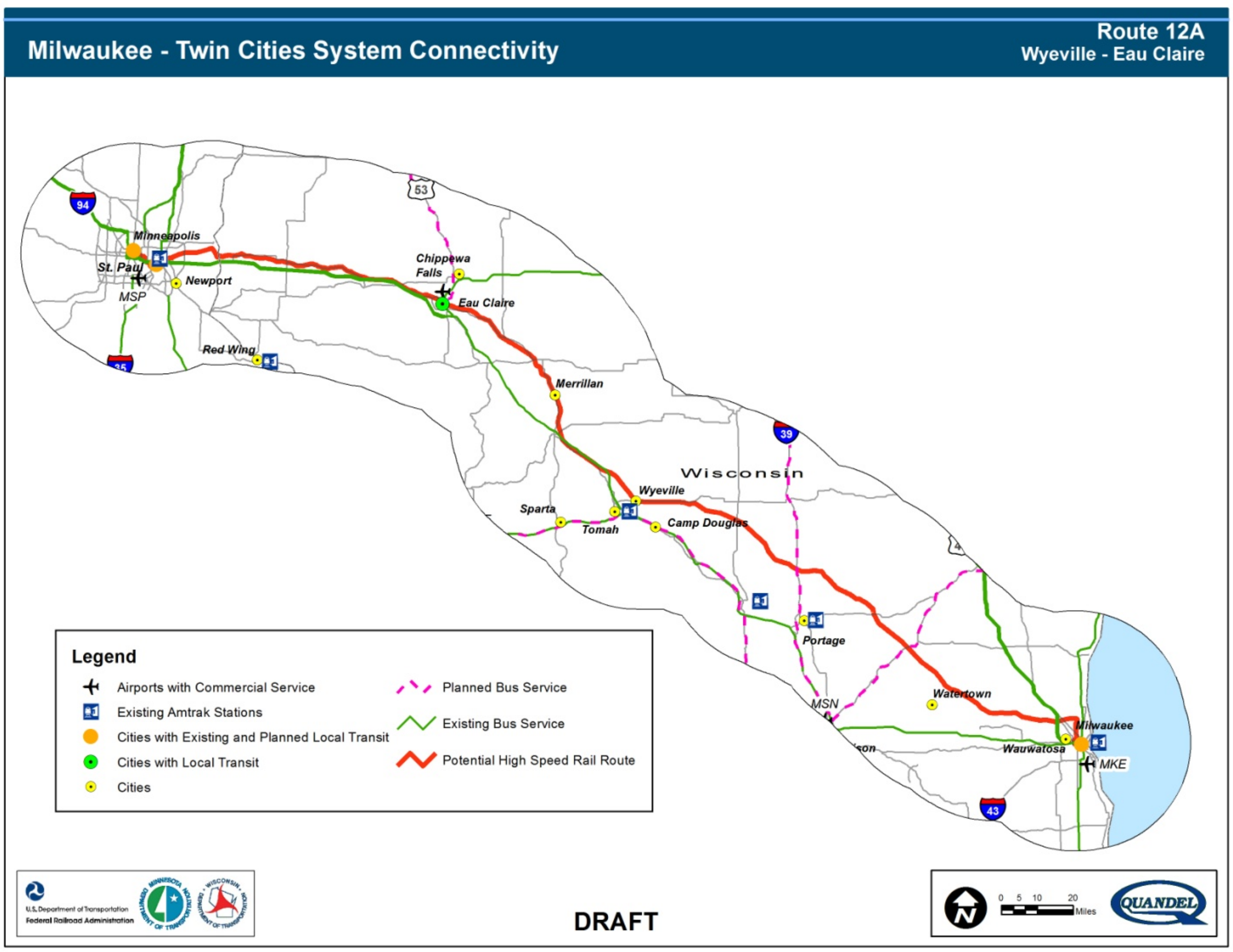
Table 10-13 and Figure 10-12 summarize the number of intermodal connections for each type of mode along Route 12A. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

[114] http://chippewavalleyairport.com/
[115] www.wisconsinbiking.com

Table 10-13. System Connectivity – Route 12A

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	N/A	N/A
Light Rail	N/A	N/A
Urban/Local Bus	2	N/A
Inter-city Bus	3	N/A
Highways	23	N/A
Airports	1	N/A
Bike Paths/Trails	1	N/A

Figure 10-12. System Connectivity – Route 12A



10.2.13 Route 13 – Milwaukee-Fond du Lac-Eau Claire

10.2.13.1 Commuter Rail

Existing

There are no existing commuter rail lines along Route 13 outside of the terminal areas.

Planned

Gateway Corridor
A commuter rail link has been planned to connect Eau Claire, WI to the Twin Cities, MN. See section 10.1.1 for a complete description of the project.

10.2.13.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*
Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 13 include Milwaukee, WI[116]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 13.

10.2.13.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 13.

Planned

There are no planned light rail transit lines within communities along Route 13.

10.2.13.4 Local Bus Transit

Existing

Fond du Lac Area Transit
The Fond du Lac Area Transit operates 9 fixed bus routes within the Fond du Lac area. Key destinations within the system include various area elementary, middle, and high schools, the Greyhound Bus station, residential areas, the Fond du Lac Industrial Park, and University of Wisconsin-Fond du Lac[117].

Oshkosh Transit System
The Oshkosh Transit System operates 9 routes throughout the Oshkosh area. The downtown transit center is located at Pearl and Market Streets in downtown Oshkosh.

116 www.amtrak.com

117 http://www.ci.fond-du-lac.wi.us/transit/

Key destinations within the system include various parks, downtown Oshkosh, Wittman Airport, the Greyhound Bus station, and the University of Wisconsin-Oshkosh[118].

Valley Transit

Valley Transit operates 16 routes throughout the Fox Valley area of Wisconsin. Key destinations within the system include each of the communities within the Fox Valley area, several colleges, Outagamie County, and Neenah, which is a community along Route 13[119].

Stevens Point Transit

Stevens Point Transit operates 8 routes throughout the Stevens Point area. Service is provided to Whiting, Park Ridge, and Plover communities. The downtown transit plaza is located at the CenterPoint Marketplace. Other destinations include the Stevens Point business park and the University of Wisconsin-Stevens Point[120].

Eau Claire Transit

Eau Claire Transit provides local bus service within the Eau Claire area. See section 10.2.10.4 for a description of Eau Claire Transit.

Minnesota Valley Transit Authority

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

Planned

There are no planned local bus transit routes within communities along Route 13.

10.2.13.5 Inter-City Bus

Existing

Route 13 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 13 are listed below.

- Fond du Lac:
    - Milwaukee-Fond du Lac-Oshkosh-Appleton-Stevens Point-Wausau*
    - Chicago-Milwaukee-Fond du Lac-Green Bay
- Oshkosh:
    - Milwaukee-Fond du Lac- Oshkosh-Appleton-Stevens Point-Wausau*

118 http://www.ci.oshkosh.wi.us/Transit/index.htm

119 http://www.appleton.org/departments/?department=fb4dcfb8d520

120 http://stevenspoint.com/index.aspx?NID=257

  - Chicago-Milwaukee-Fond du Lac-Oshkosh-Appleton-Green Bay
- Stevens Point: Milwaukee-Appleton-Stevens Point-Wausau*
- Eau Claire:
  - Minneapolis/St. Paul – Eau Claire – Wausau – Green Bay – Milwaukee*
  - Minneapolis/St. Paul - Eau Claire – Madison – Milwaukee - Chicago
- Menomonie: Minneapolis/St. Paul – Menomonie – Eau Claire – Wausau – Green Bay – Milwaukee*
- Hudson: Minneapolis/St. Paul – Hudson – Eau Claire – Wausau – Green Bay – Milwaukee*

*Amtrak Thruway Service

Planned

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 13 include:

- Fond du Lac (Madison-Columbus-Fond du Lac-Oshkosh-Appleton-Green Bay line)
- Oshkosh (Madison-Columbus-Fond du Lac-Oshkosh-Appleton-Green Bay line)
- Stevens Point (Eau Claire- Duluth/Superior line)
- Eau Claire (Eau Claire – Duluth/Superior line)[121]

10.2.13.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[122]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 13:

- West Bend (US 45, WI 33, WI 144)
- Fond du Lac (US 41, US 45, US 151, WI 23)
- Oshkosh (US 41, US 45, WI 21, WI 76)

[121] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[122] Draft Purpose and Need Statement, January 2010

- Neenah (US41, US 10, WI 114, WI 47)
- Stevens Point (I-39, US 10, US 51, WI 66)
- Chippewa Falls (US 53, WI 29, WI 124)
- Eau Claire (I-94, US 53, US 12, WI 29, WI 93, WI 37, WI 312)
- Menomonie (I-94, US 12, WI 29, WI 25)
- Hudson (I-94, US 12, WI 35)

Planned

There are no planned highways within communities along Route 13.

10.2.13.7 Airports

Existing

Outagamie County Regional Airport
The Outagamie County Regional Airport (ATW) is located approximately 6 miles northwest of Neenah, WI. Transportation options to and from ATW include taxi services and car rental services[123].

Chippewa Valley Regional Airport
See section 10.10.7.1 for a description of the Chippewa Valley Regional Airport.

Planned
There are no planned airports within communities along Route 13.

10.2.13.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 13:

- Eau Claire – Chippewa River State Trail
- Fond du Lac - Wild Goose State Trail
- Stevens Point – Green Circle State Trail
- Chippewa Falls – Old Abe State Trail[124]

Planned

There are no planned bike paths/trails within communities along Route 13.

[123] http://www.atwairport.com/
[124] www.wisconsinbiking.com

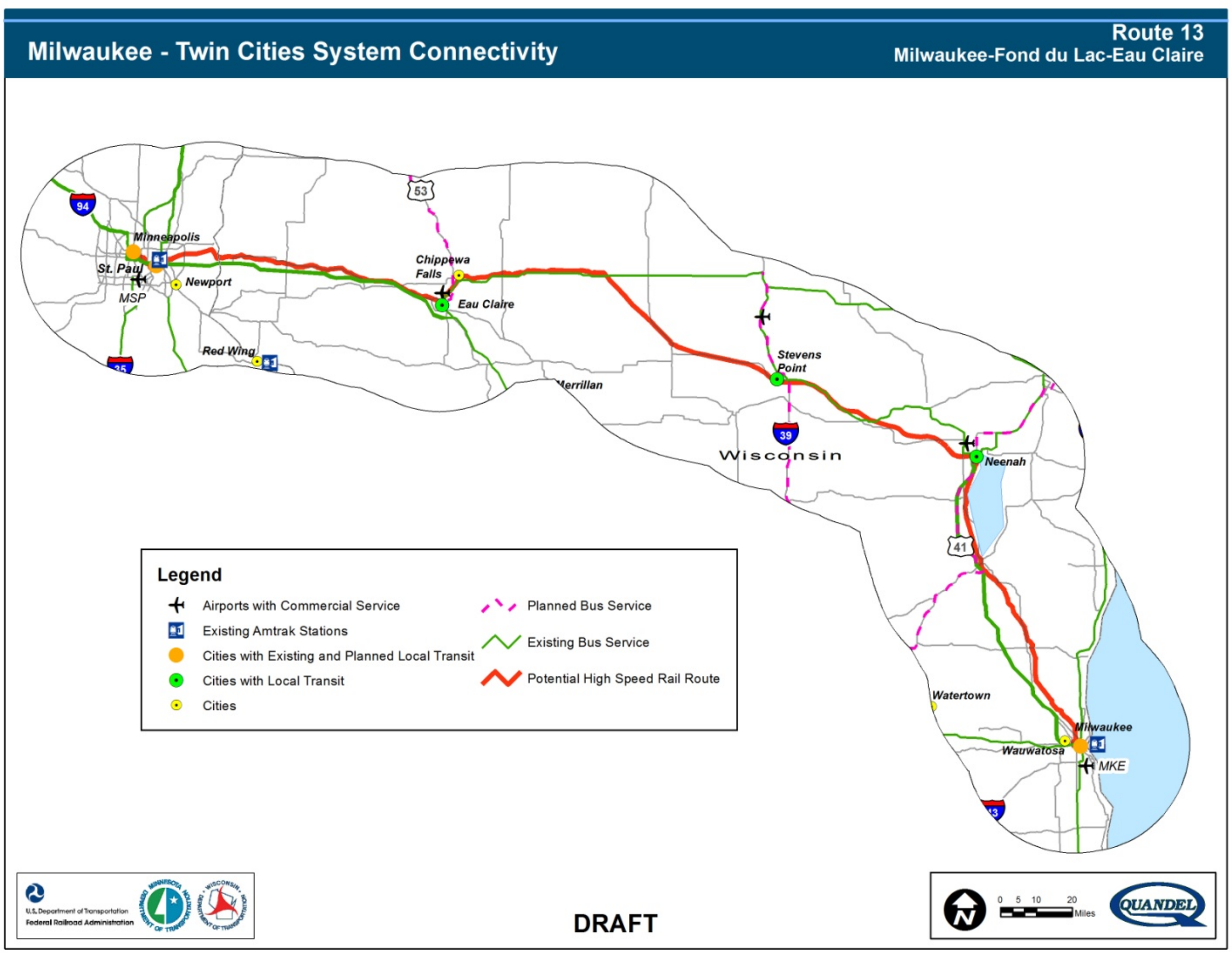
10.2.13.9 Summary of System Connectivity for Route 13

Table 10-14 and Figure 10-13 summarize the number of intermodal connections for each type of mode along Route 13. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-14. System Connectivity – Route 13

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	1
Inter-City Passenger Rail	N/A	N/A
Light Rail	N/A	N/A
Urban/Local Bus	6	N/A
Inter-city Bus	6	N/A
Highways	36	N/A
Airports	2	N/A
Bike Paths/Trails	4	N/A

Figure 10-13. System Connectivity – Route 13



10.2.14 Route 14 – Milwaukee-Fond du Lac-Chip-TC

10.2.14.1 Commuter Rail

There are no existing or planned commuter rail lines along Route 14 outside of the terminal areas.

10.2.14.2 Inter-City Passenger Rail

Existing

Amtrak *Empire Builder*

Amtrak provides rail transportation through the *Empire Builder*, a long-distance service between Chicago and Seattle/Portland. Stations along Route 14 include Milwaukee, WI[125]. See section 10.1.2 for a complete description of the *Empire Builder* service.

Planned

There are no planned inter-city passenger rail lines within communities along Route 14.

10.2.14.3 Light Rail Transit

Existing

There are no existing light rail transit lines within communities along Route 14.

Planned

There are no planned light rail transit lines within communities along Route 14.

10.2.14.4 Local Bus Transit

Existing

Fond du Lac Area Transit

The Fond du Lac Area Transit provides bus service to the Fond du Lac area. See section 10.2.13.4 for a description of Fond du Lac Area Transit.

Oshkosh Transit System

The Oshkosh Transit System provides bus service to the Oshkosh area. See section 10.2.13.4 for a description of Oshkosh Transit System.

Valley Transit

Valley Transit provides bus service to the Fox Valley area, including Neenah, a community along Route 14. See section 10.2.13.4 for a description of Valley Transit.

Stevens Point Transit

Stevens Point Transit provides bus service to the Stevens Point area. See section 10.2.13.4 for a description of Stevens Point Transit.

Minnesota Valley Transit Authority

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125 www.amtrak.com

The Minnesota Valley Transit Authority (MVTA) provides bus service to the Minnesota Valley Area of Minnesota. See section 10.2.1.4 for a description of MVTA.

<u>Planned</u>

There are no planned local bus transit routes within communities along Route 14.

10.2.14.5 Inter-City Bus

<u>Existing</u>

Route 14 crosses existing inter-city bus routes providing potential intermodal facility opportunities. The existing bus routes serving communities along Route 14 are listed below.

- Fond du Lac:
  - Milwaukee-Fond du Lac-Oshkosh-Appleton-Stevens Point-Wausau*
  - Chicago-Milwaukee-Fond du Lac-Green Bay
- Oshkosh:
  - Milwaukee-Fond du Lac- Oshkosh-Appleton-Stevens Point-Wausau*
  - Chicago-Milwaukee-Fond du Lac-Oshkosh-Appleton-Green Bay
- Stevens Point: Milwaukee-Appleton-Stevens Point-Wausau*
- Chippewa Falls: Minneapolis/St. Paul-Eau Claire-Wausau-Green Bay-Milwaukee*

*Amtrak Thruway Service

<u>Planned</u>

The Wisconsin DOT Inter-city bus program has planned for six new bus routes throughout the state. The Request for Proposals process has been completed and operators have been selected and notified. The new routes are expected to be online the second half of 2011. Proposed stops along Route 14 include:

- Fond du Lac (Madison-Columbus-Fond du Lac-Oshkosh-Appleton-Green Bay line)
- Oshkosh (Madison-Columbus-Fond du Lac-Oshkosh-Appleton-Green Bay line)
- Stevens Point (Eau Claire- Duluth/Superior line)

- Chippewa Falls (Eau Claire- Duluth/Superior line)[126]

10.2.14.6 Highways

Existing

As discussed in the Draft Purpose and Need statement, population and traffic on roadways is expected to increase significantly by the year 2030[127]. Therefore, intermodal connectivity between highways and high-speed rail will become increasingly important. The following is a list of cities and major highways along Route 14:

- West Bend (US 45, WI 33, WI 144)
- Fond du Lac (US 41, US 45, US 151, WI 23)
- Oshkosh (US 41, US 45, WI 21, WI 76)
- Neenah (US 41, US 10, WI 114, WI 47)
- Stevens Point (I-39, US 10, US 51, WI 66)
- Chippewa Falls (US 53, WI 29, WI 124)
- New Richmond (WI 65, WI 64)

Planned

There are no planned highways within communities along Route 14.

10.2.14.7 Airports

Existing

Outagamie County Regional Airport
See section 10.2.13.7 for a description of the Outagamie County Regional airport.

Chippewa Valley Regional Airport
See section 10.2.10.7 for a description of the Chippewa Valley Regional Airport.

Planned
There are no planned airports within communities along Route 14.

10.2.14.8 Bike Paths/Trails

Existing

The following is a list of cities and bike paths/trails that intersect Route 14:

[126] Request for Proposal for Wisconsin Intercity Busy Assistance Program (85.26)/Federal Transit Administration Intercity Bus Program (5311(f)), RFP# 267880, Issued by State of Wisconsin, Department of Transportation, Division of Transportation Investment Management, Bureau of Transit, Local Roads, Railroads, and Harbors

[127] Draft Purpose and Need Statement, January 2010

- Fond du Lac - Wild Goose State Trail
- Stevens Point – Green Circle State Trail
- Chippewa Falls – Old Abe State Trail[128]

Planned

There are no planned bike paths/trails within communities along Route 14.

10.2.14.9 Summary of System Connectivity for Route 14

Table 10-15 and Figure 10-14 summarize the number of intermodal connections for each type of mode along Route 14. The method for quantifying the number of intermodal connections is described in section 10.2.1.9.

Table 10-15. System Connectivity – Route 14

	Number of Intermodal Connections	
Mode	**Existing**	**Planned**
Commuter Rail	N/A	N/A
Inter-City Passenger Rail	N/A	N/A
Light Rail	N/A	N/A
Urban/Local Bus	5	N/A
Inter-city Bus	4	N/A
Highways	24	N/A
Airports	2	N/A
Bike Paths/Trails	3	N/A

128 www.wisconsinbiking.com

Figure 10-14. System Connectivity – Route 14

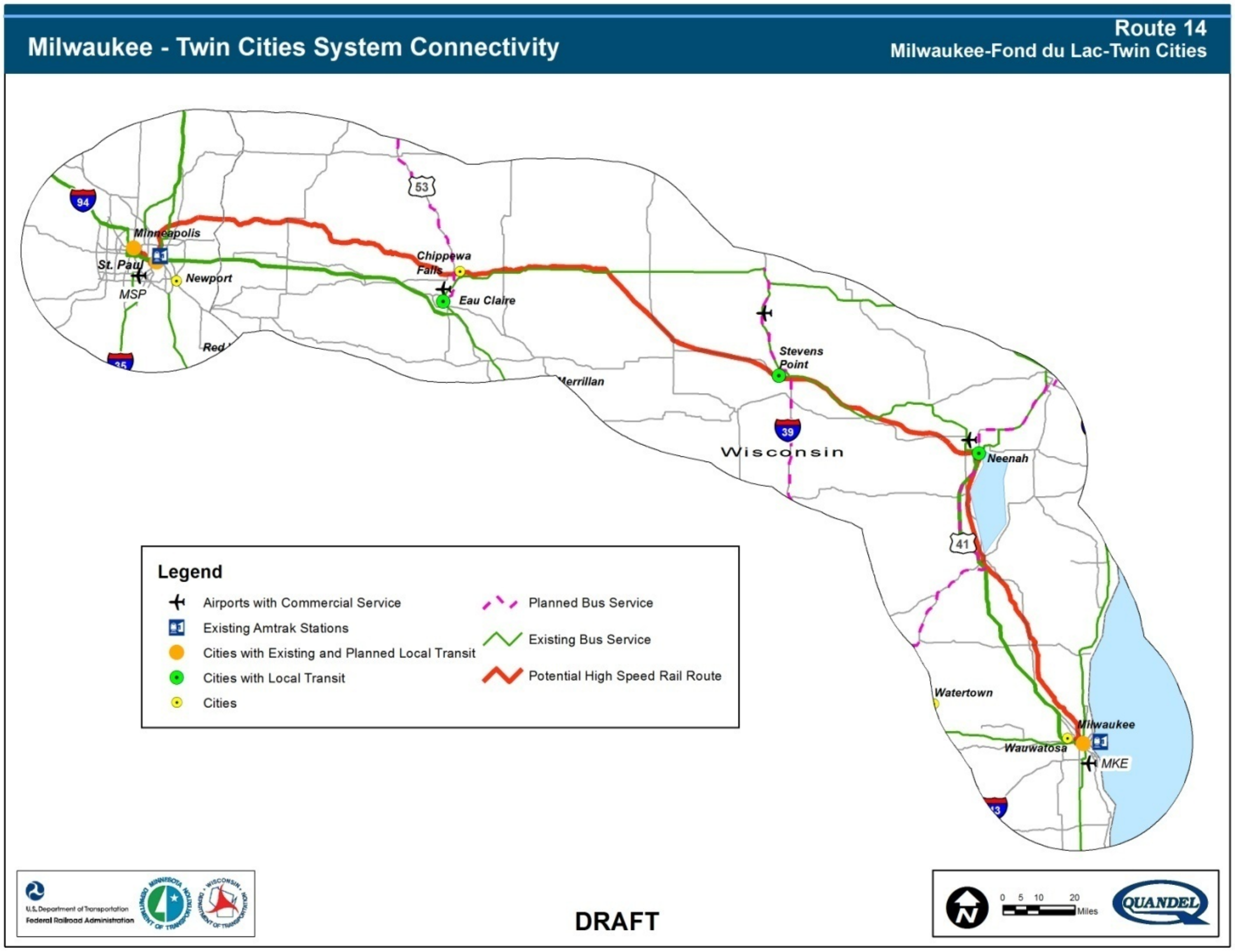
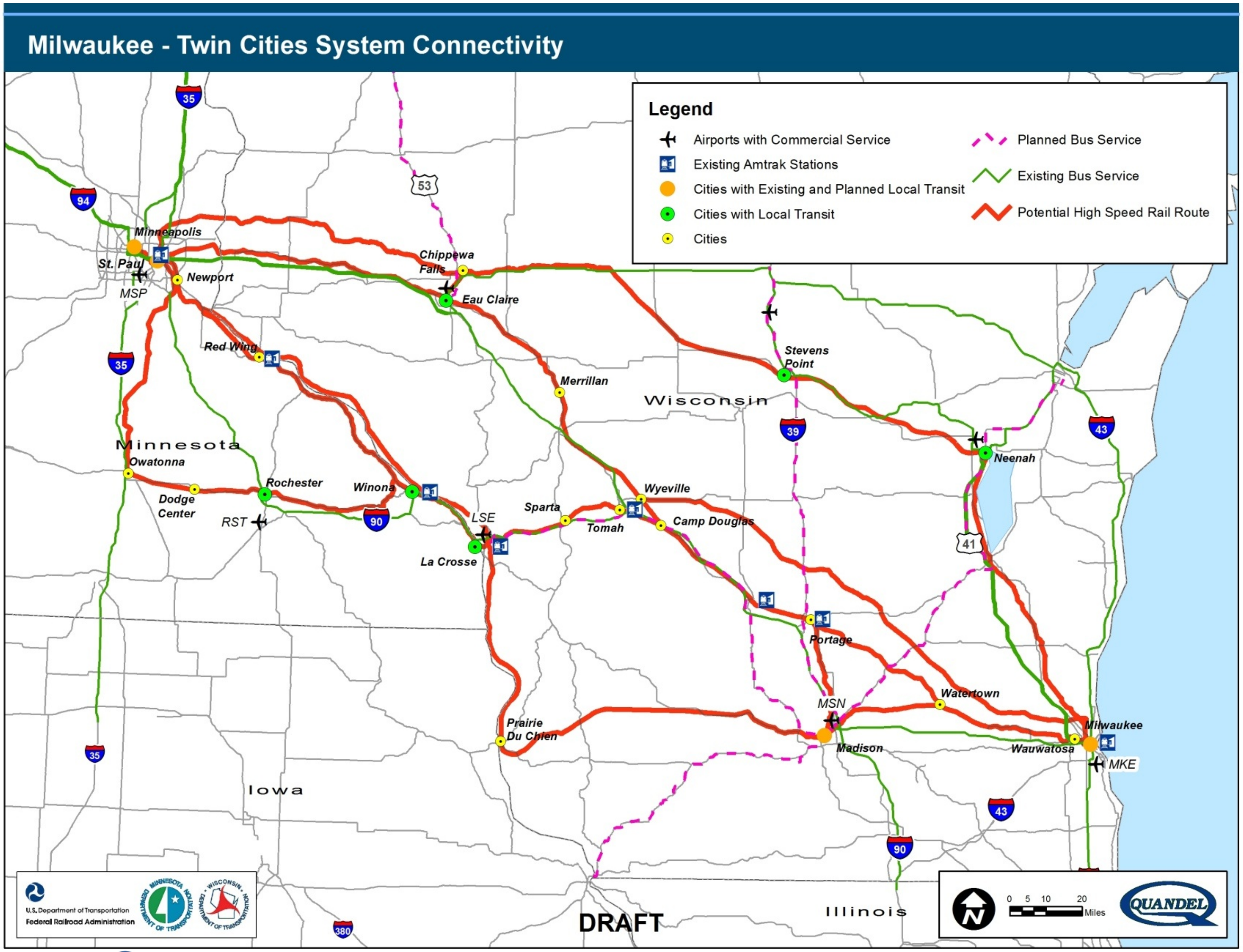


Table 10-16 depicts the overall number of intermodal connections for each route in the Milwaukee-Twin Cities corridor. Figure 10-15 depicts an overall system connectivity map for the entire Milwaukee-Twin Cities corridor.

Table 10-16. Overall Number of Intermodal Connections

	Commuter Rail		Inter-City Passenger Rail		Light Rail		Urban/Local Bus		Inter-City Bus		Highways		Airports		Bike Paths/Trails	
	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned
Terminal Areas	1	5	2	10	1	4	6	N/A	24	N/A	13	N/A	2	N/A	3	N/A
1 –Amtrak Route	N/A	1	8	N/A	N/A	N/A	4	N/A	5	2	25	N/A	1	N/A	6	N/A
2 – Amtrak-Rochester	N/A	N/A	5	N/A	N/A	N/A	5	N/A	8	2	32	N/A	2	N/A	5	N/A
3 – Amtrak-BNSF River	N/A	1	5	N/A	N/A	N/A	3	N/A	4	2	26	N/A	1	N/A	4	N/A
4 – MWRRI-Madison	N/A	2	4	N/A	N/A	N/A	5	N/A	6	1	26	N/A	2	N/A	6	N/A
5 – Madison-Rochester	N/A	1	5	N/A	N/A	N/A	6	N/A	9	1	34	N/A	3	N/A	6	N/A
6 – Madison-BNSF River	N/A	2	4	N/A	N/A	N/A	4	N/A	5	1	23	N/A	2	N/A	5	N/A
7 – Madison-Prairie	N/A	2	3	N/A	N/A	N/A	5	N/A	3	N/A	18	N/A	2	N/A	5	N/A
8 – Madison-Prairie-Rochester	N/A	2	2	N/A	N/A	N/A	6	N/A	6	N/A	15	N/A	3	N/A	3	N/A
9 – Madison-Prairie-BNSF River	N/A	2	1	N/A	N/A	N/A	4	N/A	2	N/A	19	N/A	2	N/A	3	N/A
10 – Amtrak-Eau Claire	N/A	1	3	N/A	N/A	N/A	3	N/A	4	2	29	N/A	1	N/A	2	N/A
11 – Madison-Eau Claire-TC	N/A	1	2	N/A	N/A	N/A	4	N/A	5	1	29	N/A	2	N/A	3	N/A
12A – Wyeville-Eau Claire	N/A	1	N/A	N/A	N/A	N/A	2	N/A	3	N/A	23	N/A	1	N/A	1	N/A
13 – Milwaukee-Fond du Lac-Eau Claire	N/A	1	N/A	N/A	N/A	N/A	6	N/A	6	N/A	36	N/A	2	N/A	4	N/A
14 – Milwaukee-Fond du Lac-Chip-TC	N/A	N/A	N/A	N/A	N/A	N/A	5	N/A	4	N/A	24	N/A	2	N/A	3	N/A

Figure 10-15. System Connectivity – Overall Map



Minnesota Department of Transportation
U.S. Department of Transportation
Federal Railroad Administration

Qualitative Assessment: Route 5 has the greatest number of intermodal connections. Route 5 is better than the remaining routes.

10.3 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for system connectivity based on the qualitative assessment completed for this criterion. Using the color rating for the measures, an overall system connectivity rating was assigned to each route based on the number of "green", "yellow", and "red" ratings the measures received. Table 10-17 depicts the color rating for each route for the overall system connectivity criterion.

Table 10-17. Results of Qualitative Assessment

Route	Commuter Rail	Inter-City Passenger Rail	Light Rail	Local Bus	Inter-City Bus	Highways	Airports	Bike Paths/ Trails	Overall System Connectivity Rating
1 –Amtrak Route									
2 – Amtrak-Rochester									
3 – Amtrak-BNSF River									
4 – MWRRI-Madison									
5 – Madison-Rochester									
6 – Madison-BNSF River									
7 – Madison-Prairie									
8 – Madison-Prairie-Rochester									
9 – Madison-Prairie-BNSF River									
10 – Amtrak-Eau Claire									
11 – Madison-Eau Claire-TC									
12A – Wyeville-Eau Claire									

13 – Milwaukee-Fond du Lac-Eau Claire									
14 – Milwaukee-Fond du Lac-Chip-TC									

At the March 11 workshop, the teams were presented with commuter rail, inter-city passenger rail, light rail, local bus, inter-city bus, highways, airports, and bike path/trail data and engaged in discussions regarding the qualitative assessment and color rating of each route. The teams came to the consensus that light rail is not a discriminator because none of the routes provide connectivity to existing or planned light rail lines. Therefore, light rail was not assessed in the workshop. The following captures the overall qualitative assessment and rating for each route;

- Route 1 – Amtrak Route – At the workshop, the teams assessed system connectivity data for Route 1. The teams concluded that Route 1 has average connectivity to commuter rail, local bus, inter-city bus, and highways. Route 1 has good connectivity to inter-city passenger rail and bike paths/trails and low connectivity to airports. Overall, Route 1 was assessed as yellow for system connectivity.

- Route 2 – Amtrak-Rochester –– At the workshop, the teams assessed system connectivity data for Route 2. The teams came to the consensus that Route 2 has good connectivity to inter-city bus, highways, and bike paths/trails, average connectivity to inter-city passenger rail, local bus, and airports, and low connectivity to commuter rail. Overall, Route 2 was assessed as yellow for system connectivity.

- Route 3 – Amtrak-BNSF River – At the workshop, the teams assessed system connectivity data for Route 3. The teams came to the consensus that Route 3 has average connectivity to commuter rail, inter-city passenger rail, inter-city bus, highways, and bike paths/trails and low connectivity to local bus and airports. Overall, Route 3 was assessed as yellow for system connectivity.

- Route 4 – MWRRI Madison – At the workshop, the teams assessed system connectivity data for Route 4. The teams came to the consensus that Route 4 has good connectivity to commuter rail, inter-city passenger rail, and bike paths/trails and average connectivity to local bus, inter-city bus, highways, and airports. Overall, Route 4 was assessed as yellow for system connectivity.

- Route 5 – Madison-Rochester – At the workshop, the teams assessed system connectivity data for Route 5. The teams came to the consensus that Route 5 has good connectivity to local bus, inter-city bus, highways, airports, and bike paths/trails and average connectivity to commuter rail and inter-city passenger rail. Overall, Route 5 was assessed as green for system connectivity.

- Route 6 – Madison-BNSF River –At the workshop, the teams assessed system connectivity data for Route 6. The teams came to the consensus that Route 6 has good connectivity to commuter rail and bike paths/trails and average connectivity to inter-city passenger rail, local bus, inter-city bus, highways, and airports. Overall, Route 6 was assessed as yellow for system connectivity.

- Route 7 – Madison-Prairie – At the workshop, the teams assessed system connectivity data for Route 7. The teams concluded that Route 7 has good connectivity to commuter rail and bike paths/trails, average connectivity to inter-city passenger rail, local bus, and airports, and low connectivity to inter-city bus and highways. Overall, Route 7 was assessed as yellow for system connectivity.

- Route 8 – Madison-Prairie-Rochester – At the workshop, the teams assessed system connectivity data for Route 8. The teams concluded that Route 8 has good connectivity to commuter rail, local bus, and airports, average connectivity to inter-city bus and bike paths/trails, and low connectivity to inter-city passenger rail and highways. Overall, Route 8 was assessed as yellow for system connectivity.

- Route 9 – Madison-Prairie-BNSF River – At the workshop, the teams assessed system connectivity data for Route 9. The teams concluded that Route 9 has good connectivity to commuter rail, average connectivity to local bus and bike paths/trails, and low connectivity to inter-city passenger rail, inter-city bus, and highways. Overall, Route 9 was assessed as yellow for system connectivity.

- Route 10 – Amtrak-Eau Claire – At the workshop, the teams assessed system connectivity data for Route 10. The teams came to the consensus that Route 10 has average connectivity to commuter rail, inter-city passenger rail, inter-city bus, and highways and low connectivity to local bus, airports, and bike paths/trails. Overall, Route 10 was assessed as yellow for system connectivity.

- Route 11 – Madison-Eau Claire-TC – At the workshop, the teams assessed system connectivity data for Route 11. The teams came to the consensus that Route 11 has average connectivity to commuter rail, inter-city passenger rail, local bus, inter-city bus, highways, airports, and bike paths/trails. Route 11 was assessed as yellow for system connectivity.

- Route 12A – Wyeville-Eau Claire – At the workshop, the teams assessed system connectivity data for Route 12A. The teams came to the consensus that Route 12A has average connectivity to commuter rail and highways and low connectivity to inter-city passenger rail, local bus, inter-city bus, airports, and bike paths/trails. Overall, Route 12A was assessed as red for system connectivity because the route does not meet the project purpose and need of improving overall system connectivity.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire – At the workshop, the teams assessed system connectivity data for Route 13. The teams concluded that Route 13 has good connectivity to local bus and highways, average connectivity to commuter rail, inter-city bus, airports, and bike paths/trails, and low connectivity to inter-city passenger rail. Overall, Route 13 was assessed as yellow for system connectivity.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC – At the workshop, the teams assessed system connectivity data for Route 14. The teams came to the consensus that Route 14 has average connectivity to local bus, inter-city bus, highways, airports, and bike paths/trails and low connectivity to commuter rail and inter-city passenger rail. Route 14 was assessed as yellow for system connectivity.

11.0 ENVIRONMENTAL FEATURES

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail route complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. Section 1.4.2 and 1.4.3 describe the project purpose and project need, respectively.

The environmental features criterion is tied to the project purpose of minimizing environmental impacts. If a potential passenger rail alternative does not meet the project purpose, the route will be eliminated from further analysis.

The impacts that a high-speed passenger rail alternative has on the environment is one of the factors when determining the reasonable and feasible routes. The seven (7) environmental impacts that are evaluated include the following:

- Floodplains
- Wetlands
- Threatened and Endangered Species
- Historical/Cultural Resources
- Section 4(f)/6(f) Protected Property
- Environmental Justice
- Hazardous Materials Sites

While an assumption can be made that one route is preferable based on the total number of features that are impacted, it is not prudent to solely choose a route based on this information. The specific attribute information about a feature must also be taken into account. For instance, a specific wetland or a specific historical/archeological site could have a fatal flaw that would deem a route to not be reasonable and feasible.

Right-of-way takes and the environmental features that would be impacted were also documented in areas that are known to require land acquisition for improvements related to high-speed rail operations. While documenting specific impacts near potential high-speed rail routes is in general beyond the detail of work that has been done, it was deemed necessary to include this data at this point the in study so that a better understanding of the specific environmental impacts are documented for these known right-of-way takes. The following four locations that require land acquisition are documented in section 11.8:

- La Crosse – Grand Crossing
- Prairie Du Chien – Crawford

- Owatonna
- St. Paul Union Depot

Appendix O documents all environmental features graphically by route. Environmental Systems Research Institute's (Esri) ArcGIS software was used to collect and analyze all of the seven (7) environmental impact features and output them in graphic strip map format using U.S. Geological Survey's (USGS) digital raster graphics (DRG) as background and base map information.

11.1 Floodplains

A floodplain is any area susceptible to inundation by water from any source[129]. Floodplains are valuable areas of land because they provide natural flood and erosion control, water quality maintenance, ground water recharge, biological resources, and a habitat for fish and wildlife[130]. Impacting a floodplain will impact these important resources.

In addition to impacting important natural resources, the number of floodplains that a route crosses can impact railroad operations such as maintaining service, track obstruction caused by local flooding, or mitigation cost during construction to prevent service delays during bad weather. During periods of high-discharge water events, floodplain areas may experience flooding.

The floodplain data in this corridor is analyzed using Esri's ArcGIS software and data gathered from the Wisconsin Department of Natural Resources (DNR), the Minnesota Department of Natural Resources (DNR) and the Federal Emergency Management Agency (FEMA). The analysis counted the number of times a potential high speed rail route crossed the 100-year (1% annual chance of a flood of this magnitude) and 500-year (0.2% annual chance of a flood of this magnitude) floodplain.

Normative Statement: A potential high-speed rail route would be more desirable if it impacts a fewer number of floodplains.

Table 11-1 depicts the number of floodplains within 100' of the track centerline for each potential high speed rail route. This data is also represented graphically in Chart 11-1.

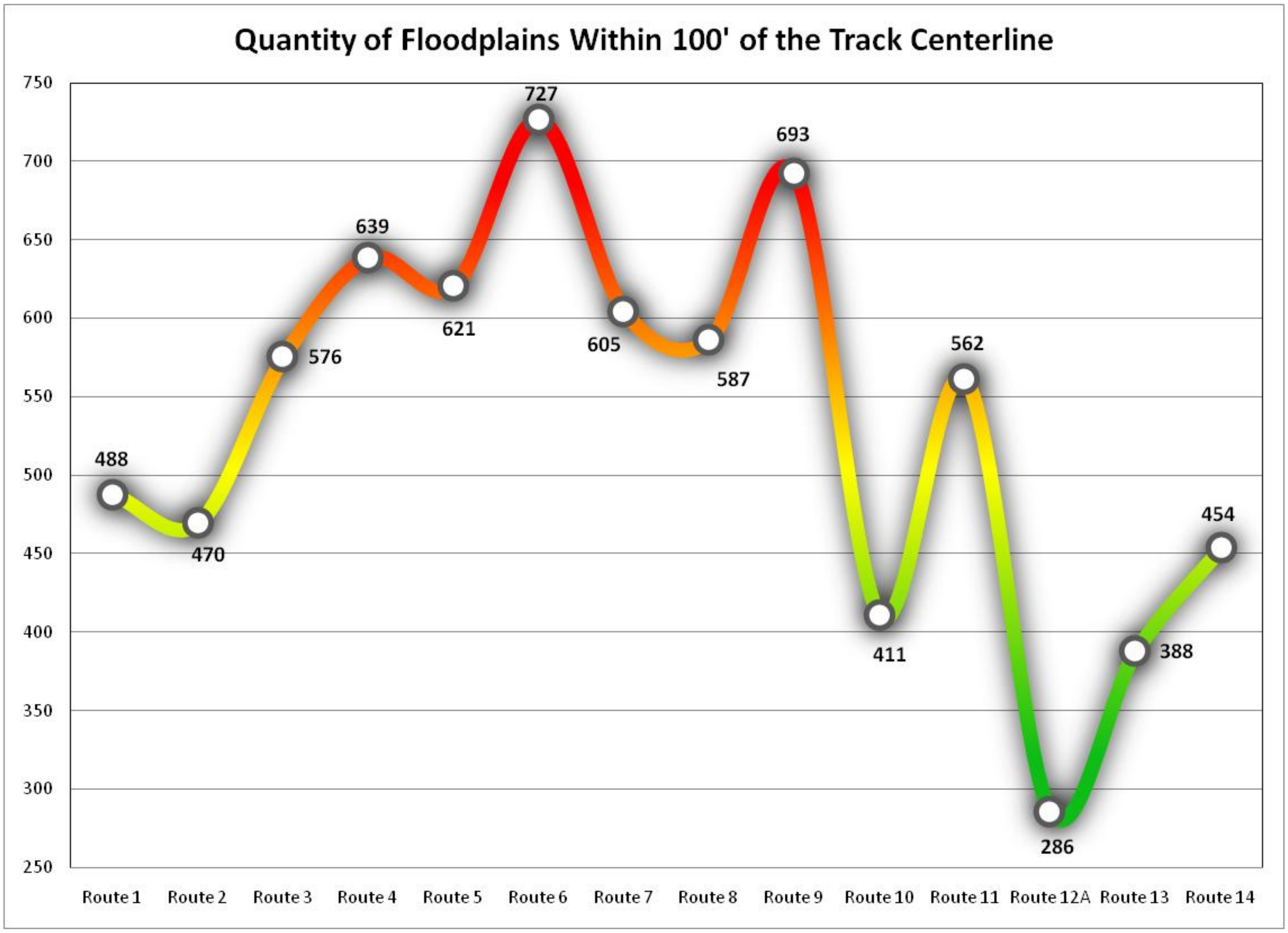
[129] www.fema.gov/pdf/floodplain/nfip_sg_appendix_d.pdf - 2006-06-02

[130] http://dnr.wi.gov/org/water/wm/dsfm/flood/purpose.htm

Table 11-1. Floodplains within 100’ of the Track Centerline

Route	Quantity of Floodplains within 100’ of the Track Centerline
1 –Amtrak Route	488
2 – Amtrak-Rochester	470
3 – Amtrak-BNSF River	576
4 – MWRRI-Madison	639
5 – Madison-Rochester	621
6 – Madison-BNSF River	727
7 – Madison-Prairie	605
8 – Madison-Prairie-Rochester	587
9 – Madison-Prairie-BNSF River	693
10 – Amtrak-Eau Claire	411
11 – Madison-Eau Claire-TC	562
12A – Wyeville-Eau Claire	286
13 – Milwaukee-Fond du Lac-Eau Claire	388
14 – Milwaukee-Fond du Lac-Chip-TC	454

Chart 11-1. Floodplains within 100' of the Track Centerline



Qualitative Assessment: Routes 10, 12A, 13, and 14 have the lowest number of floodplains within 100' of the track centerline. These routes are better than the remaining routes.

11.2 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas[131].

131 http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm

Wetlands are valuable because they provide critical habitat for plants, fish and wildlife, clean water, protection from floods, recreation, and natural scenic beauty[132].

Wetlands are federally protected by the Clean Water Act (33 USC 1344), requiring that:

- Steps have been taken to avoid wetland impacts where practicable
- Potential impacts to wetlands have been minimized
- Compensation is provided for wetland impacts that could not be avoided through activities to restore or create wetlands

A potential high speed rail route that impacts wetlands may require additional cost to mitigate and present substantial construction and feasibility issues.

Wetland data gathered from the Wisconsin DNR, Minnesota DNR and the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) was used to analyze the number of wetlands, the length a potential route passes through a wetland, and the acres of wetland impact for each route.

Normative Statement: A route would be more desirable if the route impacts a fewer number of wetlands by quantity and acres.

The number of wetlands within 50' and 100', including the acres impacted and the length in miles that a routes passes through a wetland, is shown for each route in Table 11-2 and represented graphically in Charts 11-2, 11-3, 11-4, 11-5, 11-6.

[132] http://dnr.wi.gov/wetlands/

Table 101-2. Quantity of Wetlands

Route	Length Route Passes through Wetlands (miles)	Quantity of Wetlands within 50' of the Track Centerline	Acres of Wetlands within 50' of the Track Centerline	Quantity of Wetlands within 100' of the Track Centerline	Acres of Wetlands within 100' of the centerline
1 –Amtrak Route	31	609	428	898	1,081
2 – Amtrak-Rochester	23	510	310	712	755
3 – Amtrak-BNSF River	38	477	442	642	990
4 – MWRRI-Madison	39	734	530	1,066	1,290
5 – Madison-Rochester	31	635	413	965	964
6 – Madison-BNSF River	43	602	545	902	1,198
7 – Madison-Prairie	41	612	553	815	1,314
8 – Madison-Prairie-Rochester	34	513	435	714	988
9 – Madison-Prairie-BNSF River	45	480	567	651	1,222
10 – Amtrak-Eau Claire	25	440	321	611	710
11 – Madison-Eau Claire-TC	34	585	424	856	919
12A – Wyeville-Eau Claire	9	211*	266*	301*	621*
13 – Milwaukee-Fond du Lac-Eau Claire	40	677	501	1,025	1,042
14 – Milwaukee-Fond du Lac-Chip-TC	45	834	557	1,242	1,154

*Wetland data is not available for some counties in Wisconsin

Chart 11-2. Length Route Passes through Wetlands (miles)

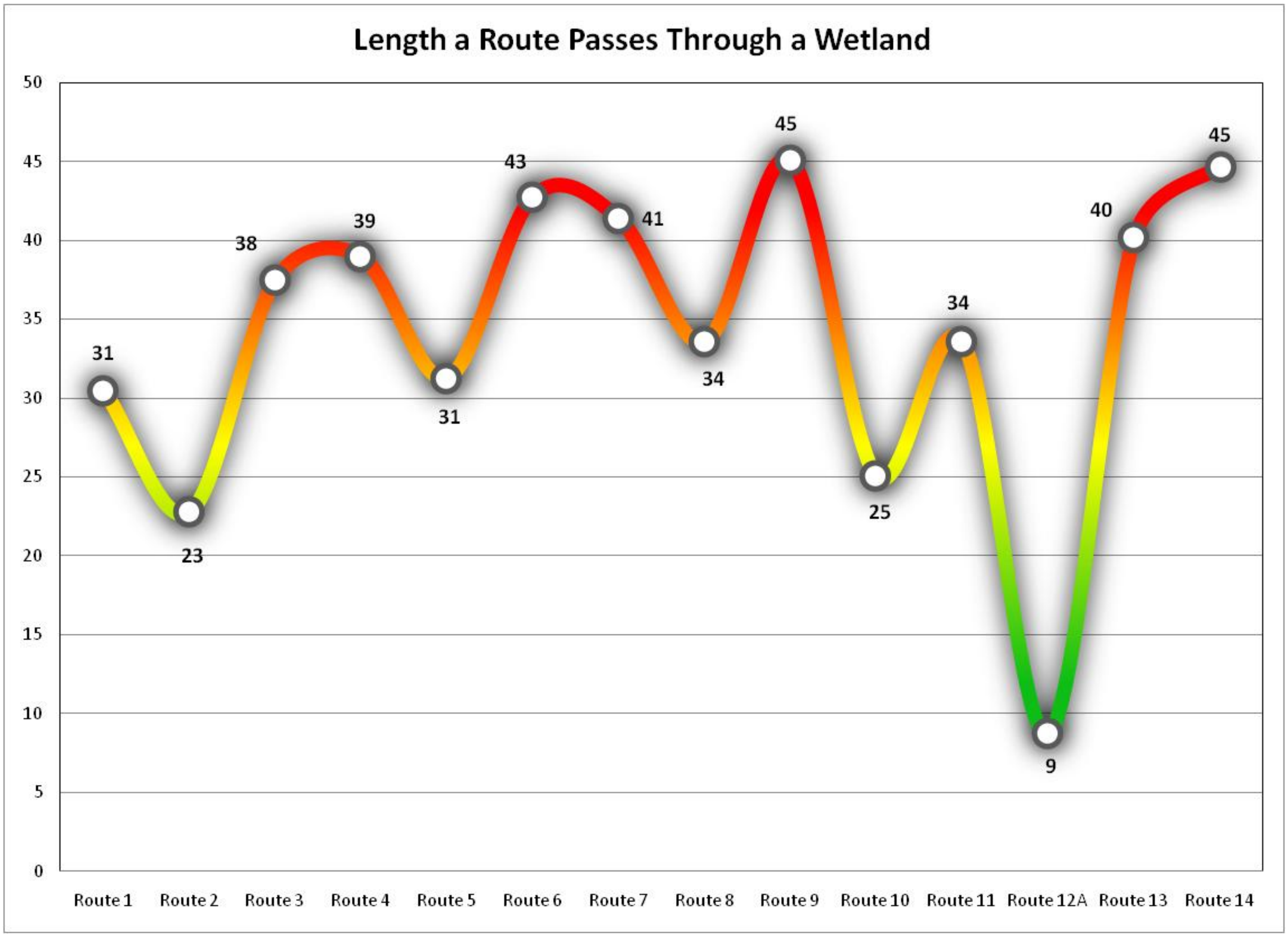


Chart 11-3. Quantity of Wetlands within 50' of the Track Centerline

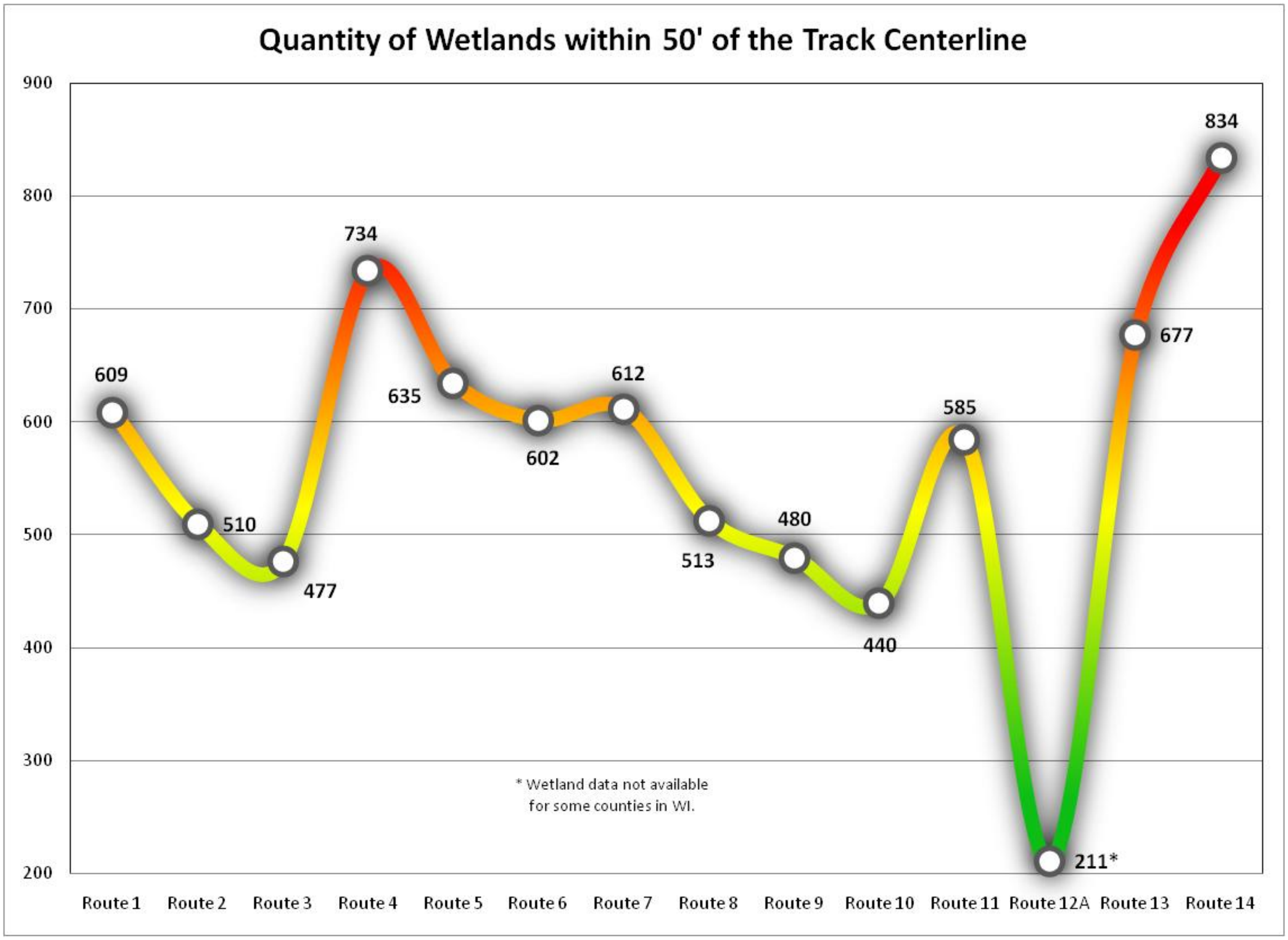


Chart 11-4. Acres of Wetlands within 50' of the Track Centerline

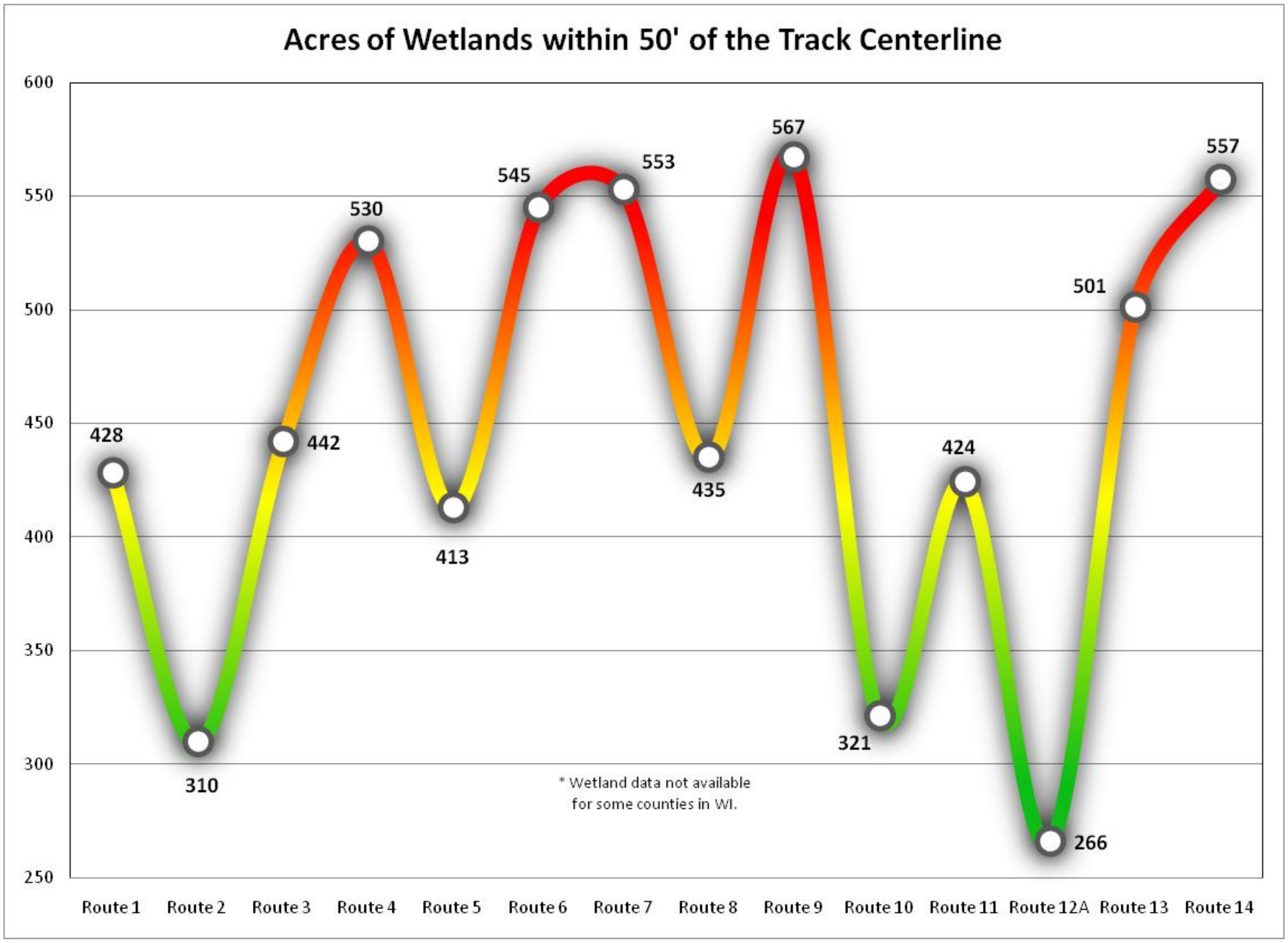


Chart 11-5. Quantity of Wetlands within 100' of the Track Centerline

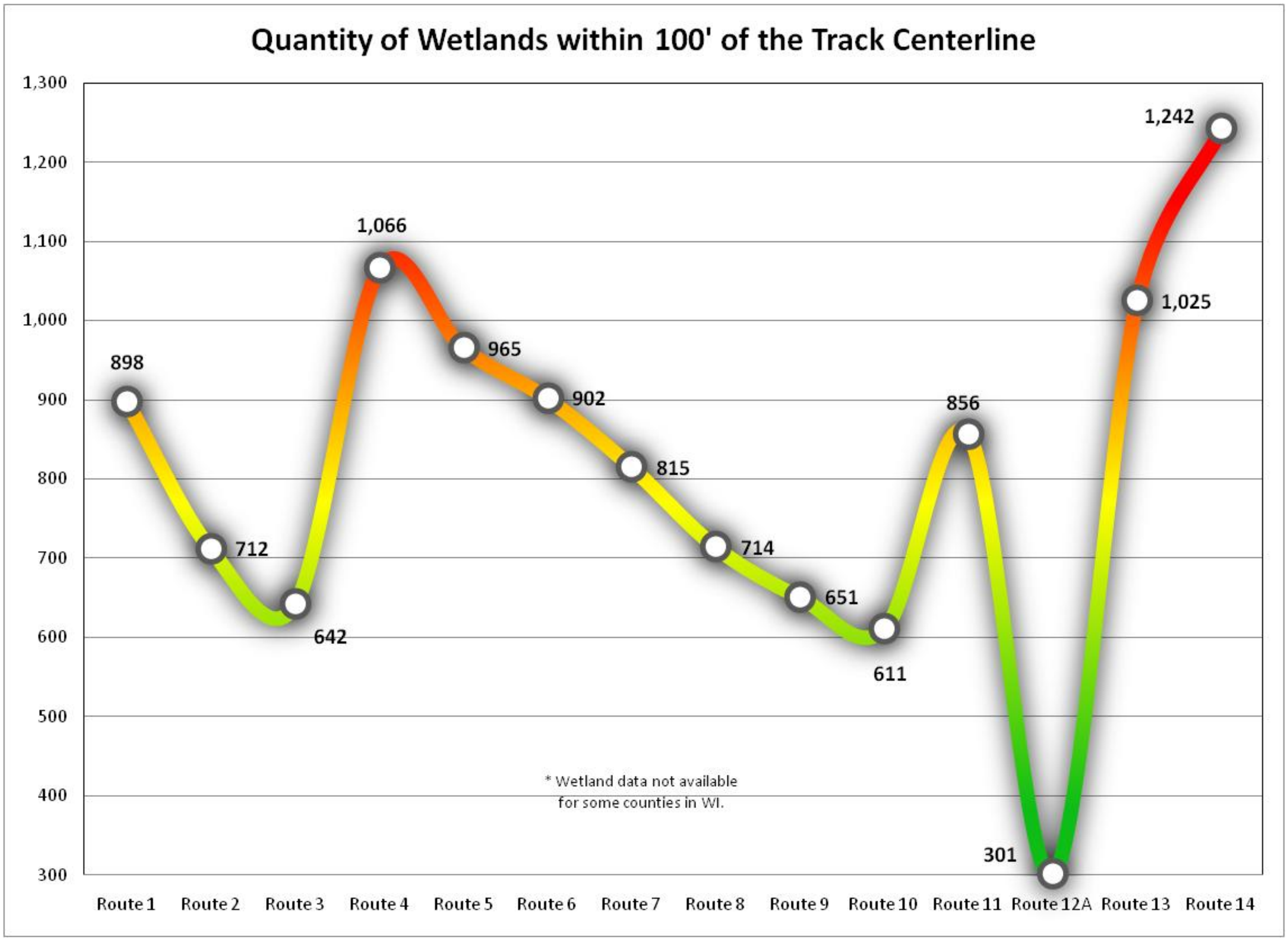
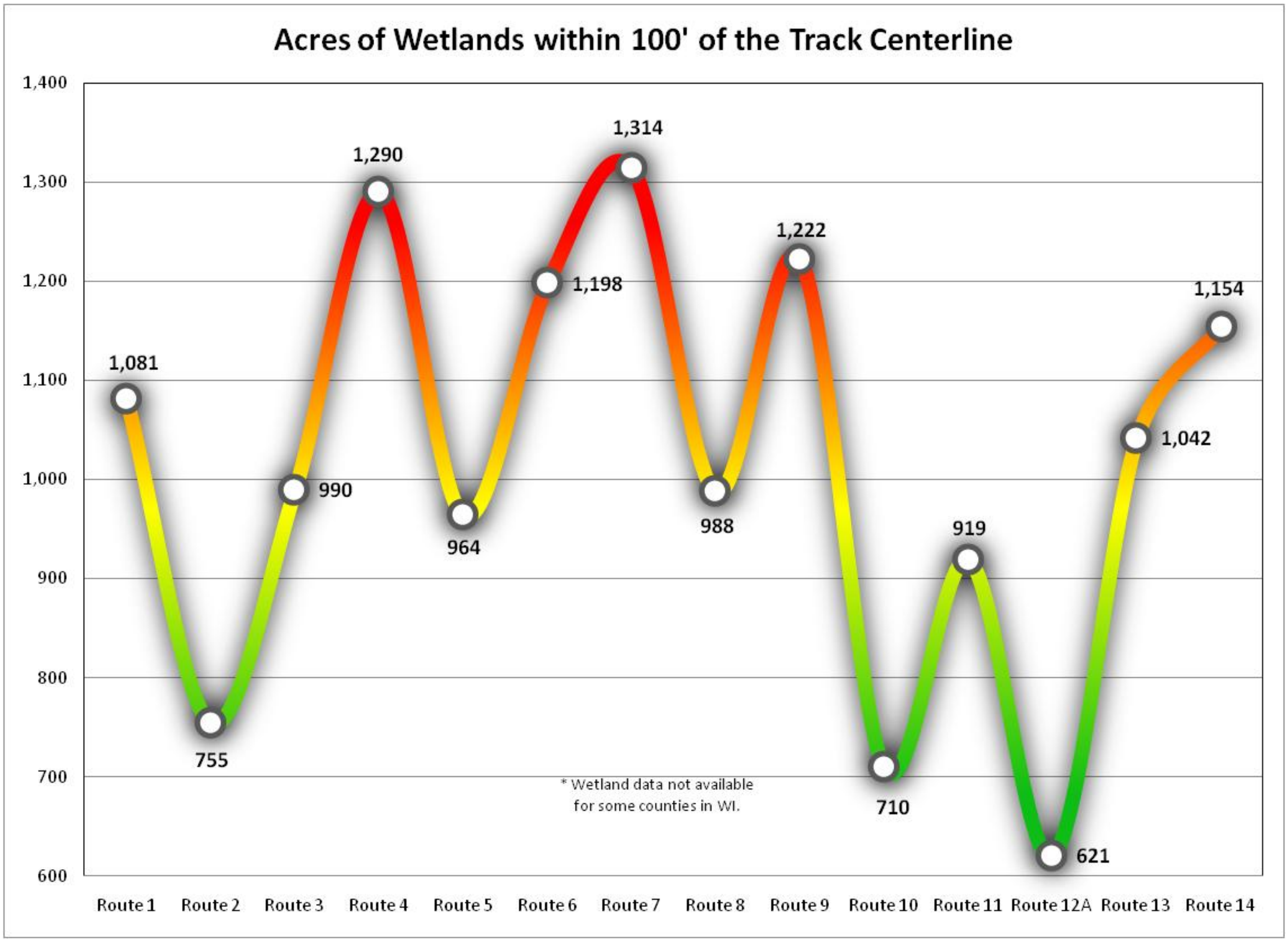


Chart 11-6. Acres of Wetlands within 100' of the Track Centerline



Qualitative Assessment: Routes 2, 10, and 12A have low miles passing through wetlands and low quantities of wetlands within 50' and 100' of the track centerline. Overall, these routes are better than the remaining routes.

11.3 Threatened and Endangered Species

Threatened and endangered species of wildlife and plants are protected under the Endangered Species Act. These species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses and trees[133]. "Endangered" species are those that are in danger of extinction throughout all or a significant portion of its range. "Threatened" species are those that are likely to become endangered within the foreseeable future.

When the Endangered Species Act was passed, it recognized that our native plants and

133 http://www.epa.gov/lawsregs/laws/esa.html

animals are of “esthetic, ecological, educational, recreational, and scientific value to our Nation and its people”[134].

The number of times that a route passes through an area considered to be ‘critical habitat’ – or an area that has potential to contain threatened and endangered species - can be indicative of a potential high speed rail route that will need to be realigned or eliminated from further consideration.

The data for threatened and endangered species was gathered from the Wisconsin DNR, Minnesota DNR and the United States Geological Survey (USGS) Gap Analysis Program (GAP). The analysis consisted of determining the number of critical habitats within 750’ and 50’ of the track centerline. Also, the length in miles that a potential high speed rail route passes through a critical habitat was documented.

Normative Statement: A route would be more desirable if it passes through fewer critical habitats.

The number of times that a critical habitat is found within 750’ and 50’ of the track centerline, as well as the length in miles that the potential high speed rail route passes through a critical habitat for each route is shown in Table 11-3. This data is graphically represented in Chart 11-7, 11-8 and 11-9.

[134] http://www.fws.gov/endangered/laws-policies/index.html

Table 11-3. Quantity of Critical Habitat

Route	Quantity of critical Habitat within 750' of the Track Centerline	Quantity of Critical Habitat Within 100' of the Track Centerline	Length Route Passes Through Critical Habitat (miles)
1 –Amtrak Route	77	52	8
2 – Amtrak-Rochester	66	47	5
3 – Amtrak-BNSF River	134	74	3
4 – MWRRI-Madison	71	47	8
5 – Madison-Rochester	60	42	4
6 – Madison-BNSF River	128	69	11
7 – Madison-Prairie	80	51	6
8 – Madison-Prairie-Rochester	69	46	2
9 – Madison-Prairie-BNSF River	137	73	9
10 – Amtrak-Eau Claire	34	21	12
11 – Madison-Eau Claire-TC	28	16	3
12A – Wyeville-Eau Claire	30	11	3
13 – Milwaukee-Fond du Lac-Eau Claire	23	12	25
14 – Milwaukee-Fond du Lac-Chip-TC	28	15	26

Chart 11-7. Critical Habitat within 750' of the Track Centerline

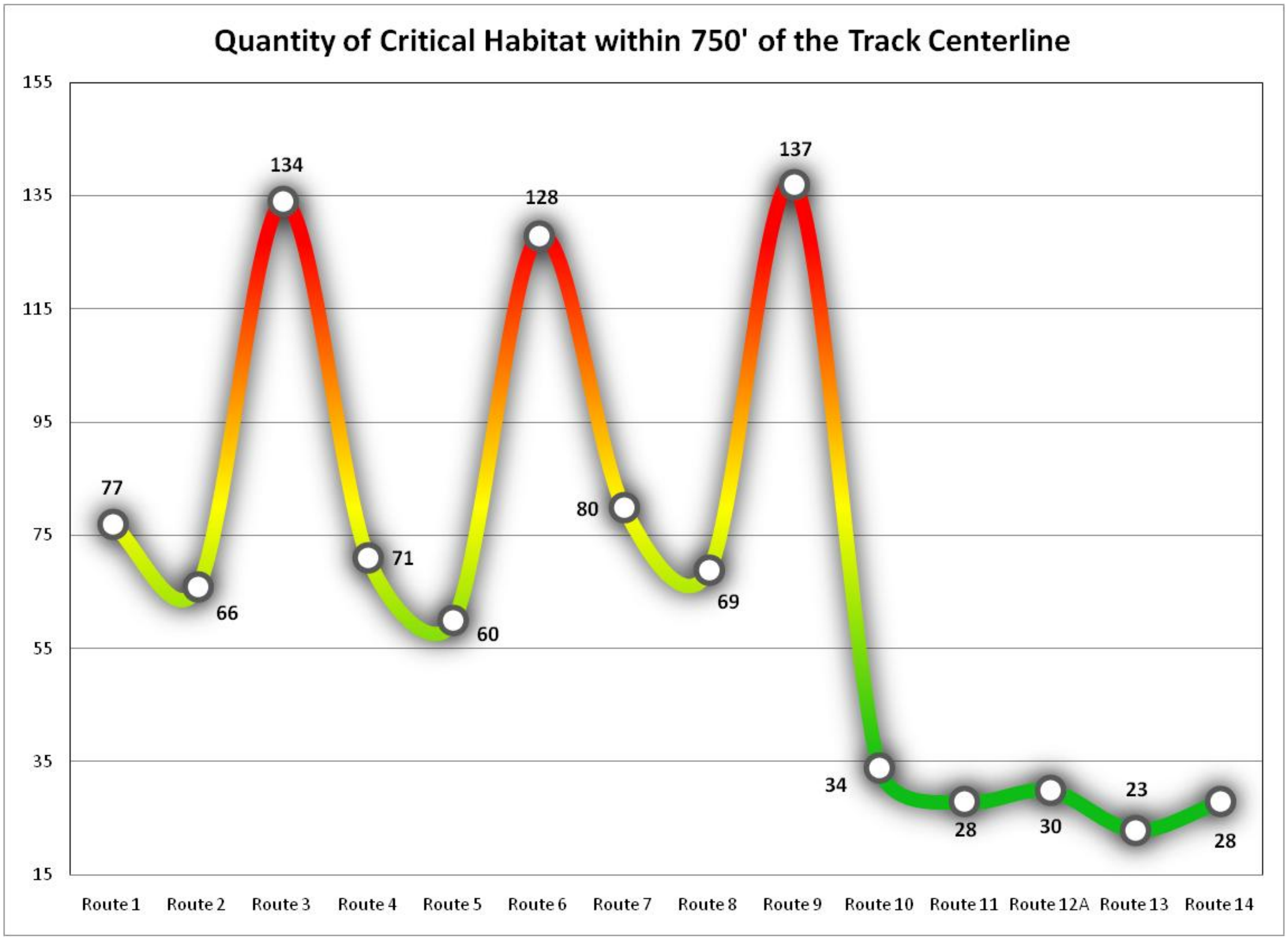


Chart 11-8. Length (miles) Route Passes Through Critical Habitat

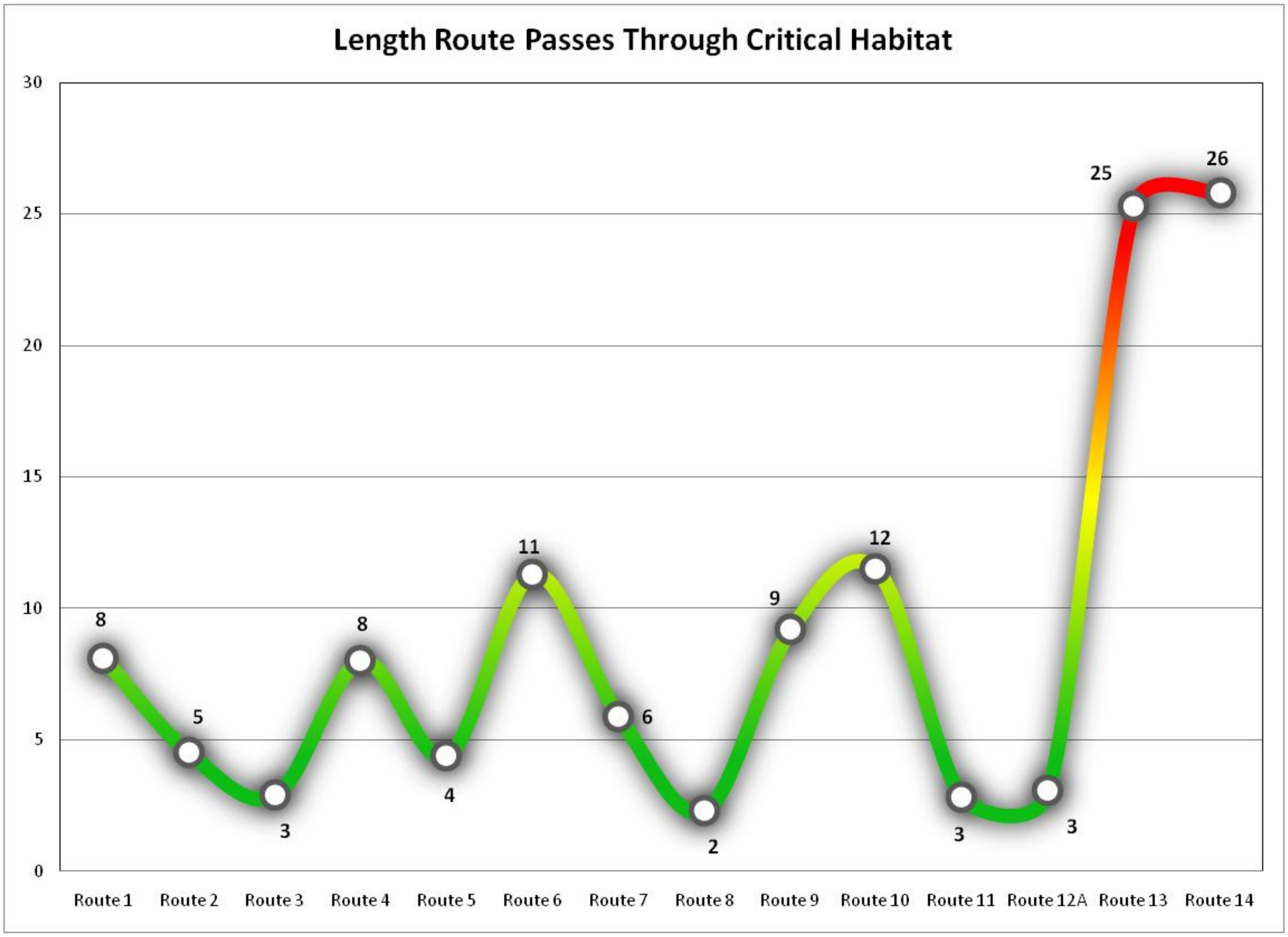
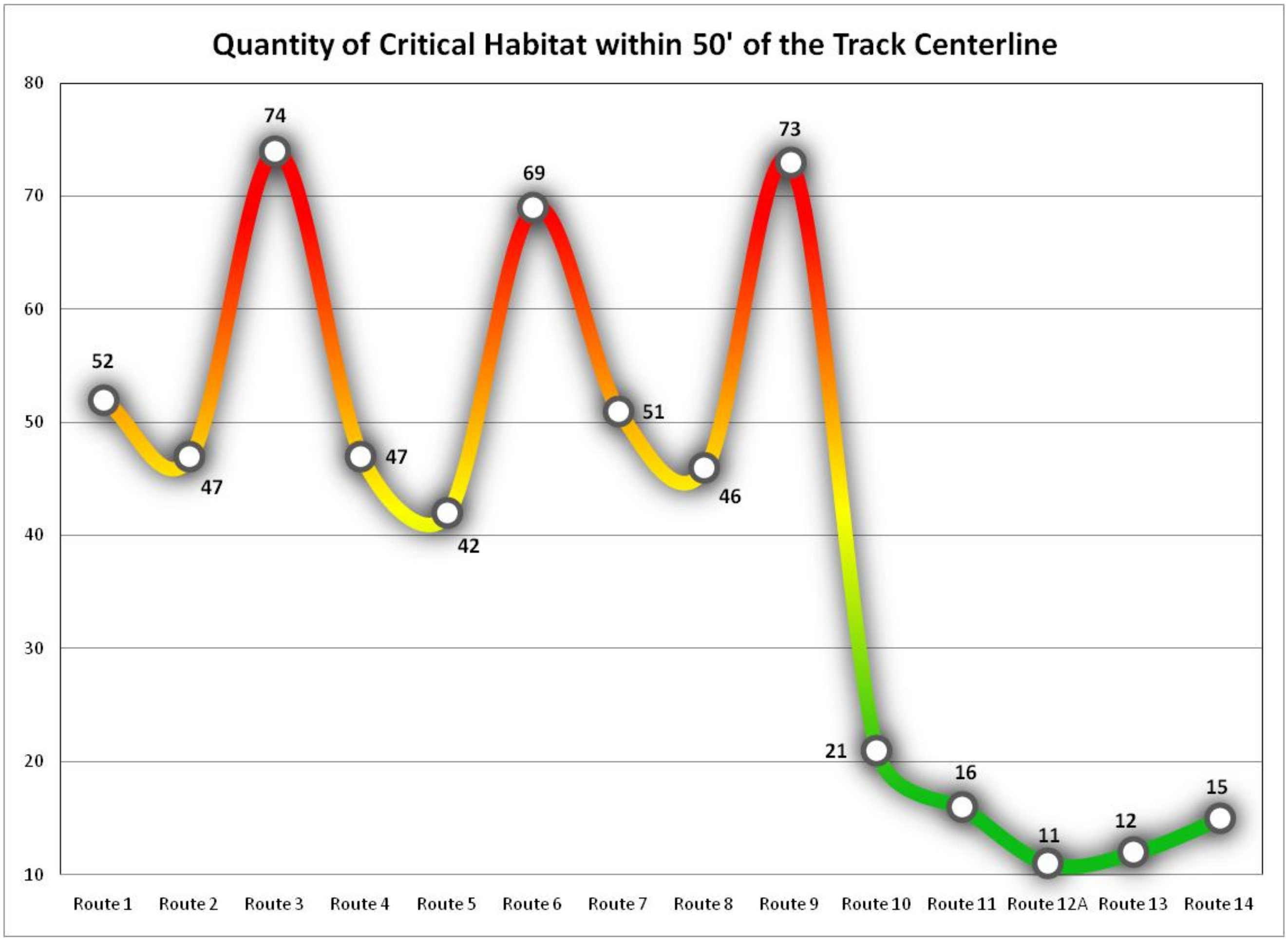


Chart 11-9. Quantity of Critical Habitat within 50' of the Track Centerline



Qualitative Assessment: Routes 10, 11, and 12A have low numbers of miles passing through critical habitat and low quantities of critical habitat within 50' and 750' of the track centerline. Overall, these routes are better than the remaining routes.

11.4 Historical/Cultural Resources

Historical/Cultural resources include any building, site or district protected by the National Historic Preservation Act. These protected sites include anything listed on or eligible for the National and State Register of Historic Places, as defined by the National Park Service (NPS) and State Historical Preservation Offices (SHPO). These areas are listed and monitored by the NPS and SHPO and covered by 4(f) protected land legislation. Impacts to cultural resources, particularly historic properties and districts include not only direct impacts to the historic property itself, but also indirect affects due to changes to the character, setting, and audible and visual landscape surrounding the property.

The number of historical and cultural resources that exist within a defined distance of a potential high-speed rail route can indicate potential issues related to historic structures (vibration) and also archeological sites that may not be able to be mitigated without incurring cost. The data collected to analyze the historical and cultural resources was obtained from the Wisconsin Historical Society, Minnesota Historical Society and the National Register of Historic Places.

The data was separated into historical sites and archeological sites. The historical sites were point locations (such as a building) while the archeological sites were polygons (such as a burial ground). Both historical and archeological sites were analyzed to see how many sites existed within 750' and within 50' of the track centerline for each route.

Normative Statement: A route with fewer occurrences of historical or archeological resource conflicts is more desirable.

The number of times a historical or archeological site fell within the defined distances of the track centerline is presented in the following table, Table 11-4 and shown graphically in Chart 11-10, 11-11, 11-12 and 11-13.

Table 11-4. Quantity of Historical/Cultural Sites

Route	Quantity of archaeological sites within 750' of the Track Centerline	Quantity of eligible or NRHP listed historic sites within 750' of the Track Centerline	Quantity of archeological sites located within 50' of the Track Centerline	Quantity of historical sites located within 50' of the Track Centerline
1 –Amtrak Route	312	4,050	63	129
2 – Amtrak-Rochester	305	4,350	66	141
3 – Amtrak-BNSF River	491	3,170	112	138
4 – MWRRI-Madison	356	4,887	73	150
5 – Madison-Rochester	339	5,188	73	163
6 – Madison-BNSF River	535	4,004	19	259
7 – Madison-Prairie	594	6,153	73	246
8 – Madison-Prairie-Rochester	577	6,453	88	246
9 – Madison-Prairie-BNSF River	774	5,273	19	358
10 – Amtrak-Eau Claire	215	3,431	63	77
11 – Madison-Eau Claire-TC	259	4,269	23	147
12A – Wyeville-Eau Claire	144	2,587	32	57
13 – Milwaukee-Fond du Lac-Eau Claire	227	5,247	23	152
14 – Milwaukee-Fond du Lac-Chip-TC	224	4,886	20	153

Chart 11-10. Quantity of Archeological Sites within 750' of the Track Centerline

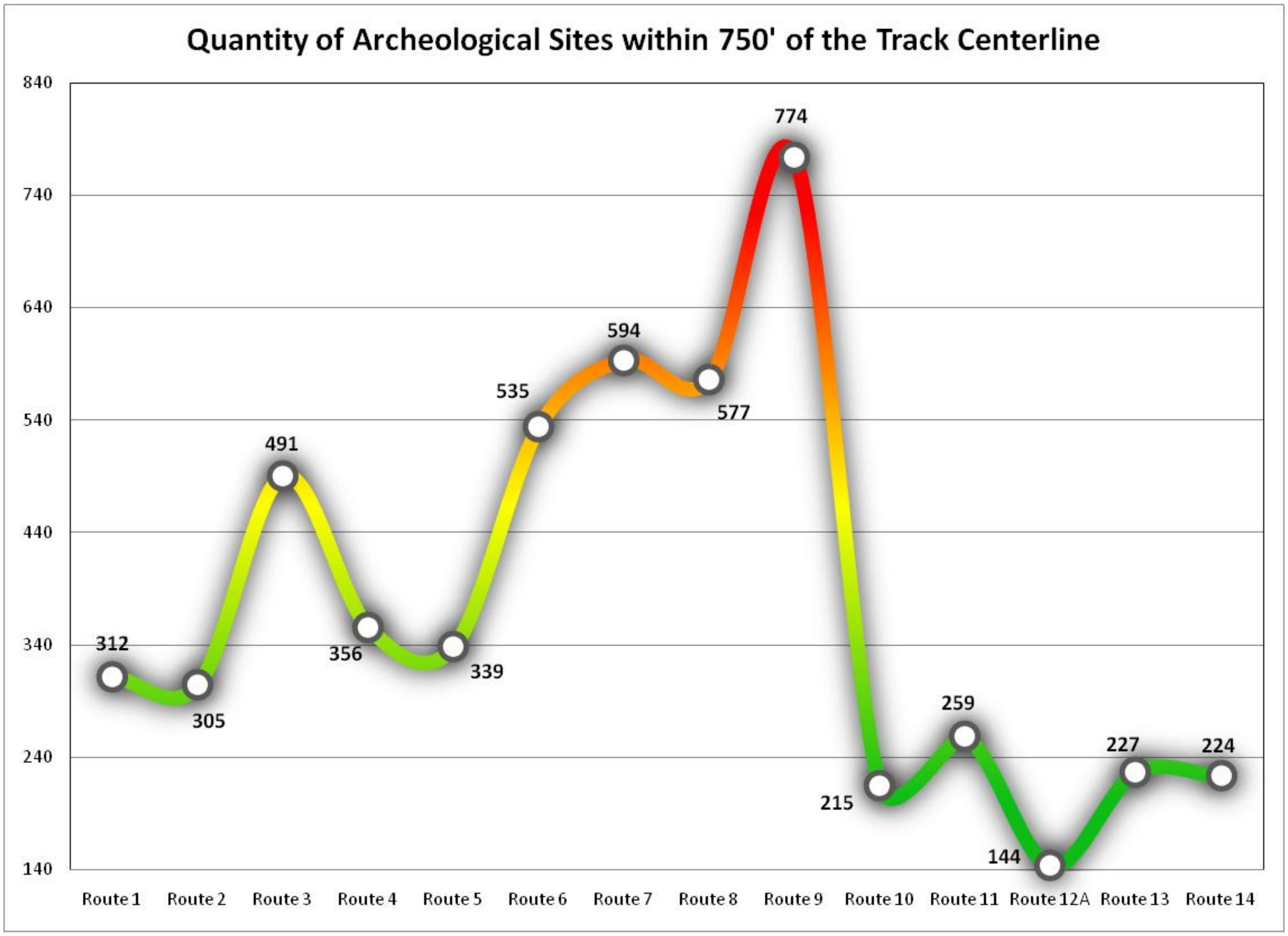


Chart 11-11. Quantity of Historic Sites within 750' of the Track Centerline

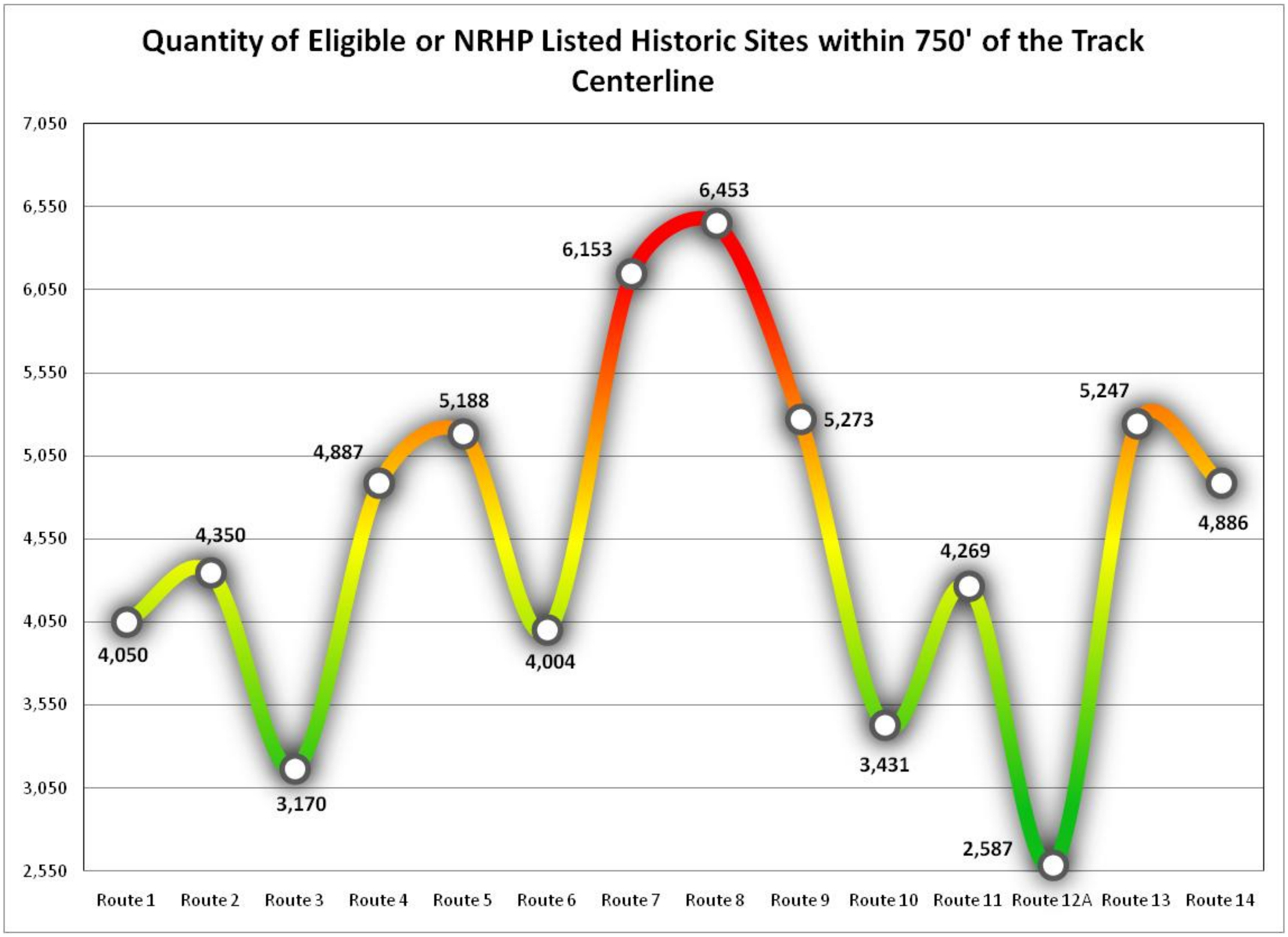


Chart 11-12. Quantity of Archeological Sites within 50’ of the Track Centerline

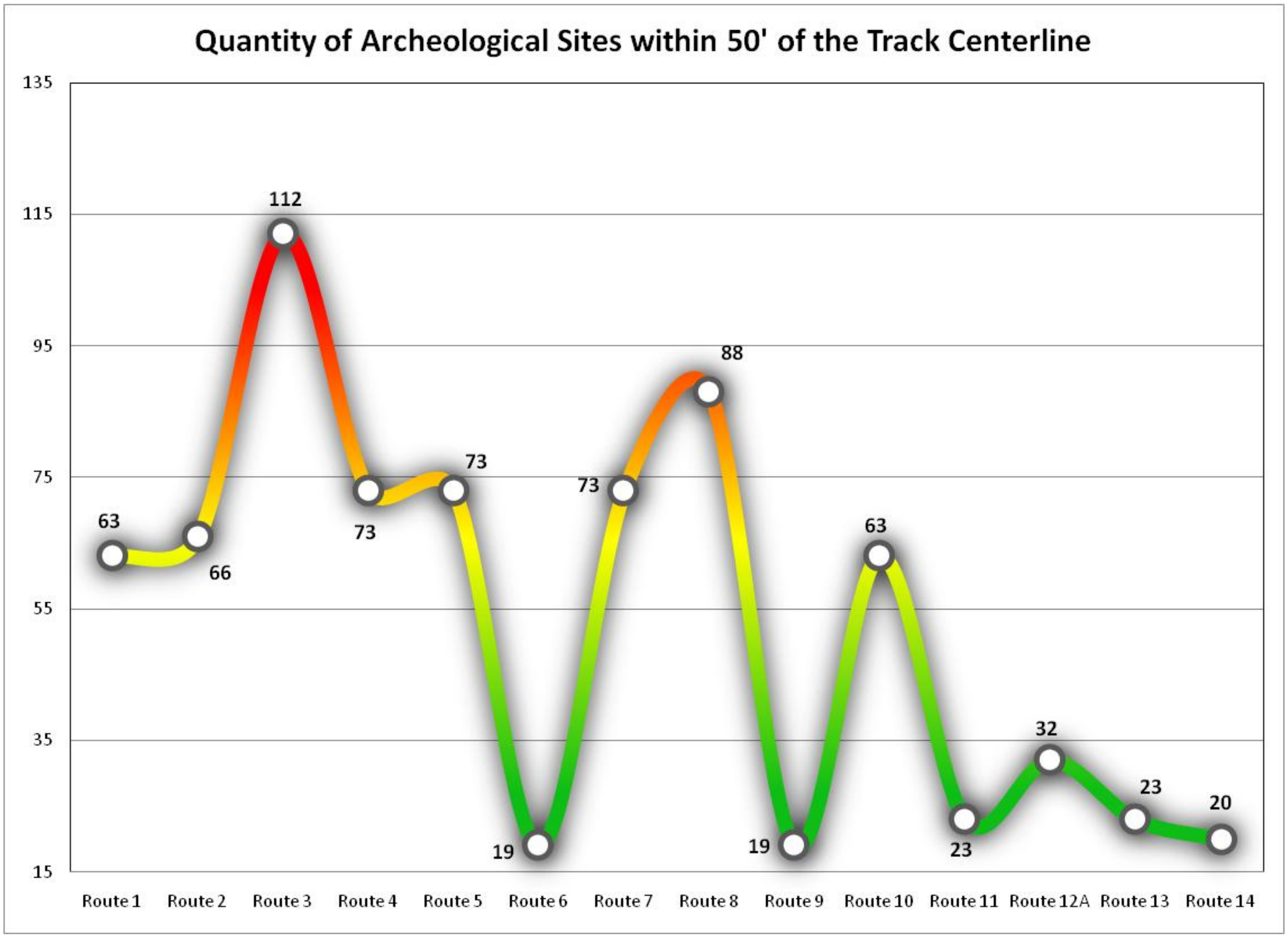
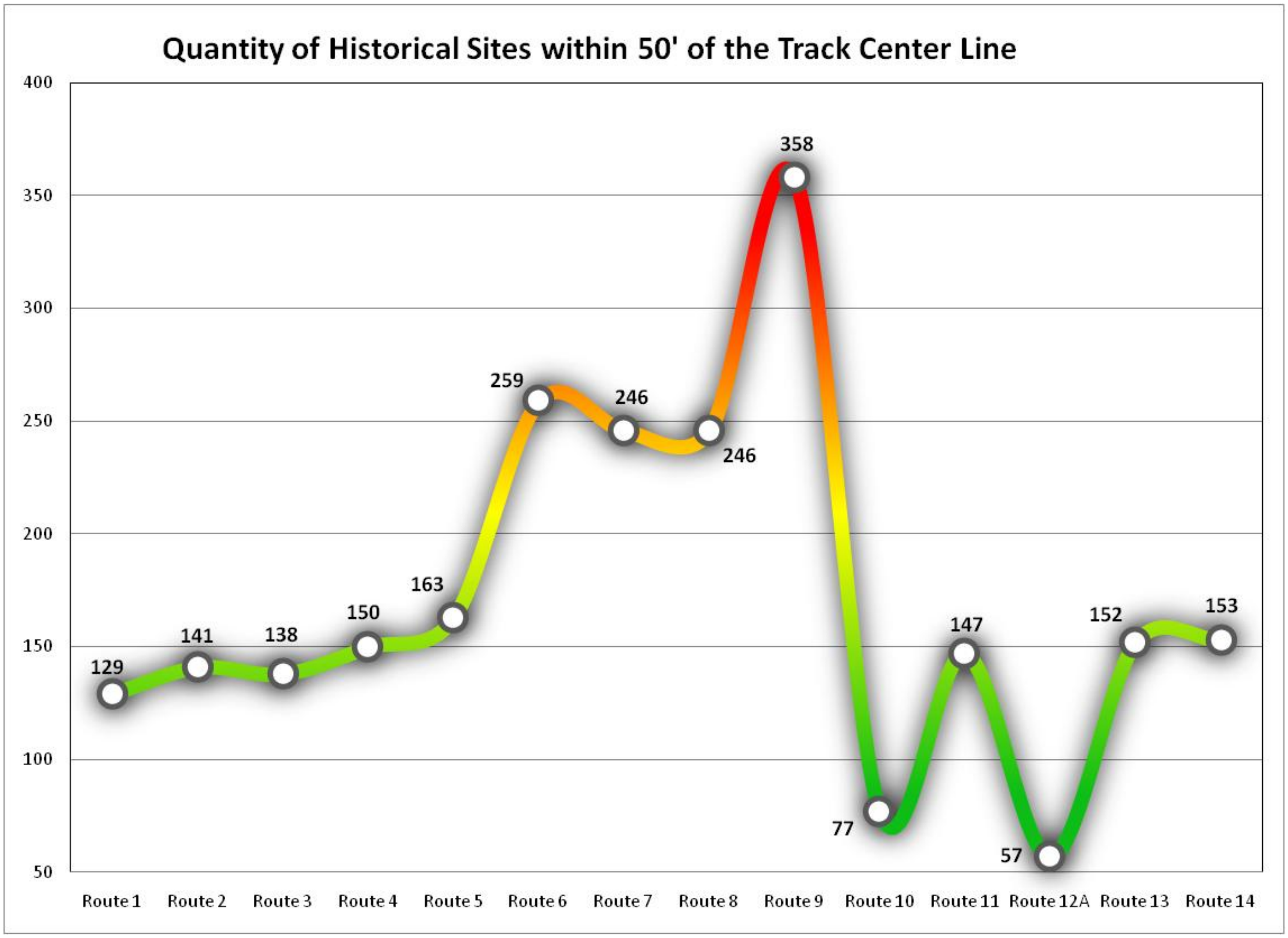


Chart 11-13. Quantity of Historical Sites within 50' of the Track Centerline



Qualitative Assessment: Routes 1, 2, 10, 11, and 12A have low quantities of archaeological and historic sites within 50' and 750' of the track centerline. Overall, these routes are better than the remaining routes.

11.5 Section 4(f)/6(f) Protected Property

Section 4(f) protected properties are any publicly-owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State or local significance or any land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) within the meaning of section 4(f) of the DOT Act (49 U.S.C. 303(c)) as amended by the 2008 FHWA Final Rule located at 23 CFR 774 § 774.11. The Final Rule defines 4(f) lands further as:

- Federal lands or public land holdings (e.g. State forests)

- Historic Sites (see Historic and Cultural Resources)
- Archeological Sites (see Historic and Cultural Resources)
- Federally designated Wild and Scenic Rivers

Section 4(f) applies to those portions of federally designated Wild and Scenic Rivers that are otherwise eligible as historic sites, or that are publicly owned and function as, or are designated in a management plan as, a significant park, recreation area, or wildlife and waterfowl refuge.

Section 6(f) protected properties are defined as any recreational area or facility which was acquired or developed using Land and Water Conservation Fund (LAWCON) assistance through the NPS. The NPS will be relied upon for geospatial identification of any 6(f) lands that may be impacted by the proposed rail corridor.

The Federal Highway Administration's (FHWA) policy recognized by the National Environmental Policy Act of 1969 (NEPA) states that use of a Section 4(f) property needs to be avoided unless there is no 'feasible and prudent alternative'.

The data used to determine potential Section 4(f) and Section 6(f) protected property was gathered from the Wisconsin GAP Analysis Program, Minnesota Gap Analysis Program and the Protected Areas Database of the United States (PAD-US). From these various datasets the following data was analyzed:

- Number of times a route passed through a Section 4(f) or Section 6(f) property
- Length in miles that a route passed through a Section 4(f) or Section 6(f) property
- Number of times a Section 4(f) or Section 6(f) property was within 50' of the track centerline
- Number of times a Section 4(f) or Section 6(f) property was within 100' of the track centerline

Normative Statement: A route that passes through or a route that impacts a fewer number of Section 4(f) and/or Section 6(f) properties would be more desirable.

The number of times and length in miles that a route passed through or passed near a Section 4(f) and/or Section 6(f) property is detailed by route in Table 11-5 and shown graphically in Charts 11-14, 11-15, 11-16, 11-17, 11-18, 11-19, 11-20 and 11-21.

Table 11-5. Section 4(f)/6(f) Protected Property

Route	Number of Times Route Passes Through 4(f) Sites	Number of Times Route Passes Through 6(f) Sites	Length Route Passes Through 4(f) Site (miles)	Length Route Passes Through 6(f) Site (miles)	Quantity of Section 4(f) Sites Within 50' of the Track Centerline	Quantity of Section 4(f) Sites Within 100' of the Track Centerline	Quantity of Section 6(f) Sites Within 50' of the Track Centerline	Quantity of Section 6(f) Sites Within 100' of the Track Centerline
1 –Amtrak Route	125	10	45	23	731	975	17	22
2 – Amtrak-Rochester	47	20	29	14	223	384	24	26
3 – Amtrak-BNSF River	28	9	28	19	107	182	15	20
4 – MWRRI-Madison	127	10	45	23	728	974	17	22
5 – Madison-Rochester	49	20	25	14	222	383	24	26
6 – Madison-BNSF River	30	9	22	19	106	181	15	20
7 – Madison-Prairie	134	10	39	23	756	1,040	17	22
8 – Madison-Prairie-Rochester	56	20	19	14	248	449	24	26
9 – Madison-Prairie-BNSF River	37	9	16	19	132	247	15	20
10 – Amtrak-Eau Claire	17	7	8	4	32	40	9	10
11 – Madison-Eau Claire-TC	19	7	8	4	31	39	9	10
12A – Wyeville-Eau Claire	15	7	8	4	27	33	10	12
13 – Milwaukee-Fond du Lac-Eau Claire	6	7	25	4	13	21	9	10
14 – Milwaukee-Fond du Lac-Chip-TC	8	8	26	4	16	21	11	12

Chart 11-14. Number of Times Route Passes Through a Section 4(f) Site

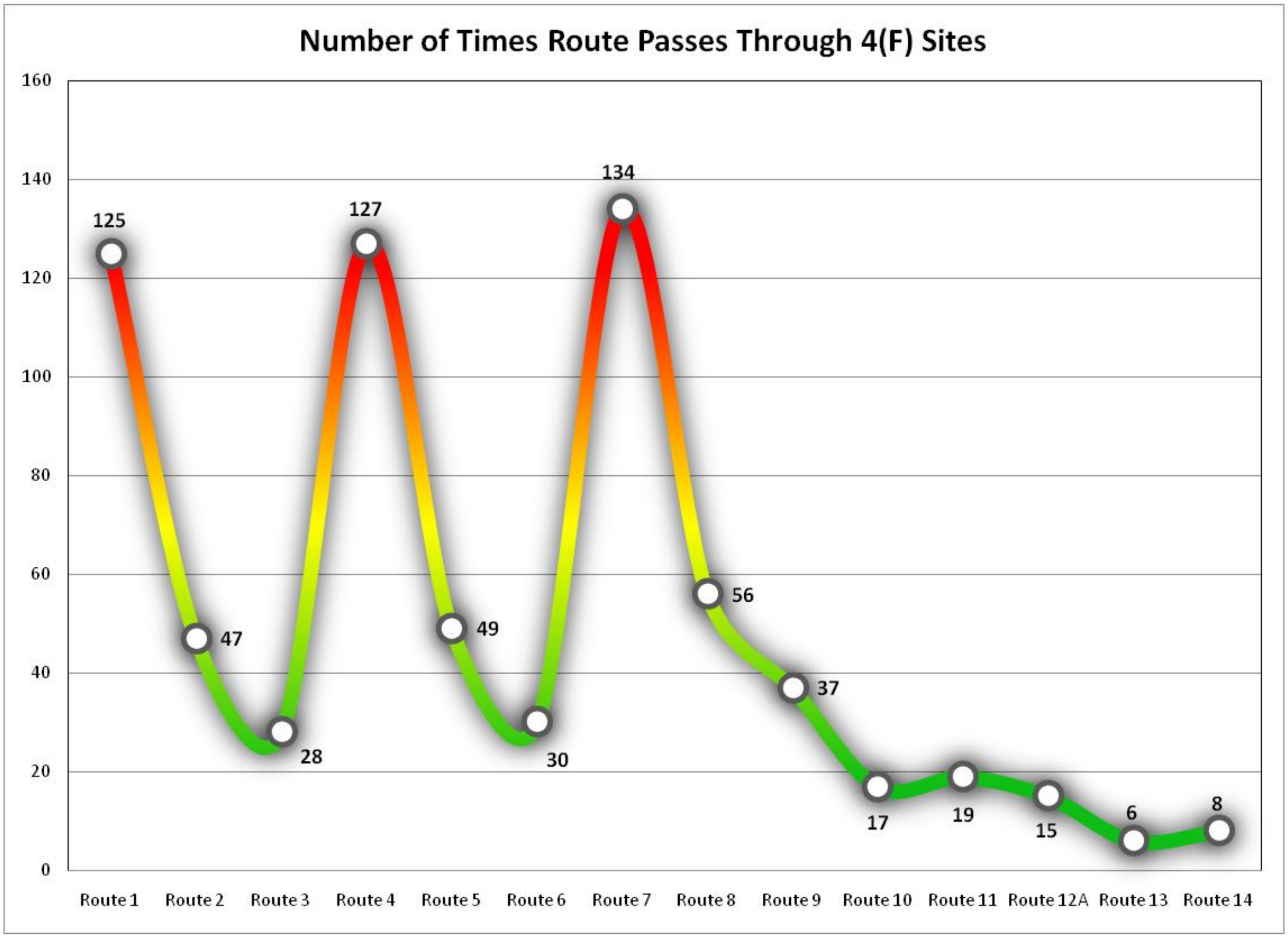


Chart 11-15. Number of Times Routes Passes Through Section 6(f) Sites

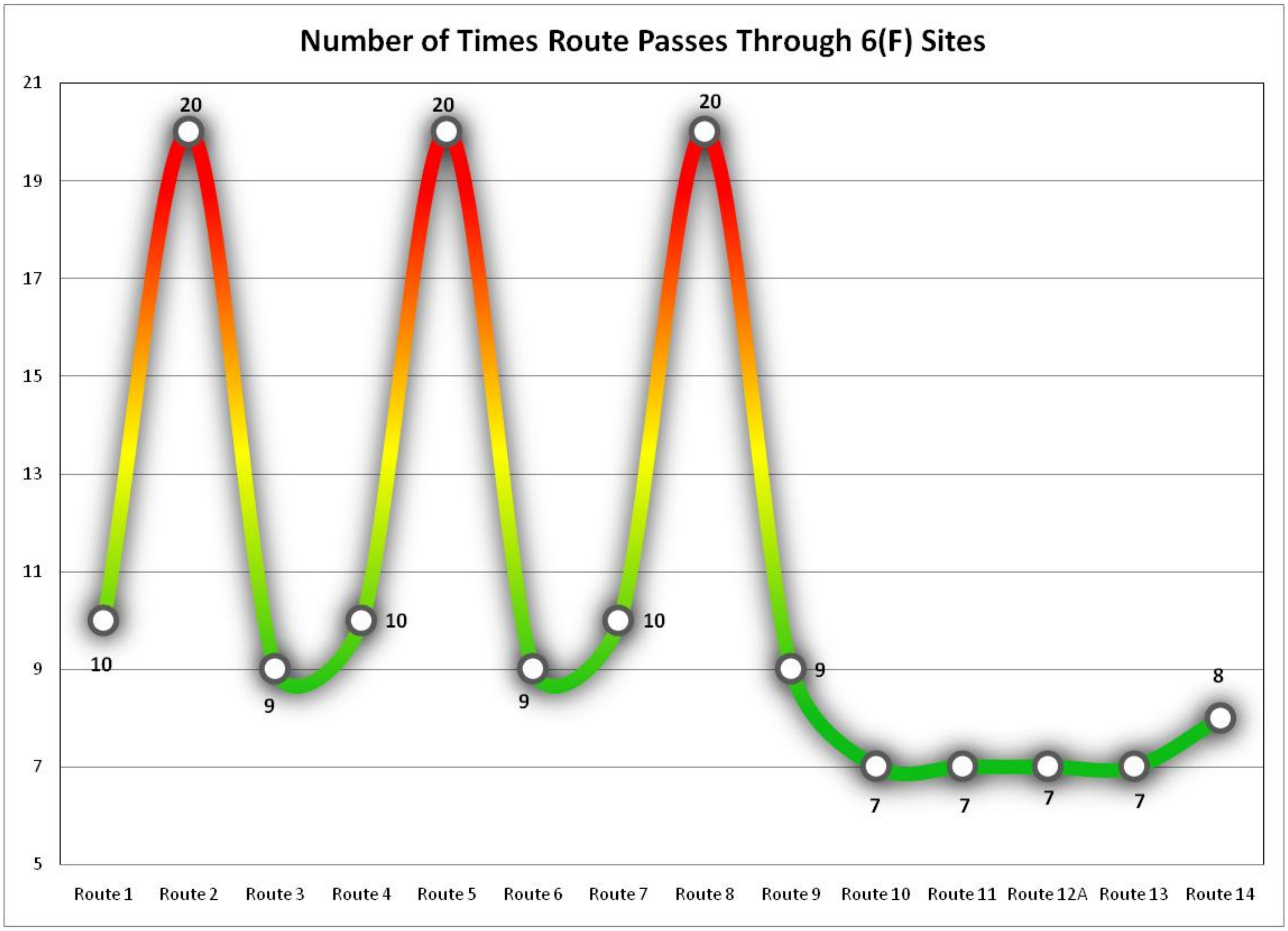


Chart 11-16. Length (miles) Route Passes Through Section 4(f) Sites

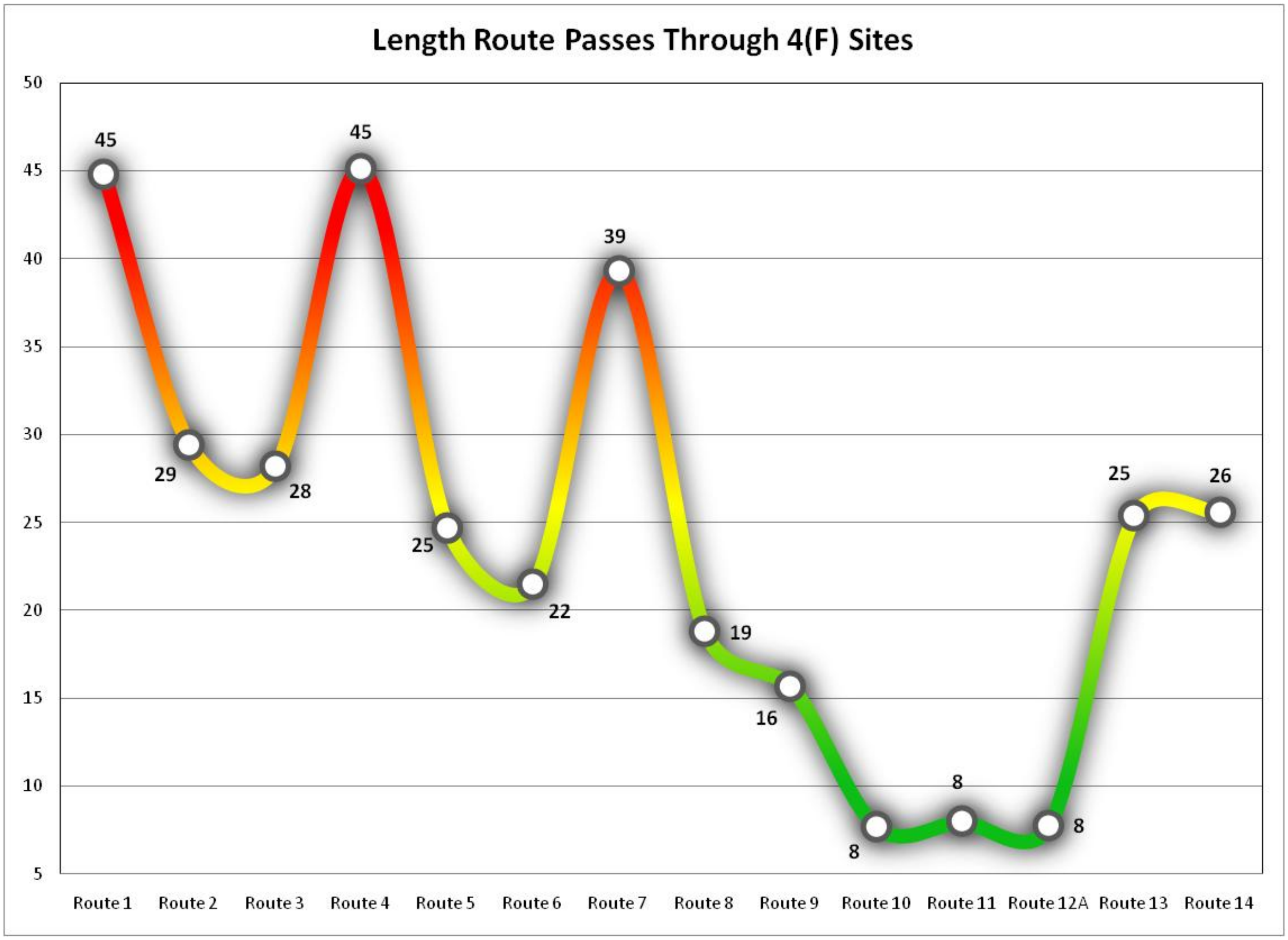


Chart 11-17. Length (miles) Route Passes Through Section 6(f) Sites

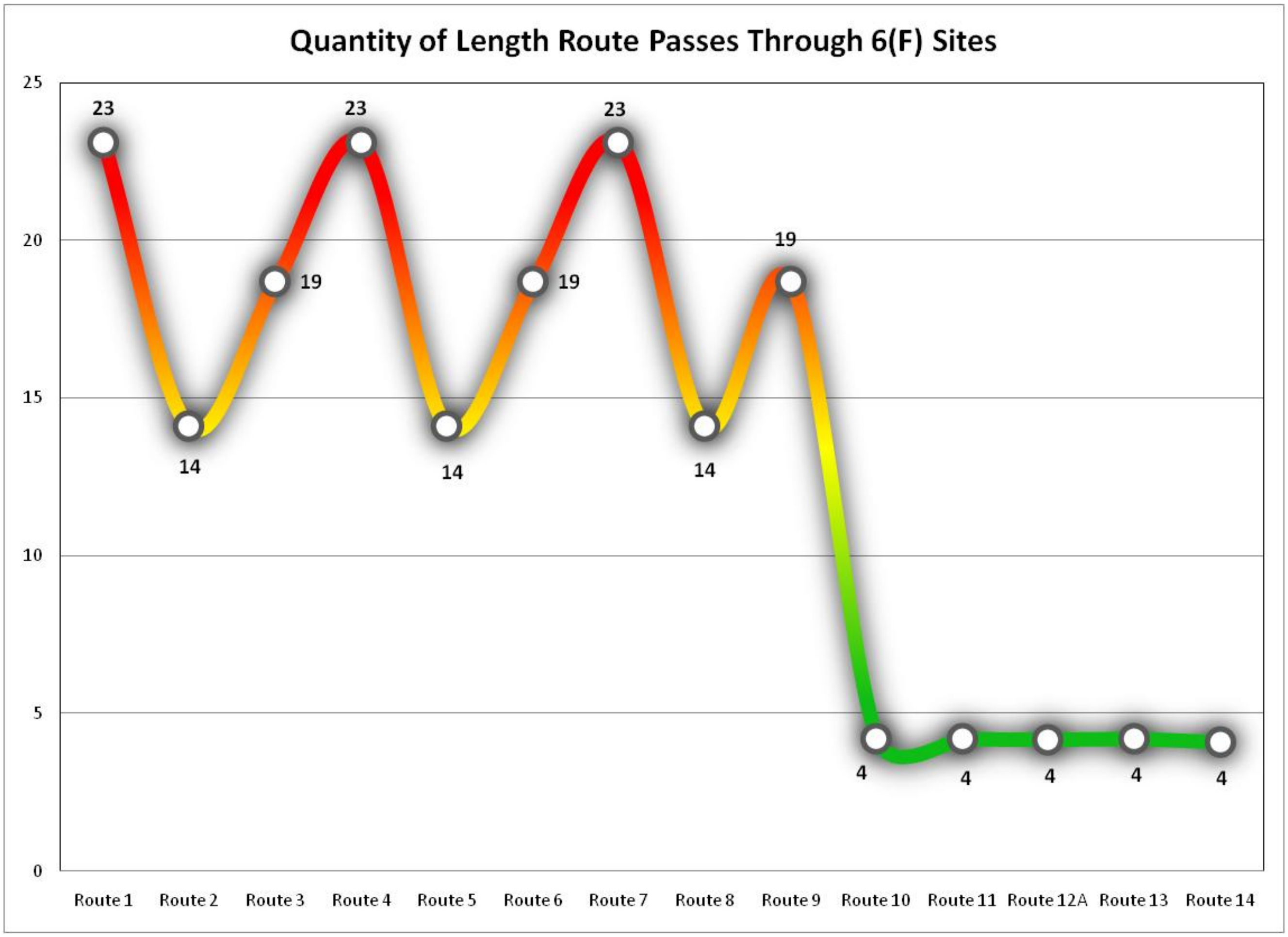


Chart 11-18. Quantity of Section 4(f) Sites Within 50' of the Track Centerline

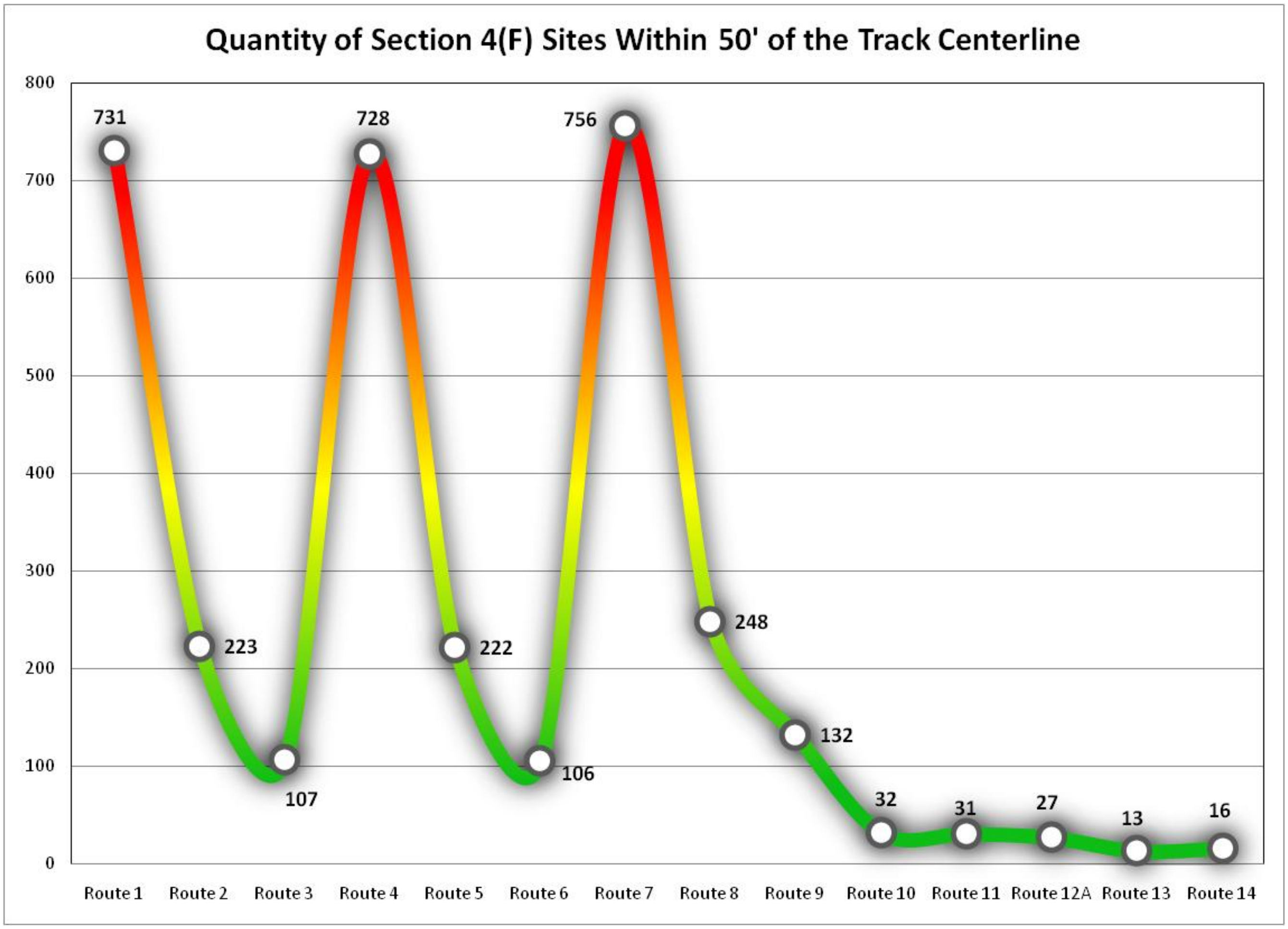


Chart 11-19. Quantity of Section 4(f) Sites Within 100' of the Track Centerline

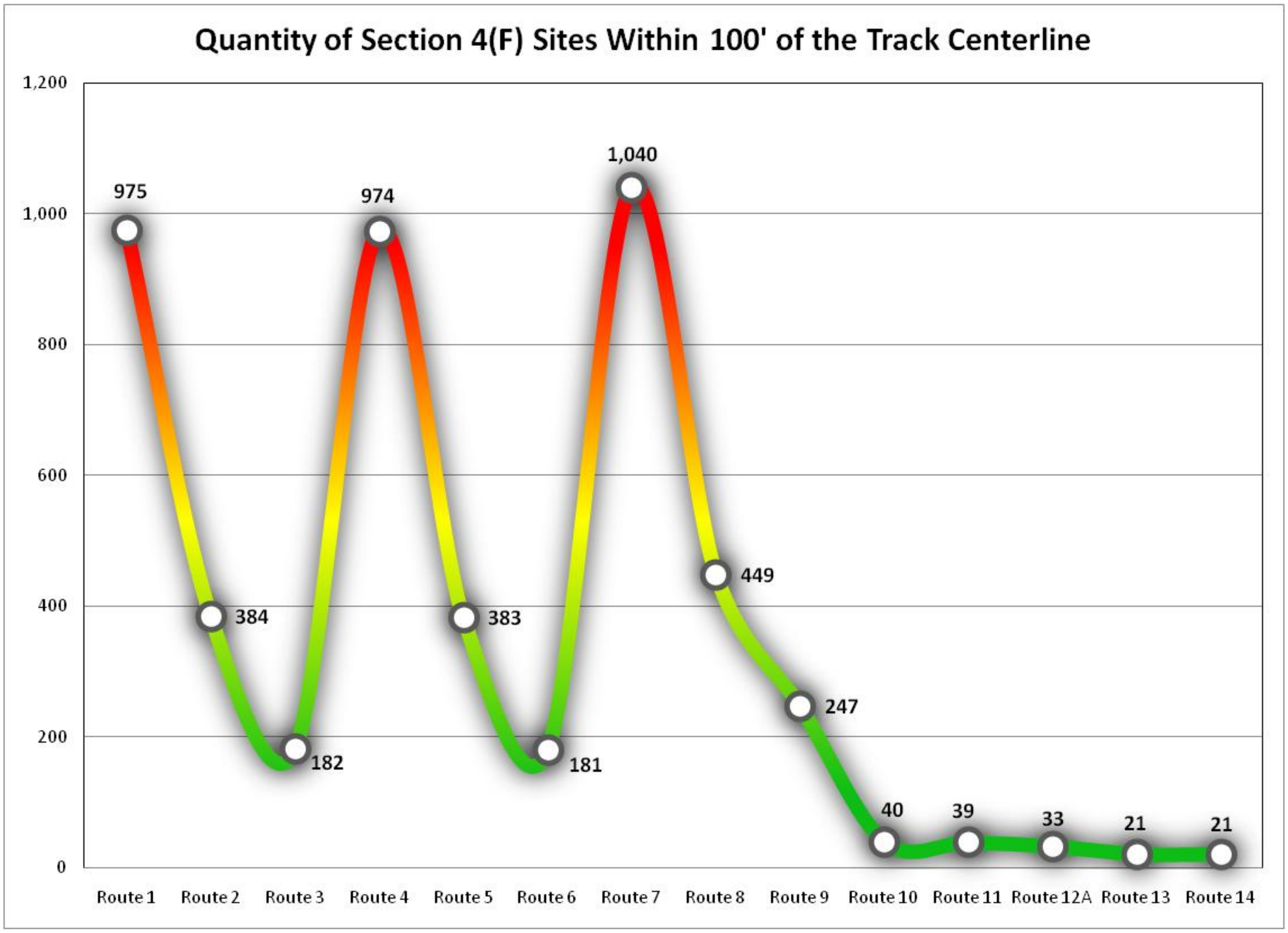


Chart 11-20. Quantity of Section 6(f) Sites Within 50' of the Track Centerline

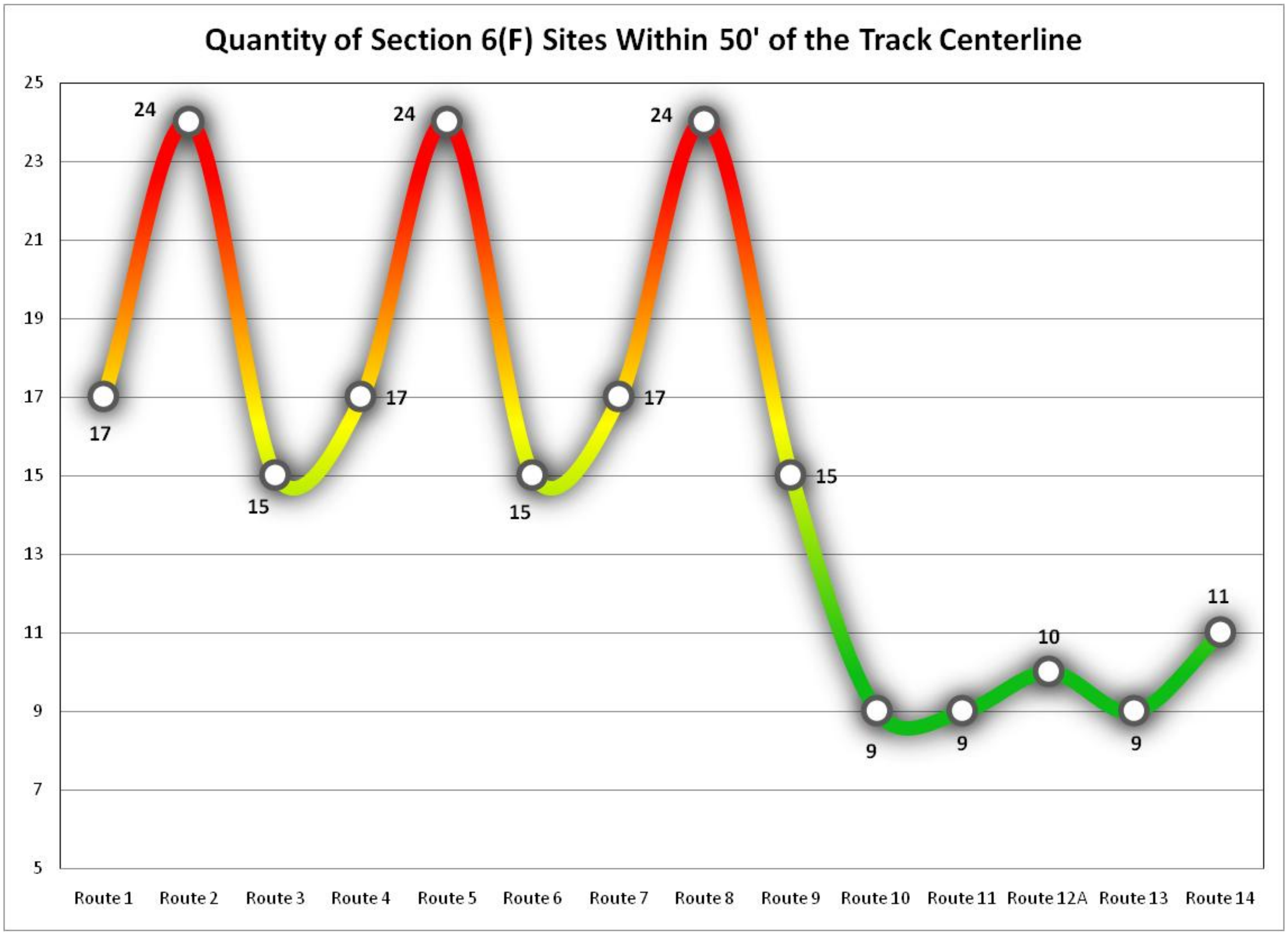
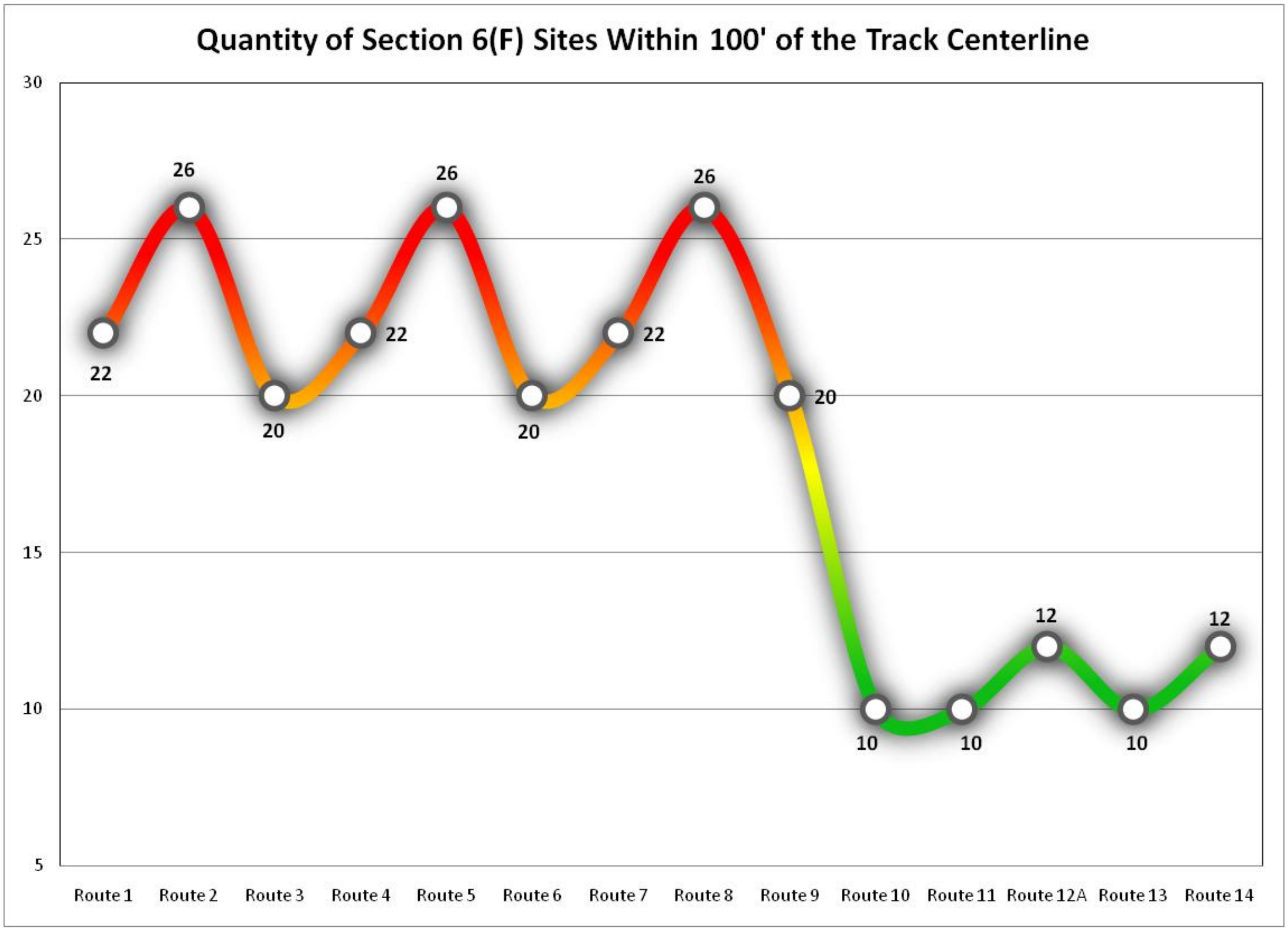


Chart 11-21. Quantity of Section 6(f) Sites Within 100' of the Track Centerline



Qualitative Assessment: Routes 10, 11, 12A, 13, and 14 *pass through the fewest number of* 4(f) and 6(f) sites, *have the fewest number* of miles passing through 4(f) and 6(f) sites, and *have the fewest* 4(f) and 6(f) sites within 50' and 100' of the track centerline. Overall, these routes are better than the remaining routes.

11.6 Environmental Justice

The goal of Environmental Justice, as the Federal Highway Administration (FHWA) has determined, seeks to ensure that minority populations or low-income populations are not disproportionately affected by a potential transportation project. The federal guidance for evaluating environmental justice issues is found in Guidance for Federal Agencies on Key Terms in Executive Order 12898, which was developed by the Interagency Working Group on Environmental Justice, August 1995. Based on this guidance, a tract in this study is categorized as having a large concentration of either minority or low income population if:

- At least 50 percent of the population in the census tract is minority or low income; or
- The minority or low income population in the tract is at least 10 percent greater than the average of the minority or low income population in the county.

Low income populations will be indentified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. Minority population is defined as "any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity". Minorities include: Black, Hispanic, Asian American, American Indian and Alaskan Native.

Environmental justice areas also include all Economically Distressed Areas (EDAs). EDAs are defined in the Public Works and Economic Development Act of 1965, amended in 1994. These areas are defined as areas that have a per capita income of 80 percent or less of the national average or if it has an unemployment rate that is, for the most recent 24-month period, at least 1 percent greater than the national average unemployment rate based on unemployment rates available from the U.S Bureau of Labor and Statistics.

Analyzing the location of the routes compared to the entire block group that has either a majority of minority populations, or that is considered to be low income can determine whether or not a particular route is adversely impacting groups that fall into these socio-economic categories.

Normative Statement: A route that impacts a fewer number of Environmental Justice block groups would be a more desirable route.

The number of majority-minority block groups and the low-income block groups are detailed in Table 11-6 and represented graphically in Chart 11-22 and Chart 11-23.

Table 11-6. Environmental Justice Data

Route	Quantity of Block Groups That Contain a Majority of Low Income Populations Within ½-mile of the Track Centerline	Quantity of Block Groups That Contain a Majority of Minority Populations Within ½-mile of the Track Centerline
1 –Amtrak Route	191	354
2 – Amtrak-Rochester	207	470
3 – Amtrak-BNSF River	183	304
4 – MWRRI-Madison	206	354
5 – Madison-Rochester	222	450
6 – Madison-BNSF River	198	304
7 – Madison-Prairie	220	356
8 – Madison-Prairie-Rochester	236	472
9 – Madison-Prairie-BNSF River	213	306
10 – Amtrak-Eau Claire	211	326
11 – Madison-Eau Claire-TC	226	326
12A – Wyeville-Eau Claire	360	479
13 – Milwaukee-Fond du Lac-Eau Claire	396	476
14 – Milwaukee-Fond du Lac-Chip-TC	372	479

Chart 11-22. Number of Block Groups That Contain a Majority of Low Income Populations Within ½-Mile of the Track Centerline

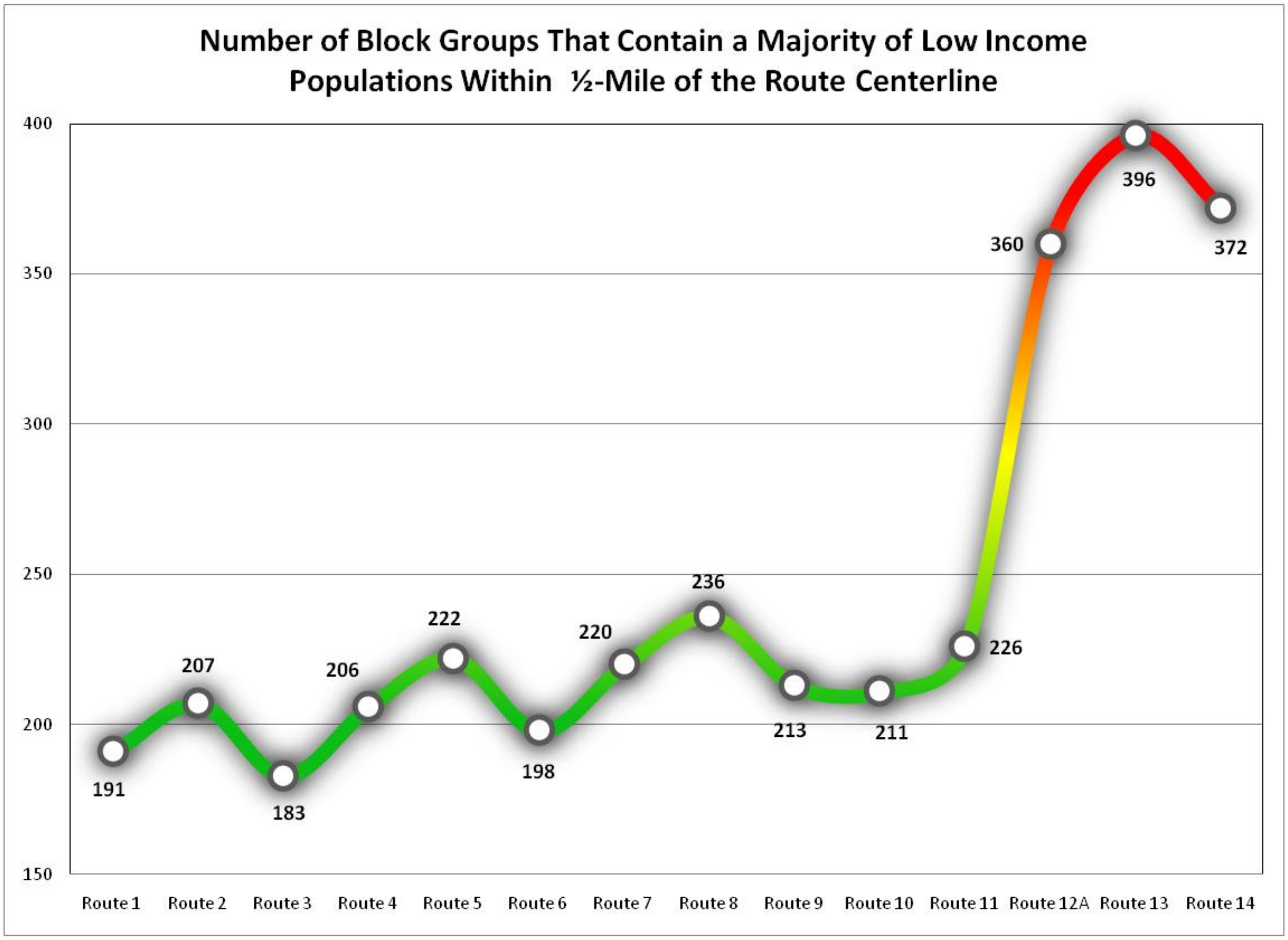
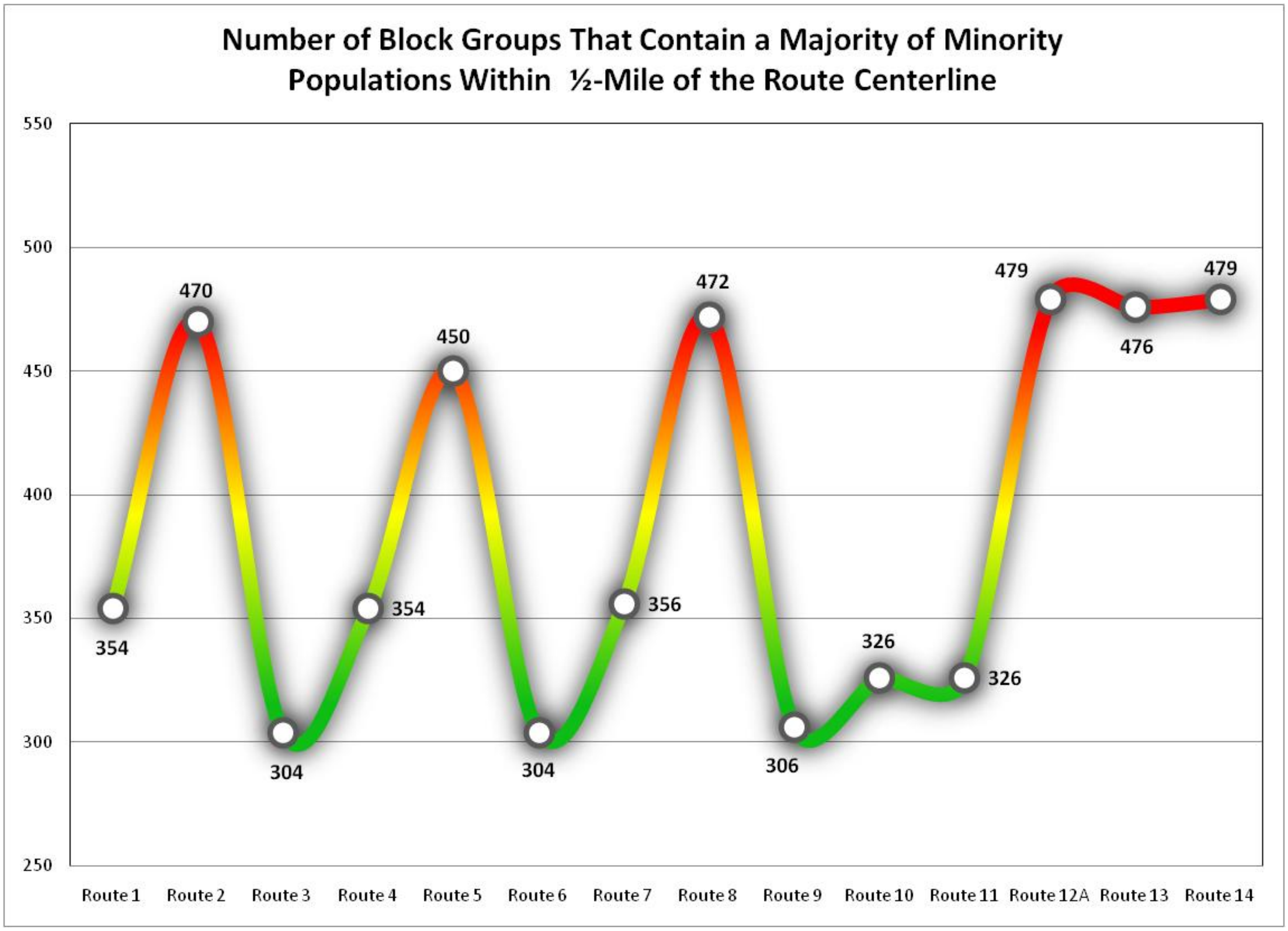


Chart 11-23. Number of Block Groups That Contain a Majority of Minority Populations Within ½-Mile of the Track Centerline



Qualitative Assessment: Routes 1, 3, 6, 9, 10, and 11 have low quantities of block groups containing a majority of low income populations and a majority of minority populations within ½ mile of the track centerline. Overall, these routes are better than the remaining routes.

11.7 Hazardous Materials

Hazardous materials are materials that are dangerous or potentially harmful to our health or the environment. Hazardous materials can be liquids, solids, gases, or sludge. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes. For the purposes of this analysis, only superfund sites adjacent to each route alternative are considered hazardous materials/waste.

The number of hazardous materials sites that are present within a distance of a potential high speed rail route can significantly impact the feasibility of a particular route. A hazardous materials site that is too close to a potential route may require mitigation and could result in significant delay to required improvements for a route. The data that was analyzed for hazardous materials sites came from the United States Environmental Protection Agency.

Normative Statement: A route with fewer hazardous materials site impacts would be more desirable.

The number of hazardous materials sites within ¼-mile of the track centerline and within 50' of the track centerline are detailed in Table 11-7 and represented graphically in Chart 11-24 and Chart 11-25.

Table 11-7. Quantity of Hazardous Materials Sites

Route	Quantity of Hazardous Materials sites 1/4-mile from the Track Centerline	Quantity of Hazardous Materials Sites Located 50' from the Track Centerline
1 –Amtrak Route	2	0
2 – Amtrak-Rochester	3	0
3 – Amtrak-BNSF River	3	0
4 – MWRRI-Madison	2	0
5 – Madison-Rochester	3	0
6 – Madison-BNSF River	3	0
7 – Madison-Prairie	1	0
8 – Madison-Prairie-Rochester	2	0
9 – Madison-Prairie-BNSF River	2	0
10 – Amtrak-Eau Claire	0	0
11 – Madison-Eau Claire-TC	0	0
12A – Wyeville-Eau Claire	1	0
13 – Milwaukee-Fond du Lac-Eau Claire	3	0
14 – Milwaukee-Fond du Lac-Chip-TC	2	0

Chart 11-24. Hazardous Materials ¼ mile from the Track Centerline

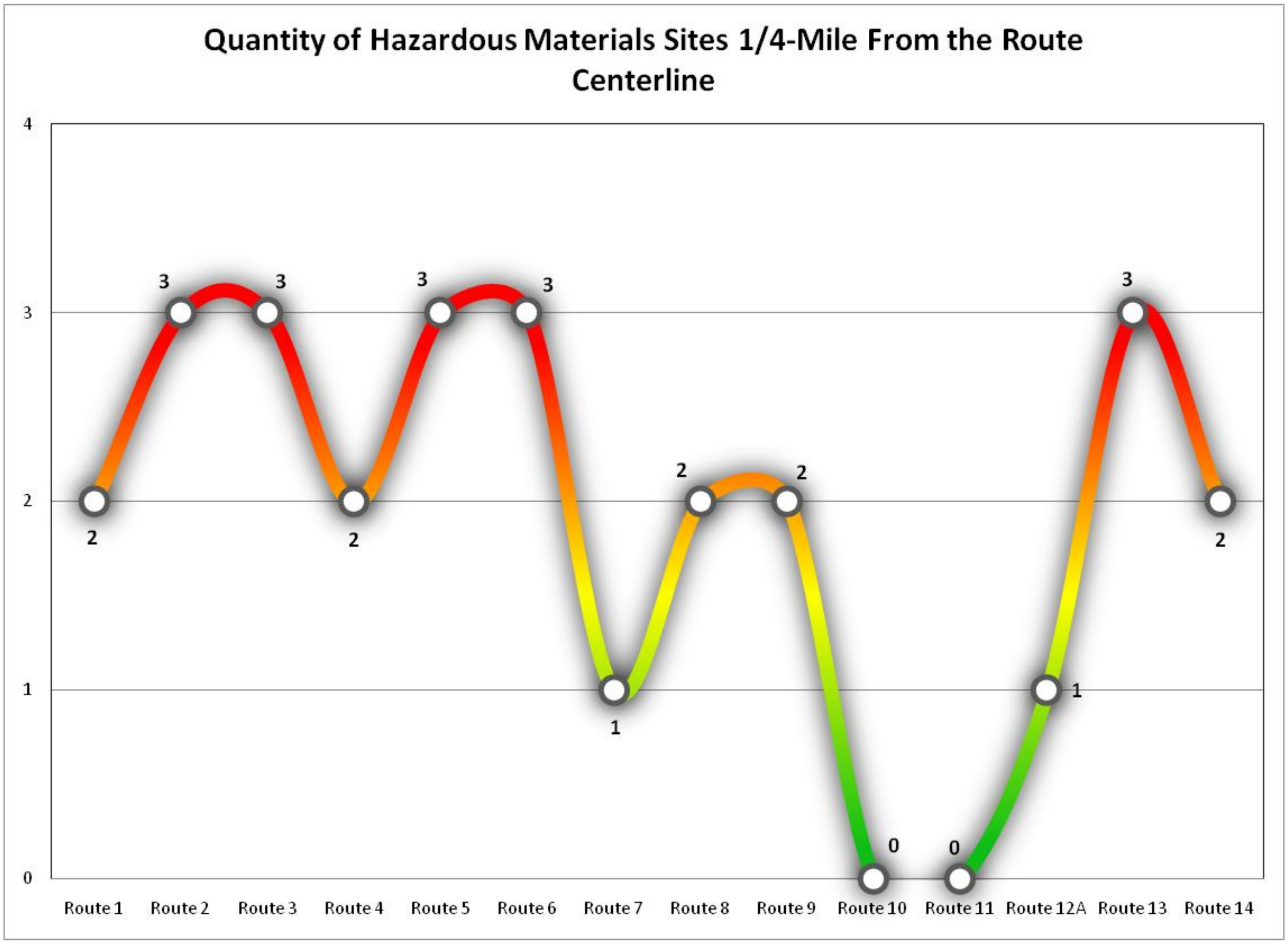
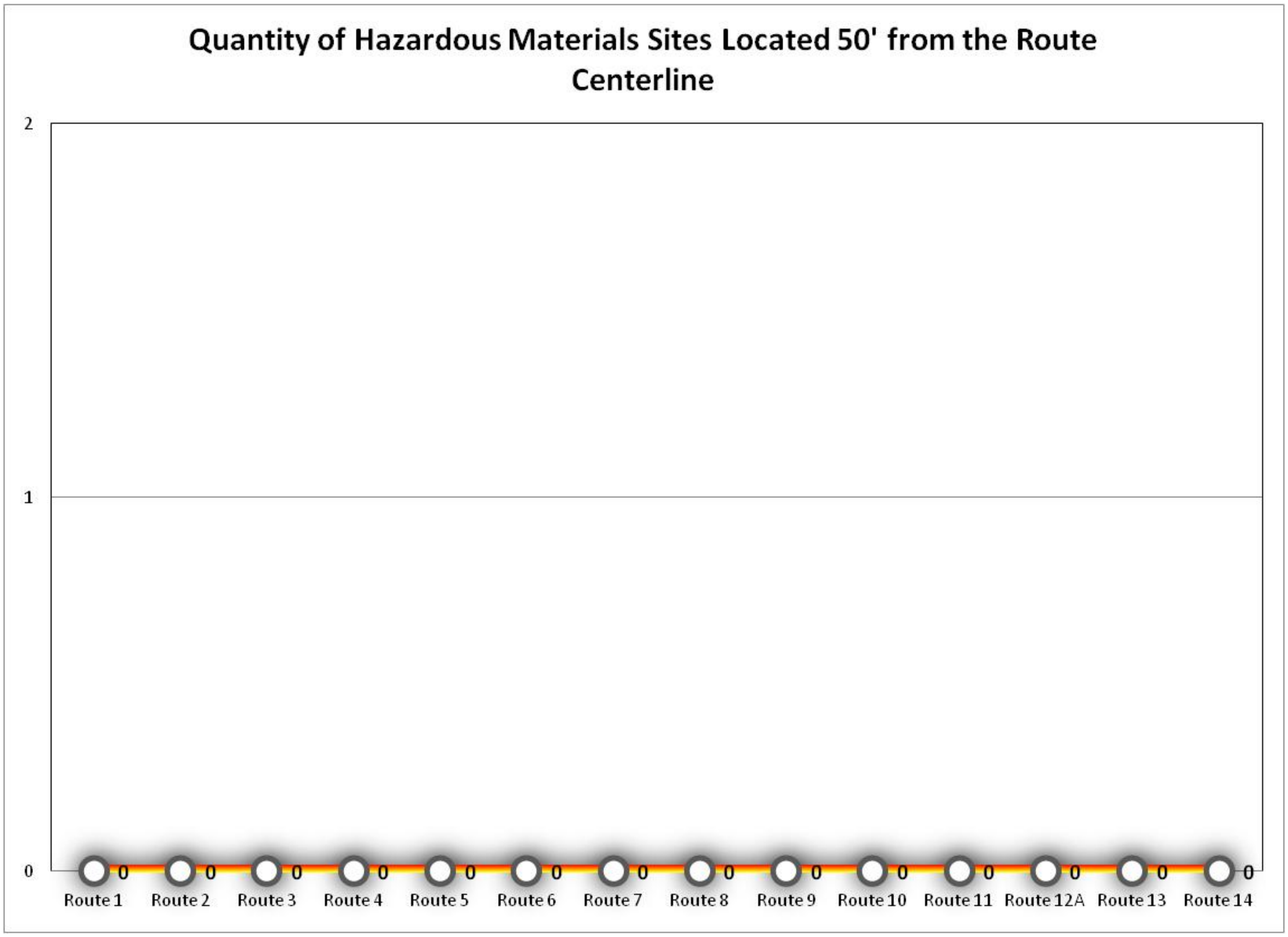


Chart 11-25. Hazardous Materials 50' from the Track Centerline



Qualitative Assessment: Routes 7, 10, 11, and 12A have the fewest number of hazardous materials sites located 50' and ¼ mile from the track centerline. Overall, these routes are better than the remaining routes.

11.8 Right-of-Way Takes

For certain routes there are known areas that will require the acquisition of right-of-way in order to construct additional rail or rail features. Four (4) areas have been determined to require right-of-way takes of significant size and are detailed below. Specific environmental features that will be impacted by the right-of-way take are also included.

11.8.1 La Crosse, WI – Grand Crossing, WI

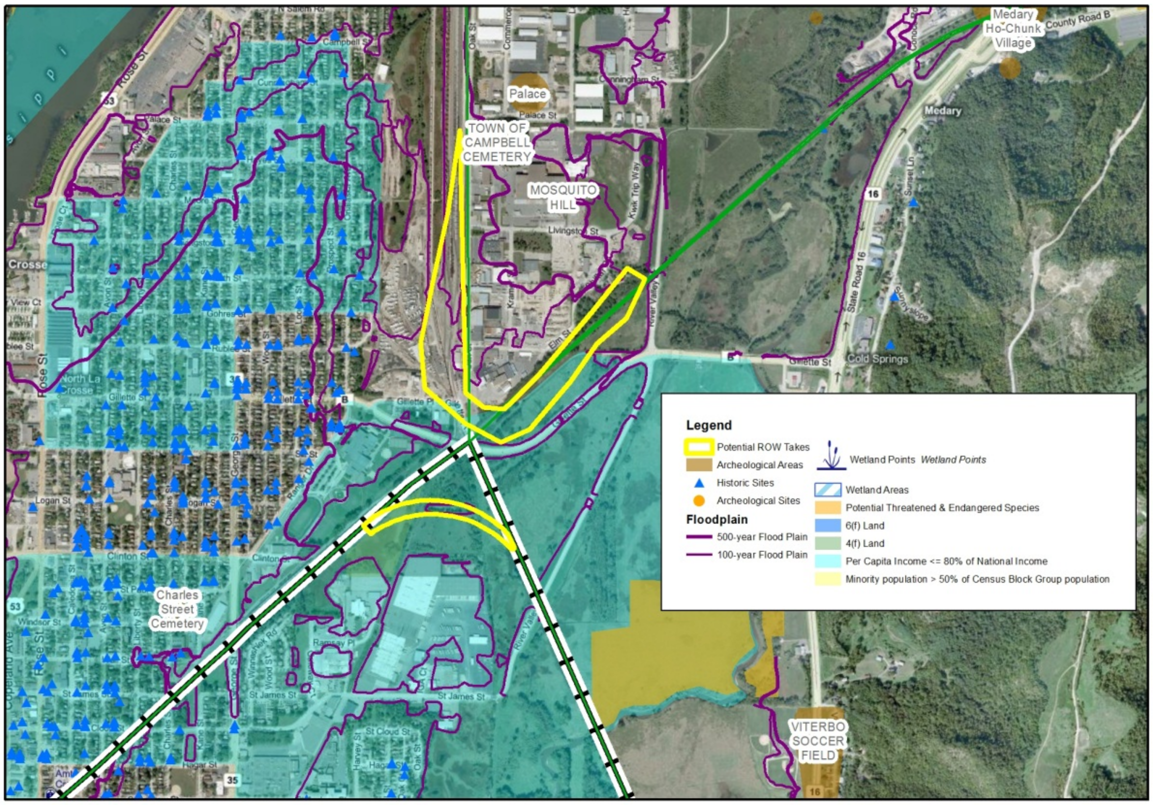
Improvements are required on the north or the south side of Grand Crossing in La Crosse, depending on the route chosen. The details for the property required for either side of the crossing are as follows:

North side - Property in the northwest quadrant will be needed if the decision were made to utilize either Route 3 (Amtrak-BNSF River) or Route 6 (Madison-BNSF River). The proposed connection between westbound Canadian Pacific and northbound BNSF at Grand Crossing requires that a new flyover between the CP & BNSF be constructed to avoid major property takes and business/residential relocations at Grand Crossing. The new track will cross both 100-year and 500-year floodplains. The track will also cross through a low income (Environmental Justice) block group. Additionally, the right-of-way take may impact an existing railroad building.

In addition to the connection itself, property will also be required to allow relocation of the present-day Amtrak Station along the CP west of Grand Crossing, to a new location along the BNSF, north of Grand Crossing. In addition to Routes 3 (Amtrak-BNSF River) and 6 (Madison-BNSF River), if Route 9 (Madison-Prairie-BNSF River) were selected, a relocated station and the associated property take will be required.

South side – Property in the southwest quadrant will be needed if the decision were made to utilize either Route 7 (MWRRI-Madison-Prairie) or Route 8 (Madison-Prairie-Rochester). The connection between northbound BNSF and westbound Canadian Pacific at Grand Crossing requires the construction of a separate track providing a connection to the depot (old Amtrak station). The connecting track must be long enough to allow a high-speed rail train to clear one railroad before obstructing the other so as to avoid successive delays on both railroads. This is especially true since the CP route may be obstructed with open river bridges that delay rail traffic (water traffic has the right of way at movable span rail bridges). This new track will impact 100-year and 500-year floodplain, a low income (Environmental Justice) block group and a 4(f) Statewide Habitat Area.

Figure 11-1. La Crosse, WI-Grand Crossing, WI

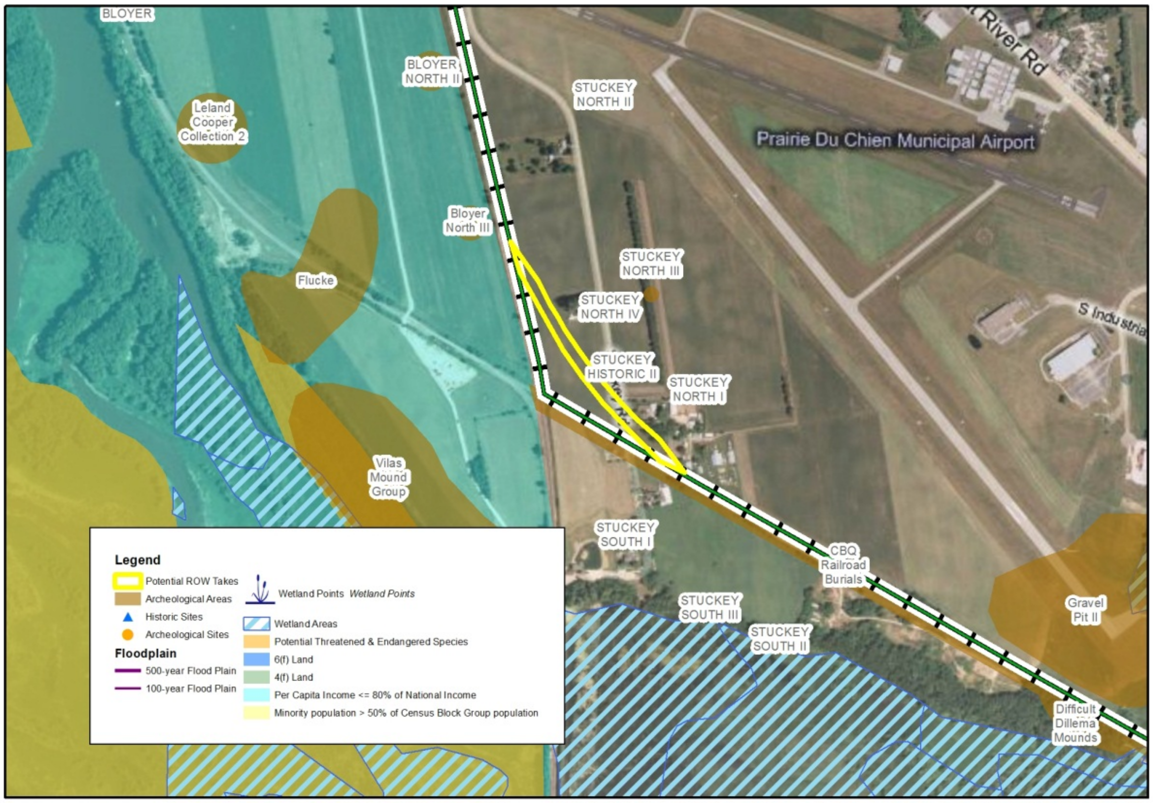


11.8.2 Prairie Du Chien, WI – Crawford, WI

If Route 7 (MWRRI-Madison-Prairie), 8 (Madison-Prairie-Rochester) or 9 (Madison-Prairie-BNSF River) were selected, a connection between westbound WSOR and northbound BNSF must be constructed in the northeast quadrant of this rail crossing as shown below in Figure 2. The property take required at Crawford increases as the maximum operating speed desired at the connection increases. The lower the speed at the connection, the less property required.

Right-of-way impacts include houses and archeological sites along the existing railroad and in the area that the new curve would be constructed. If the connecting track is designed for speeds of 10-15 MPH, the property required would be substantially reduced to a small corner of farm field and could likely avoid disturbances to archeological sites and the highway-rail grade crossing.

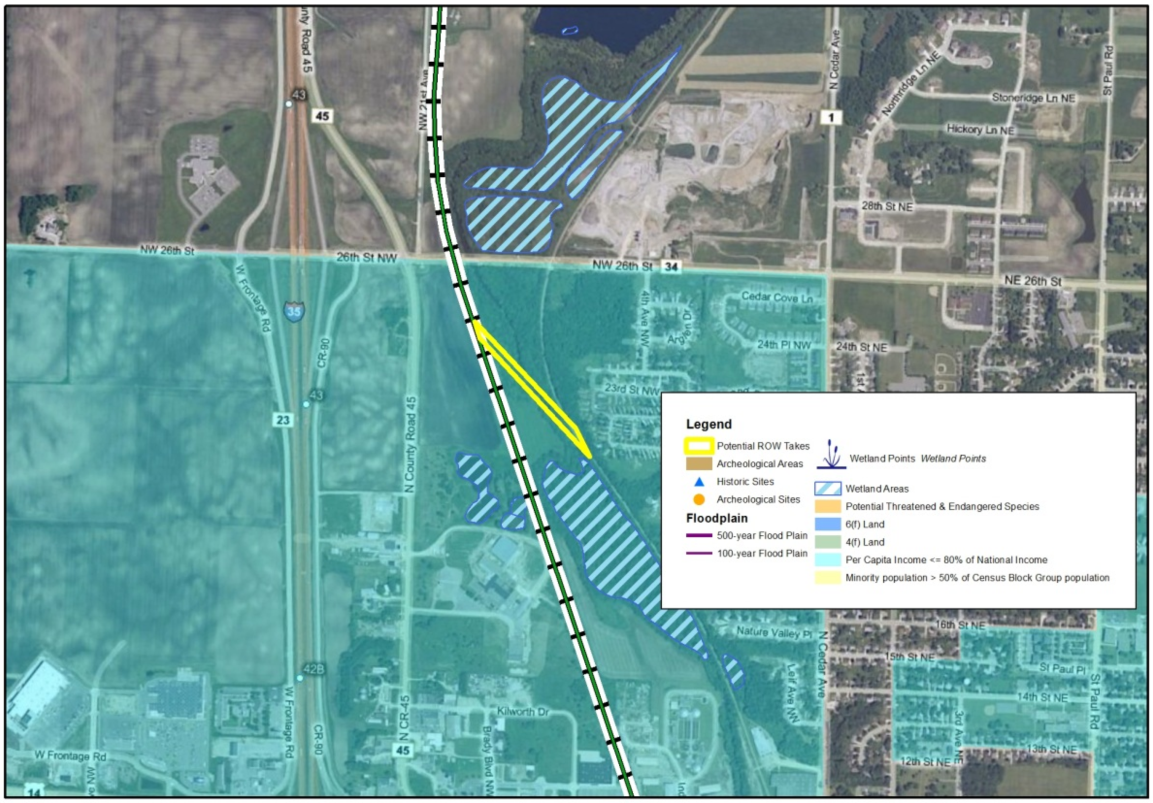
Figure 11-2. Prairie du Chien, WI-Crawford Junction, WI



11.8.3 Owatonna, MN

If Routes 2 (Amtrak-Rochester), 5 (Madison-Rochester), or 8 (Madison-Prairie-Rochester) are selected, an existing connecting track between the CP (former C&NW and later DM&E) and the CP (former Milwaukee Road and later IC&E) will be utilized in Owatonna. This connection was selected to be used because the alternative connection, the CP (former C&NW and later DM&E) and the UPRR Albert Lea Subdivision, will require the construction of a very expensive structure and property takes to connect the at-grade CP to the 30-40 foot lower UPRR. The UPRR is located in a valley along the lower river route through Owatonna. Through Owatonna, the CP will be utilized. North of Owatonna, a new low-level bridge will be constructed to facilitate a connection between the CP and the UPRR. The impacts north of Owatonna include multiple low income and minority block groups (Environmental Justice) as well as potential wetland impacts.

Figure 11-3. Owatonna, MN



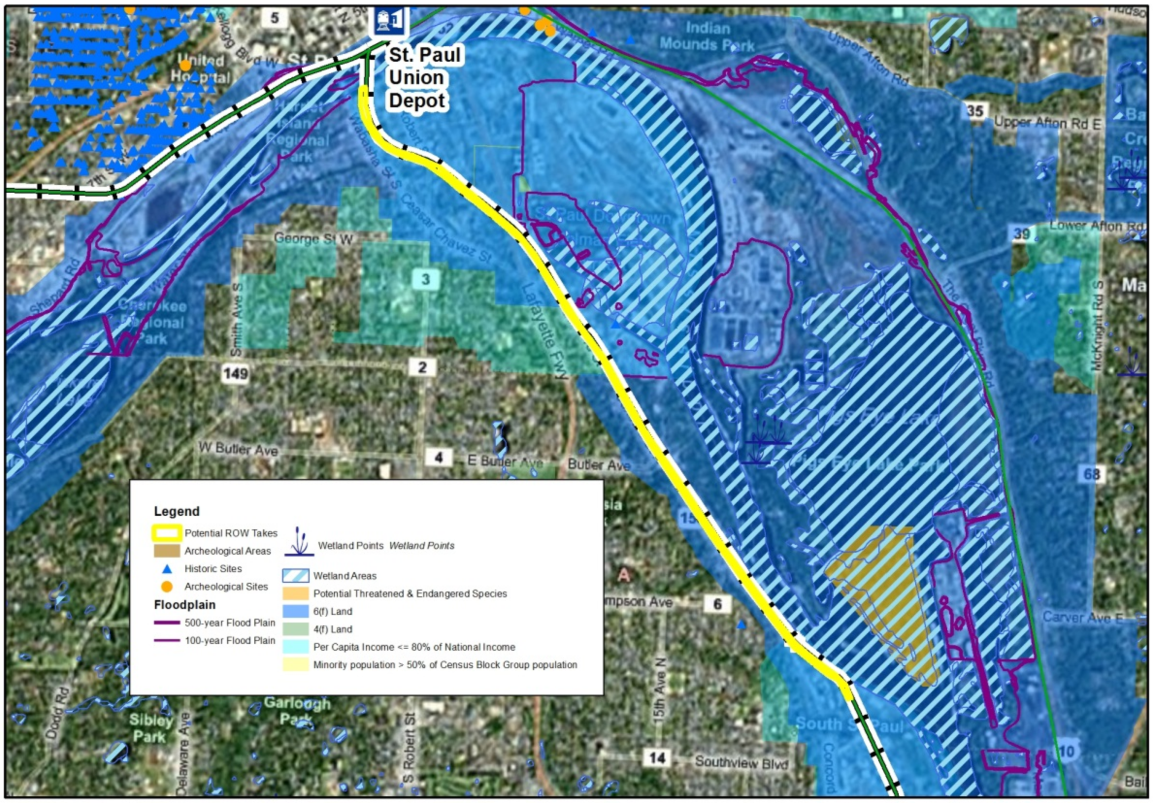
11.8.4 St. Paul, MN – St. Paul Union Depot, MN

If Routes 2 (Amtrak-Rochester), 5 (Madison-Rochester), or 8 (Madison-Prairie-Rochester) are selected, 50' to 100' of additional right-of-way will be required from Grand Avenue in South St. Paul to the Robert St Bridge over the Mississippi River just south of St Paul Union Depot. The proposed high-speed rail passenger track will be constructed on the geographic west side of the existing UPRR right of way along the bluff line. By using a combination of track rationalization and track realignment for the existing tracks in the area, and constructing retaining walls in limited areas of the new track, the need for property takes can be minimized.

The selection of the west side alternative along the bluff is essential because the east side of the UPRR is the "working side" of the yard where the yard switching leads, roadway and maintenance access, industry track switches and the mainline via the Hoffman Avenue Bridge to Hoffman Avenue Yard are located. These represent frequent and slow freight train movement conflicts and would significantly threaten high-speed rail service reliability.

This additional right-of-way will impact 6(f) protected land (Mississippi National River and Recreation Area), low income, and minority block groups (environmental justice).

Figure 11-4. St. Paul, MN-St. Paul Union Depot, MN



11.9 Results of Qualitative Assessment

The routes were assigned a color rating, as described in section 2.2, for the number of floodplains, wetlands, threatened and endangered species, historical/archaeological sites, section 4(f)/6(f) sites, environmental justice, and hazmat sites along each route based on the qualitative assessment completed for these measures. Using the color rating for the measures, an overall travel time rating was assigned to each route based on the number of “green”, “yellow”, and “red” ratings the measures received.

Prior to the March 11 workshop, Quandel Consultants prepared a qualitative assessment and rating of each route based on the data provided in the Environmental Features section of the Alternatives Selection Report. At the workshop, the teams reviewed the environmental data and were asked to review the assessment and ratings provided. The teams came to the consensus that the provided assessment and ratings were consistent with the teams’ assessment of the environmental data, and accepted the ratings.

The teams determined that environmental features were not a discriminator in this level of the project. The environmental specialists stated that the data was not specific enough to eliminate routes based on environmental features. The teams agreed that environmental features would not be used to identify the reasonable and feasible passenger rail alternatives, but would be used after the reasonable and feasible routes were identified to justify moving the routes into a Tier 1 Environmental Impact Statement. Additionally, the states asked that a sensitivity analysis be prepared to determine how the results of the overall qualitative assessment of the routes would change if the environmental features data were considered. The sensitivity analysis is shown in the conclusions section.

Table 11-8 depicts the color rating for each route for the measures and the overall environmental features criteria.

Table 11-8. Results of Qualitative Assessment

Route	Floodplains	Wetlands	Threatened/ Endangered Species	Historical/ Archaeological Sites	4(f)/6(f) Sites	Environmental Justice	Hazmat Sites	Overall Environmental Features Rating
1 –Amtrak Route								
2 – Amtrak-Rochester								
3 – Amtrak-BNSF River								
4 – MWRRI-Madison								
5 – Madison-Rochester								
6 – Madison-BNSF River								
7 – Madison-Prairie								
8 – Madison-Prairie-Rochester								
9 – Madison-Prairie-BNSF River								
10 – Amtrak-Eau Claire								
11 – Madison-Eau Claire-TC								
12A – Wyeville-Eau Claire								
13 – Milwaukee-Fond du Lac-Eau Claire								
14 – Milwaukee-Fond du Lac-Chip-TC								

12.0 RESULTS OF QUALITATIVE ASSESSMENT OF POTENTIAL PASSENGER RAIL ALTERNATIVES

12.1 Introduction

The purpose of the March 11, 2011 workshop was to identify a set of reasonable and feasible passenger rail alternatives for further analysis in a Tier 1 EIS. In order to do so, the workshop participants used the data presented on Route Characteristics, Travel Time, Market Size, Capital Cost, Operating Cost, Safety, Reliability, System Connectivity, and Environmental Features to give an overall qualitative assessment to each of the routes. Sections 3.0-11.0 of this report present all of the data that was used by the participants to reach a consensus-based assessment on the nine evaluation criteria for each route. Table 12-1 depicts the consensus-based qualitative assessments for the potential passenger rail alternatives.

The measures for each evaluation criterion are assessed to ensure that a potential passenger rail alternative complements the project purpose and project need for the proposed action to qualify as a reasonable and feasible passenger rail alternative. The potential passenger rail alternative that does not meet the project purpose and the project need of the proposed action will be eliminated.

As stated in sections 1.4.2 and 1.4.3, the purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

In addition, the project will:

- Improve overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans
- Provide accessibility to major population centers,
- Improve freight rail mobility, and
- Minimize environmental impacts.

The need for the proposed action is based on the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities. Existing transportation modes, including highway, bus, and air travel, have inherent problems including congested highways near the Milwaukee, Madison, and Twin Cities metro areas and airport capacity issues at Minneapolis-St. Paul International Airport and Milwaukee's General Mitchell International Airport. Improved and expanded passenger rail service can provide an alternative mode and/or relief to these congested roadways and airports.

The need for the proposed action exists because:

1. **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure
2. **Competitive and attractive alternative** modes of travel do not exist in the corridor
3. As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes ;
4. **Intermodal connectivity** among existing transportation systems is limited.

Table 12-1. Consensus-Based Qualitative Assessment

Routes	Route Characteristics	Travel Time	Market Size	Capital Cost	Operating Cost	Safety	Reliability	System Connectivity	Environmental Features
1 –Amtrak Route									
2 – Amtrak-Rochester									
3 – Amtrak-BNSF River									
4 – MWRRI-Madison									
5 – Madison-Rochester									
6 – Madison-BNSF River									
7 – Madison-Prairie									
8 – Madison-Prairie-Rochester									
9 – Madison-Prairie-BNSF River									
10 – Amtrak-Eau Claire									
11 – Madison-Eau Claire-TC									
12A – Wyeville-Eau Claire									
13 – Milwaukee-Fond du Lac-Eau Claire									
14 – Milwaukee-Fond du Lac-Chip-TC									

12.2 Routes of Concern

The participants determined that the most efficient way to identify the reasonable and feasible passenger rail alternatives is to identify the routes that do not satisfy the project purpose and the project need and, therefore, are NOT reasonable and feasible. The initial task is to identify “routes of concern.” Routes of concern are those routes that, when assessed to the normative statements, were assigned a “red” rating for multiple evaluation criterion. Table 12-2 shows the evaluation criterion that received a “red” rating for each route.

Table 12-2. Routes of Concern

Routes	Route Characteristics	Travel Time	Automobile Travel Time	Overall Travel Time	Market Size	Capital Cost	Operating Cost	Safety	Number of At-Grade Crossings	Reliability	System Connectivity	Environmental Features	Total Number of "Red" Assessments
1 –Amtrak Route													
2 – Amtrak-Rochester	X		X					X					3
3 – Amtrak-BNSF River													
4 – MWRRI-Madison													
5 – Madison-Rochester	X	X	X	X			X	X					6
6 – Madison-BNSF River													
7 – Madison-Prairie			X										1
8 – Madison-Prairie-Rochester		X	X	X		X	X	X					6
9 – Madison-Prairie-BNSF River							X						1
10 – Amtrak-Eau Claire													
11 – Madison-Eau Claire-TC			X				X						2
12A – Wyeville-Eau Claire											X		1
13 – Milwaukee-Fond du Lac-Eau Claire	X								X	X			3
14 – Milwaukee-Fond du Lac-Chip-TC	X		X						X				3

Routes 2, 5, 8, 13, and 14 are considered Routes of Concern because, based on the agreed normative statement, each has multiple "red" qualitative assessments. Specifically:

- Route 2 - Amtrak-Rochester
    - Route Characteristics - Route 2 has 164 miles (42% of the total route miles) of single track on a double track roadbed. However, Route 2 encounters significant grades between Winona and Rochester. The track has a 600 foot elevation change from the river basin area to the plateau to Rochester over a short distance.
    - Automobile Travel Time – Since the travel time for Route 2 is close to the automobile travel time, the route received a "red" assessment
    - Safety – Route 2 has a high number of rail-rail crossings and at-grade crossings compared to the other routes.
- Route 5 – Madison-Rochester
    - Route Characteristics - Route 5 has 163 miles (40% of the total route miles) of single track on a double track roadbed. However, Route 5 encounters significant grades between Winona and Rochester. Similarly to Route 2, the track has a 600 foot elevation change from the river basin area to the plateau to Rochester over a short distance. .
    - Travel Time - Route 5 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester, and at least one reverse move is required. Additionally, Route 5 has a travel time greater than the automobile travel time. Overall, the route received a "red" assessment.
    - Operating Costs - Route 5 had one of the highest track maintenance costs and therefore received a "red" assessment.
    - Safety - Route 5 has a high number of rail-rail and at-grade crossings compared to the other routes and therefore received a "red" assessment.
- Route 8 – Madison-Prairie-Rochester
    - Travel Time - Route 8 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester, and at least one reverse move is required. Additionally, Route 8 has a travel time greater than the automobile travel time. The route received a "red" assessment.
    - Capital Costs - The cost to upgrade to high-speed rail was high and the cyclic capital costs were high for Route 8. Overall, the route received a "red" assessment.
    - Operating Costs - Route 8 had the highest track maintenance cost of all

the routes and therefore received a "red" assessment.

  - Safety - Route 8 has a high number of rail-rail and at-grade crossings compared to the other routes and therefore received a "red" assessment.

- Route 13 – Milwaukee-Fond du Lac-Eau Claire

  - Route Characteristics – 65% of the total track miles is single track without a second roadbed – this is an indication that the route does not have the capacity to accommodate faster trains; only 6% of the total track miles is double track; and the route has almost 21 miles of grades that are greater than 1% - this indicates that trains will not be able to travel quickly over this route. Overall, this route received a "red" assessment.

  - Number of At-Grade Crossings – Route 13 has a very high number of at-grade crossings. The higher the number of crossings, the less safe the system. The route received a "red" assessment.

  - Reliability - Route 13 has a high number of freight conflicts and handoffs between railroads. Furthermore, The UPRR handles unit coal trains from Wyoming's Powder River Basin to St. Paul, and then to Hudson using the St. Croix River swing bridge in Hudson. Once the train clears the junction switch at Lakeland Junction, the train makes a reverse move from the main track at Hudson north up the former CMStP&P branch to the electrical generating station at Stillwater, MN. The movements are made at a speed of approximately 5 MPH and occupy the UPRR's single main track in the vicinity of the river bridge for a period of about one hour. While these loaded and empty coal train movements are occurring, no other trains may move through this bottleneck location. This is a severe reliability issue. Overall, this route received a "red" assessment.

- Route 14 – Milwaukee-Fond du Lac-Chip-TC

  - Route Characteristics – 91% of Route 14's total track miles is single track without a second roadbed – an indication that the route does not have the capacity to accommodate faster trains; only 4% of the total track miles is double track; the route has almost 38 miles of track with a degree of curvature greater than 45 minutes – an indication that trains will not be able to travel quickly over this track. Overall, this route received a "red" assessment.

  - Automobile Travel Time – Route 14 has a travel time of 5 hours and 18 minutes and is 12 minutes shorter than the automobile travel time, as shown in Tables 4-1 and 4-2. As stated above, this route does not meet the project purpose of decreasing travel time and the project need for providing competitive and attractive alternative modes of travel. Overall, this route received a "red" assessment.

  - Number of At-Grade Crossings – Route 14 has a very high number of at-grade crossings. The higher the number of crossings, the less safe the system. The route received a "red" assessment.

Because Route 2 does not meet the project purpose of decreasing travel times and providing safe and reliable service, and the project need for competitive and attractive alternative modes of travel, Route 2 is eliminated from further analysis.

Because Route 5 does not meet the project purpose of decreasing travel times and providing safe and reliable service, and the project need for competitive and attractive alternative modes of travel, Route 5 is eliminated from further analysis.

Because Route 8 does not meet the project purpose of decreasing travel times and providing safe and reliable service, and the project need for competitive and attractive alternative modes of travel, Route 8 is eliminated from further analysis.

Route 13 does not meet the project purpose of providing safe and reliable service, and the project need that a new travel mode must be reliable. Furthermore, a second main track is required to be built to accommodate high-speed passenger rail service on new roadbed and embankment. The construction of the second main track has the potential for severe environmental concerns on wetlands along the route. Figure 12-1 depicts a map of Route 13 and Route 14 between Milwaukee and Chippewa Falls showing the locations of wetlands along the route.

Figure 12-1. Map of Route 13 and Route 14 Wetland Locations

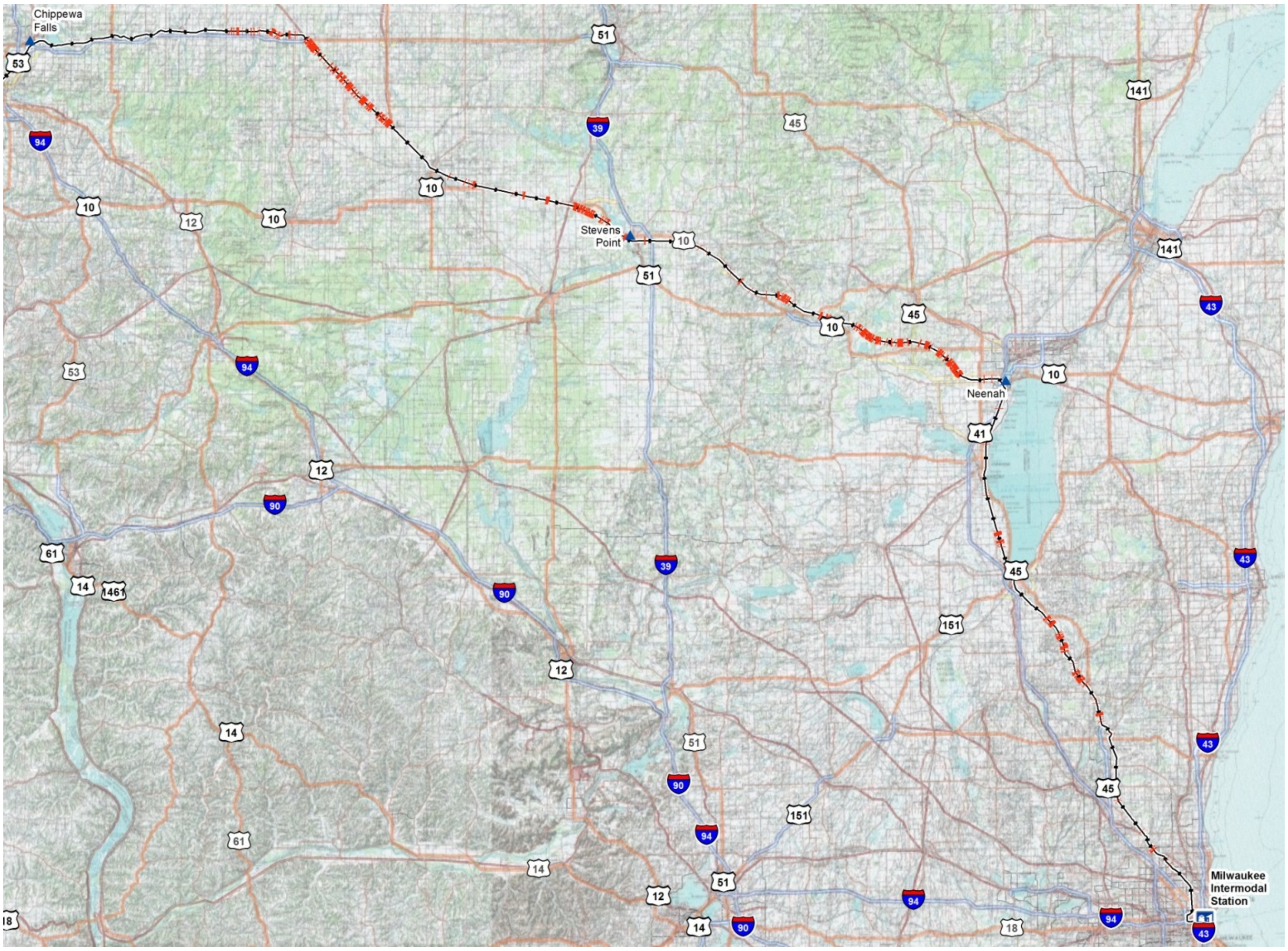
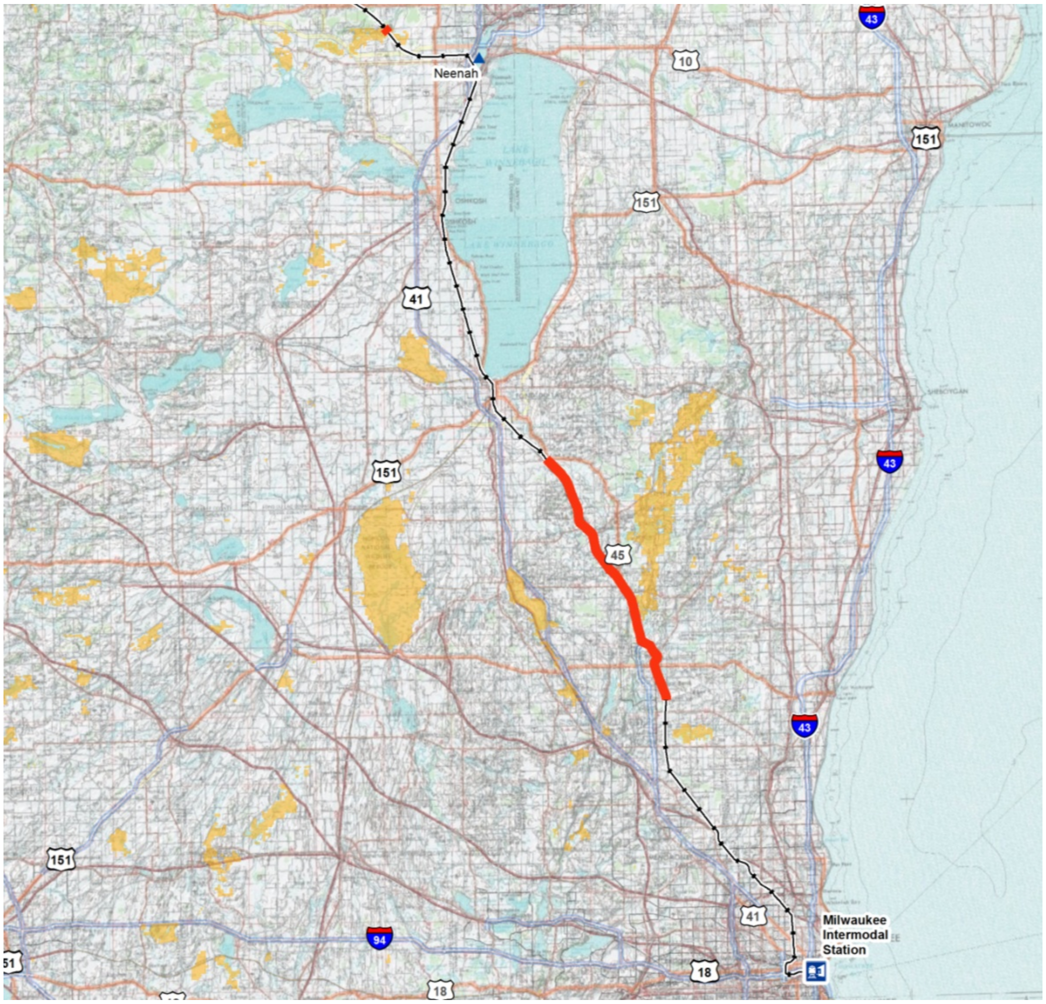


Figure 12-1 denotes the location of wetlands with a red hatch mark. Throughout this entire area, a second main track is required to be built on new roadbed and embankment. At these locations, the new main track will be built within the wetland. Overall, Route 13 passes through 40 miles (11% of the total track miles) of wetlands.

Additionally, Route 13 passes through 25 miles (7% of the total track miles) of critical habitat. Figure 12-2 depicts a map of Route 13 between Milwaukee and Neenah showing the locations of critical habitat along the route.

Furthermore, Route 13 has very high values of the number of block groups that contain a majority of low income populations and the number of block groups that contain a majority of minority populations. Any impacts in that area would have to be analyzed to determine if impacts would be "disproportionately high and adverse".

Figure 12-2. Map of Route 13 and Route 14 Critical Habitat Locations



Because Route 13 does not meet the project purpose of providing safe and reliable service, and the project need that a new travel mode must be reliable, and has the potential for severe environmental concerns, Route 13 is eliminated from further analysis.

Route 14 does not meet the project purpose of reducing travel time and providing safe and reliable service, and the project need for competitive and attractive alternative modes of travel and that a new travel mode must be reliable. Furthermore, a second main track is required to be built to accommodate high-speed passenger rail service on new roadbed and embankment. The construction of the second main track has the potential for severe environmental concerns on wetlands along the route. Figure 12-1 depicts a map of Route 14 between Milwaukee and Chippewa Falls showing the locations of wetlands along the route. Throughout this entire area, a second main track is required to be built on new roadbed and embankment. At these locations, the new main track will be built within the wetland. Overall, Route 14 passes through 45 miles (12% of the total track miles) of wetlands.

Additionally, Route 14 passes through 26 miles (7% of the total track miles) of critical habitat. Figure 12-2 depicts a map of Route 14 between Milwaukee and Neenah showing the locations of critical habitat along the route.

Furthermore, Route 14 has very high values of the number of block groups that contain a majority of low income populations and the number of block groups that contain a majority of minority populations. Any impacts in that area would have to be analyzed to determine if impacts would be "disproportionately high and adverse".

Because Route 14 does not meet the project purpose of reducing travel time and providing safe and reliable service, and the project need for competitive and attractive alternative modes of travel and that a new travel mode must be reliable, and has the potential for severe environmental concerns, Route 14 is eliminated from further analysis.

12.3 Environmental Sensitivity Analysis

In section 11.0 of this report, data was presented on the seven environmental "impacts": floodplains, wetlands, threatened and endangered species, historical/cultural resources, section 4(f)/6(f) sites, environmental justice, and hazardous materials sites. Environmental Features is an important evaluation criterion because a project purpose is to minimize environmental impacts. The Environmental Features Strip Maps prepared for each route, included as Appendix O, are used to identify areas with the potential for severe environmental concerns. Routes with the potential for severe environmental concerns are eliminated from further analysis.

Sections 12.3.1 and 12.3.2 discuss the potential severe environmental concerns with right-of-way takes in the corridor and environmental impacts along the Mississippi River.

12.3.1 Environmental Concerns due to Right-of-Way Takes

As stated in section 11.8:

- **La Crosse, WI – Grand Crossing, WI:**

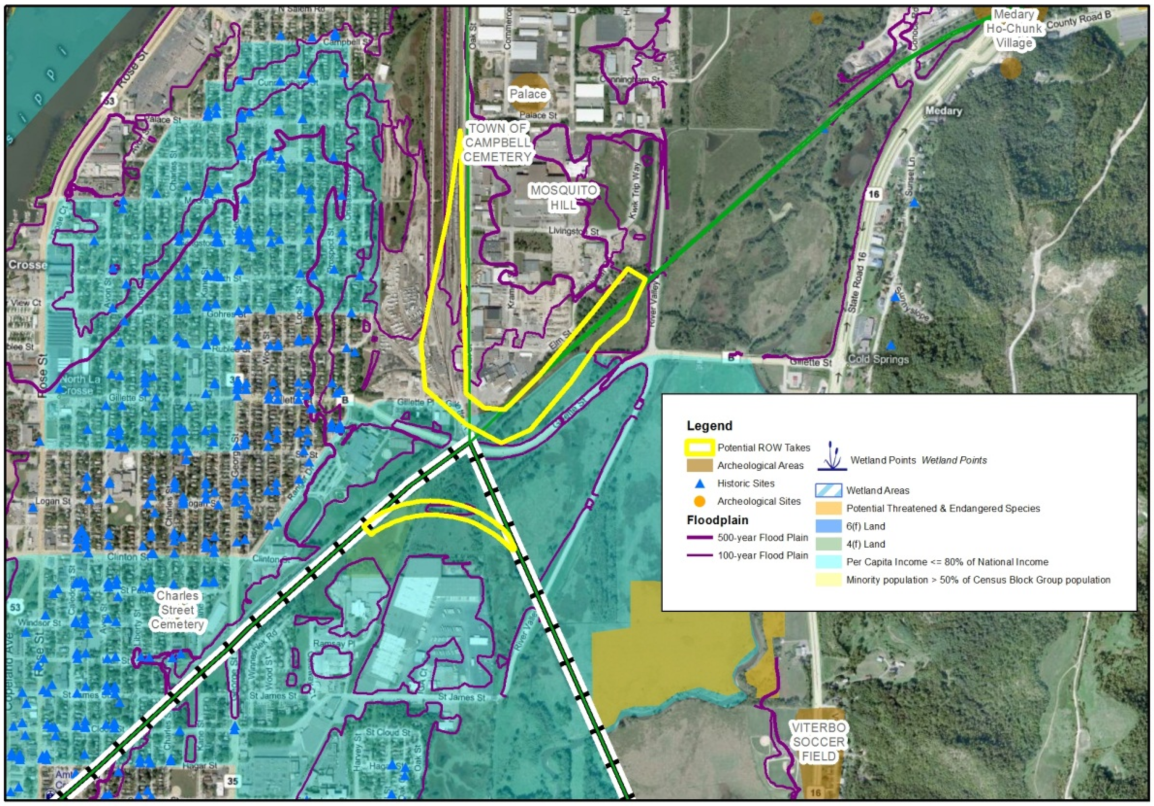
  Improvements are required on the north or the south side of Grand Crossing in La Crosse, depending on the route chosen. The details for the property required for either side of the crossing are as follows:

  - North side - Property in the northwest quadrant will be needed if the decision were made to utilize either Route 3 (Amtrak-BNSF River) or Route 6 (Madison-BNSF River). The proposed connection between westbound Canadian Pacific and northbound BNSF at Grand Crossing requires that a new flyover between the CP & BNSF be constructed to avoid major property takes and business/residential relocations at Grand Crossing. The new track will cross both 100-year and 500-year floodplains. The track will also cross through a low income (Environmental Justice) block group. Additionally, the right-of-way take may impact an existing railroad building.

- In addition to the connection itself, property will also be required to allow relocation of the present-day Amtrak Station along the CP west of Grand Crossing, to a new location along the BNSF, north of Grand Crossing. In addition to Routes 3 (Amtrak-BNSF River) and 6 (Madison-BNSF River), if Route 9 (Madison-Prairie-BNSF River) were selected, a relocated station and the associated property take will be required.

- South side – Property in the southwest quadrant will be needed if the decision were made to utilize either Route 7 (MWRRI-Madison-Prairie) or Route 8 (Madison-Prairie-Rochester). The connection between northbound BNSF and westbound Canadian Pacific at Grand Crossing requires the construction of a separate track providing a connection to the depot (old Amtrak station). The connecting track must be long enough to allow a high-speed rail train to clear one railroad before obstructing the other so as to avoid “tumble-down” delays on both railroads. This is especially true since the CP route may be obstructed with open river bridges that delay rail traffic (water traffic has the right of way at movable span rail bridges). This new track will impact 100-year and 500-year floodplain, a low income (Environmental Justice) block group and a 4(f) Statewide Habitat Area.

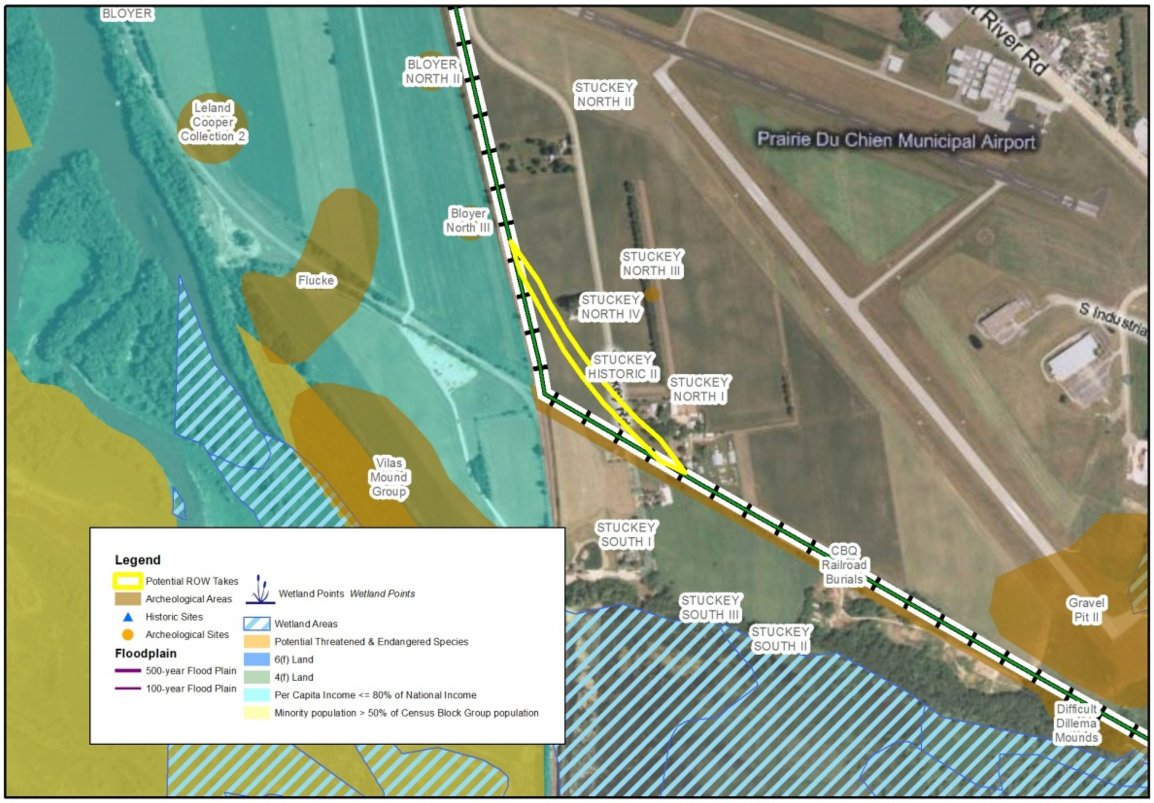
Figure 12-3. La Crosse, WI-Grand Crossing, WI



- **Prairie Du Chien, WI – Crawford, WI:**
    - If Route 7 (MWRRI-Madison-Prairie), 8 (Madison-Prairie-Rochester) or 9 (Madison-Prairie-BNSF River) were selected, a connection between westbound WSOR and northbound BNSF must be constructed in the northeast quadrant of this rail crossing as shown below in Figure 2. The property take required at Crawford increases as the maximum operating speed desired at the connection increases. The lower the speed at the connection, the less property required.

   - Right-of-way impacts include houses and archeological sites along the existing railroad and in the area that the new curve would be constructed. If the connecting track is designed for speeds of 10-15 MPH, the property required would be substantially reduced to a small corner of farm field and could likely avoid disturbances to archeological sites and the highway-rail grade crossing.

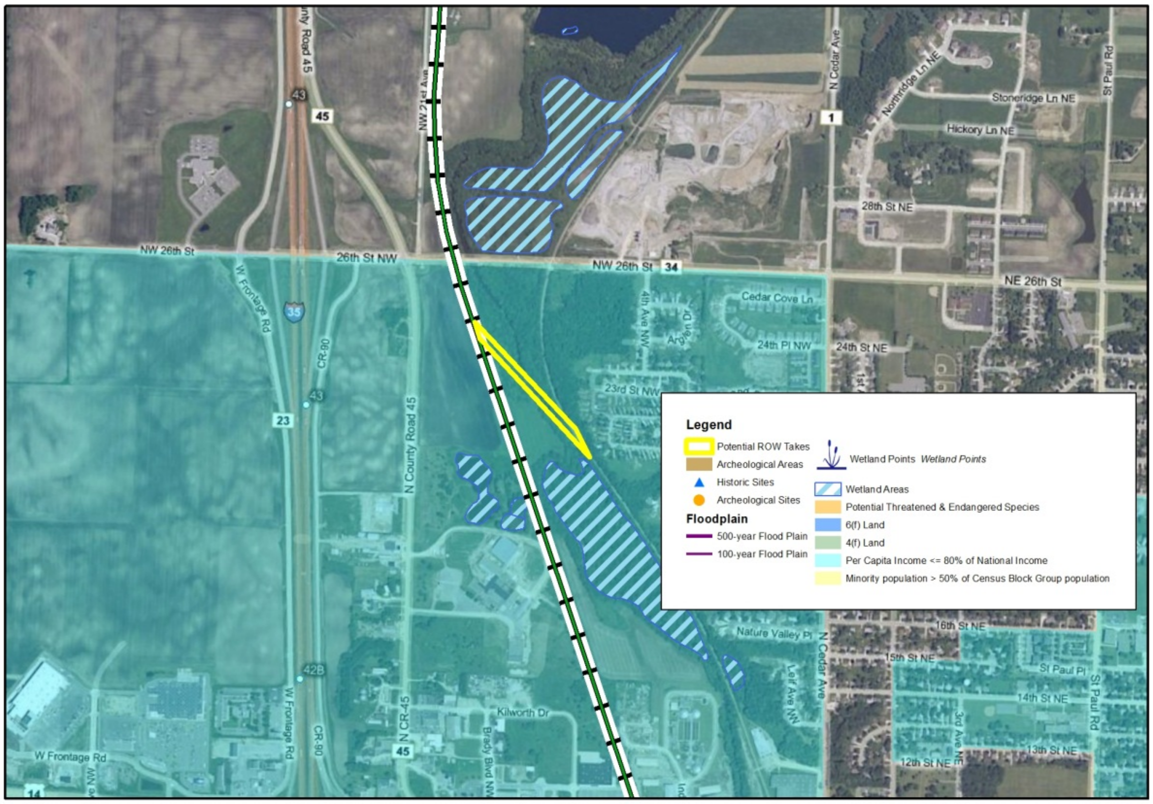
Figure 12-4. Prairie du Chien, WI-Crawford Junction, WI



- **Owatonna, MN**

   - If Routes 2 (Amtrak-Rochester), 5 (Madison-Rochester), or 8 (Madison-Prairie-Rochester) are selected, an existing connecting track between the CP (former C&NW and later DM&E) and the CP (former Milwaukee Road and later IC&E) will be utilized in Owatonna. This connection was selected to be used because the alternative connection, the CP (former C&NW and later DM&E) and the UPRR Albert Lea Subdivision, will require the construction of a very expensive structure and property takes to connect the at-grade CP to the 30-40 foot lower UPRR. The UPRR is located in a valley along the lower river route through Owatonna. Through Owatonna, the CP will be utilized. North of Owatonna, a new low-level bridge will be constructed to facilitate a connection between the CP and the UPRR. The impacts north of Owatonna include multiple low income and minority block groups (Environmental Justice) as well as potential wetland impacts.

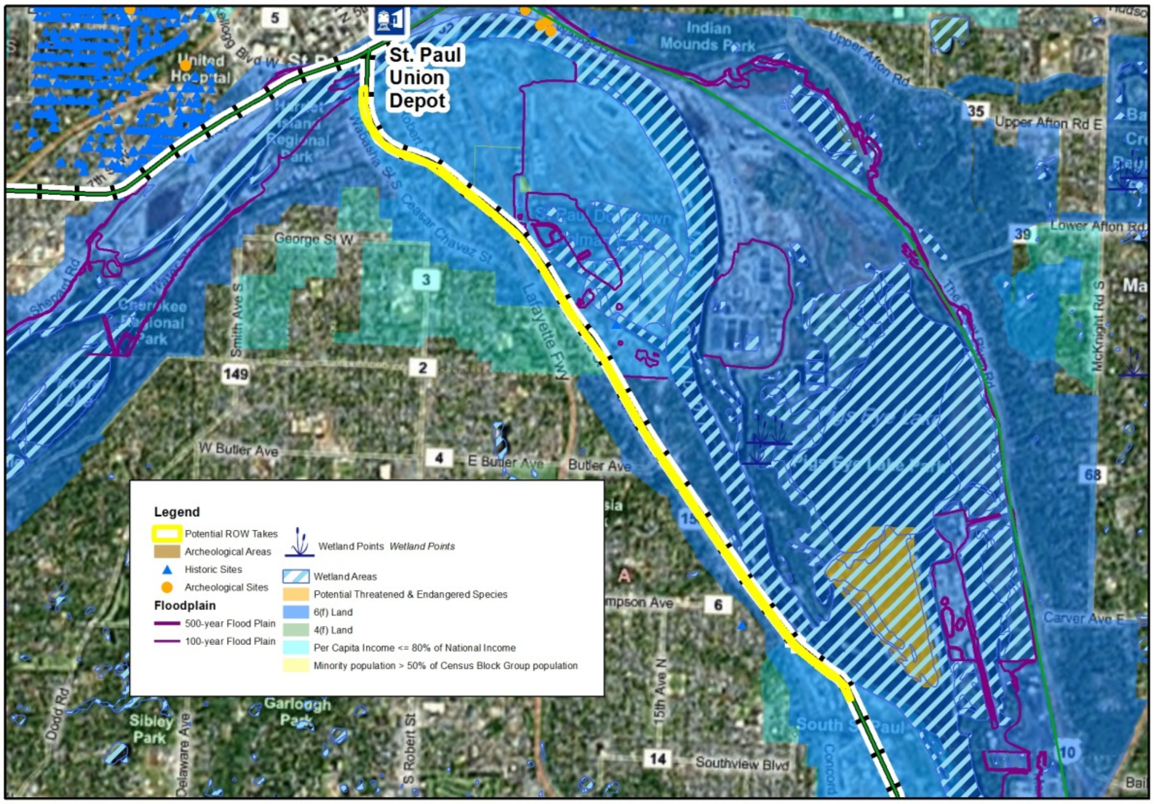
Figure 12-5. Owatonna, MN



- **St. Paul, MN – St. Paul Union Depot, MN:**
    - If Routes 2 (Amtrak-Rochester), 5 (Madison-Rochester), or 8 (Madison-Prairie-Rochester) are selected, 50' to 100' of additional right-of-way will be required from Grand Avenue in South St. Paul to the Robert St Bridge over the Mississippi River just south of St Paul Union Depot. The proposed high-speed rail passenger track will be constructed on the geographic west side of the existing UPRR right of way along the bluff line. By using a combination of track rationalization and track realignment for the existing tracks in the area, and constructing retaining walls in limited areas of the new track, the need for property takes can be minimized.
    - The selection of the west side alternative along the bluff is essential because the east side of the UPRR is the "working side" of the yard where the yard switching leads, roadway and maintenance access, industry track switches and the mainline via the Hoffman Avenue Bridge to Hoffman Avenue Yard are located. These represent frequent and slow freight train movement conflicts and would significantly threaten high-speed rail service reliability.

- o This additional right-of-way will impact 6(f) protected land (Mississippi National River and Recreation Area), low income, and minority block groups (environmental justice).

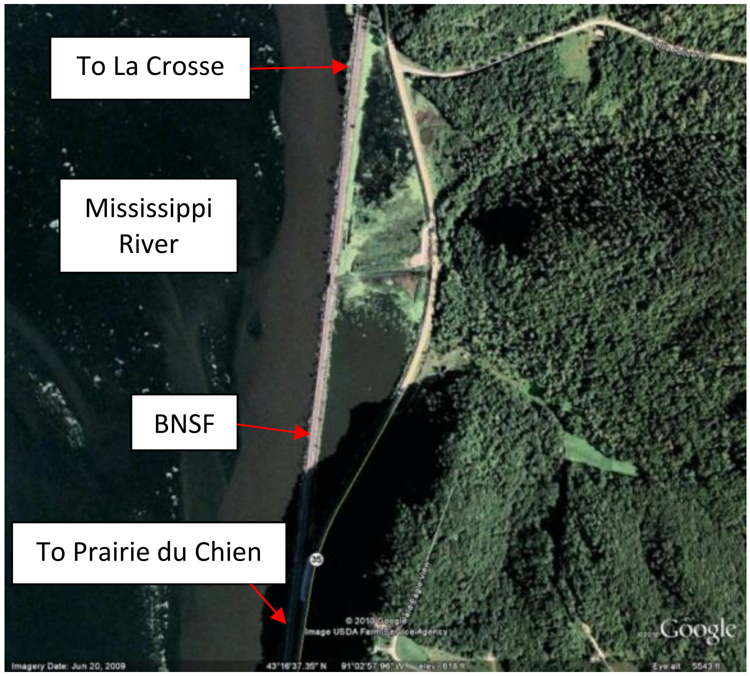
Figure 12-6. St. Paul, MN-St. Paul Union Depot, MN



12.3.2 Environmental Impacts along the Mississippi River

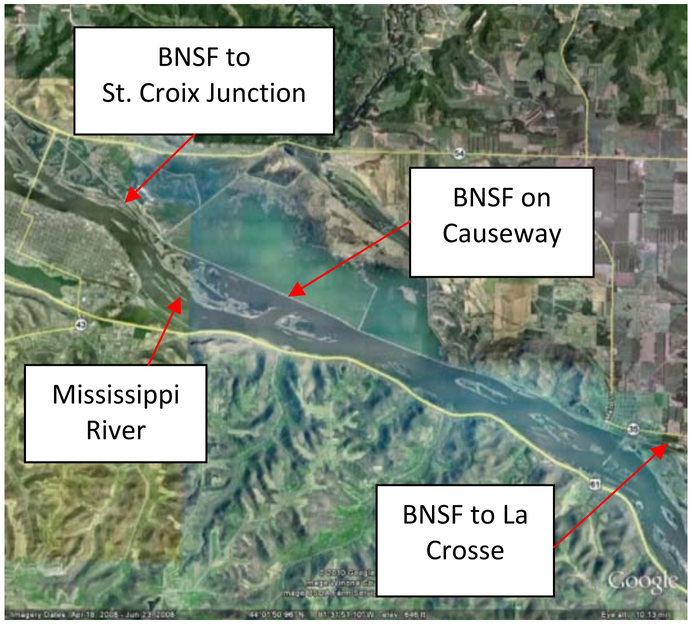
Segment J – Prairie du Chien, WI – La Crosse, WI - This segment is presently a BNSF double track main line. In order to provide HSR service within the segment, a new third main track is required. A CTC signal system for the new third main and PTC overlay for all tracks will be added to the segment forming a new 3 main track system. A new control point with universal crossovers will be provided within the segment to provide operational flexibility; existing control points will be maintained “as is” or expanded to include the new third track. The railroad right of way in this segment does not have sufficient width to support the construction of a third main without the need for right-of-way acquisition. Figure 12-7 depicts Lynxville, WI.

Figure 12-7. Lynxville, WI



<u>Segment Q – La Crosse, WI-Hastings, MN -</u> This segment is presently a BNSF double track main line. In order to provide HSR service within the segment, a new third main track is required. A CTC signal system for the new third main and PTC overlay for all tracks will be added to the segment forming a new 3 main track system. New control points with universal crossovers will be provided within the segment to provide operational flexibility; existing control points will be maintained "as is" or expanded to include the new third track. The railroad right of way in this segment does not have sufficient width to support the construction of a third main without the need for right-of-way acquisition. Figure 12-8 depicts East Winona, MN.

Figure 12-8. East Winona, MN



Due to the position of the track between the Mississippi River to the west and the slope of the bluff along the eastern side of the railroad, adding a third track in many places will require building out into the river or cutting away the slope of the bluff; both of these approaches are considered within the cost estimate. Because of its proximity to the Mississippi River and the associated flood plains, drainage areas and wetlands along the eastern shore, it should be anticipated that there will be environmental permitting and remediation required for any construction in this sub-segment. There may be areas where construction outside the existing railroad right of way is completely prohibitive. The extent of this potential project cost has not been estimated, primarily because of the large number of unknown factors at this level of planning, but also because as design advances, requirements and assumptions may be able to be adapted to the situation lessening the potential impacts to the environment and lowering the associated cost.

12.3.3 Environmental Conclusions

Routes 3, 6, 7, and 9 have environmental concerns that include the following:

- Route 3 – Amtrak-BNSF River
    - Route 3 utilizes Segment Q between La Crosse and Hastings and will require a third track to be built into the river or into the slope of the bluff along the river; substantial environmental permitting and remediation will be required and in some areas, construction outside the railroad right-of-way will be prohibitive
    - Between La Crosse and Grand Crossing, a new connection will be required to connect the Canadian Pacific to the BNSF - a new flyover will be constructed to avoid major property takes and business/residential

relocations at Grand Crossing. The new track will cross both 100-year and 500-year floodplains. The track will also cross through a low income (Environmental Justice) block group. Additionally, the right-of-way take may impact an existing railroad building

- In addition to the connection itself, property will also be required to allow relocation of the present-day Amtrak Station along the CP west of Grand Crossing, to a new location along the BNSF, north of Grand Crossing

- Route 6 – Madison-BNSF River
    - Route 6 utilizes Segment Q between La Crosse and Hastings and will require a third track to be built into the river or into the slope of the bluff along the river; substantial environmental permitting and remediation will be required and in some areas, construction outside the railroad right-of-way will be prohibitive
    - Between La Crosse and Grand Crossing, a new connection will be required to connect the Canadian Pacific to the BNSF - a new flyover will be constructed to avoid major property takes and business/residential relocations at Grand Crossing. The new track will cross both 100-year and 500-year floodplains. The track will also cross through a low income (Environmental Justice) block group. Additionally, the right-of-way take may impact an existing railroad building
    - In addition to the connection itself, property will also be required to allow relocation of the present-day Amtrak Station along the CP west of Grand Crossing, to a new location along the BNSF, north of Grand Crossing
- Route 7 – Madison-Prairie
    - Route 7 utilizes Segment J between Prairie du Chien and La Crosse and will require a third track to be built into the river or into the slope of the bluff along the river; substantial environmental permitting and remediation will be required and in some areas, construction outside the railroad right-of-way will be prohibitive
    - Between La Crosse and Grand Crossing, a new connection will be required to connect the BNSF to Canadian Pacific – this requires the construction of a separate track providing a connection to the depot (old Amtrak station). The connecting track must be long enough to allow a high-speed rail train to clear one railroad before obstructing the other so as to avoid “tumble-down” delays on both railroads. This is especially true since the CP route may be obstructed with open river bridges that delay rail traffic (water traffic has the right of way at movable span rail bridges). This new track will impact 100-year and 500-year floodplain, a low income (Environmental Justice) block group and a 4(f) Statewide Habitat Area
    - A connection between westbound WSOR and northbound BNSF in Prairie du Chien must be constructed in the northeast quadrant. The property take required at Crawford increases as the maximum operating

speed desired at the connection increases

- Route 9 – Madison-Prairie-BNSF River
  - Route 9 utilizes Segment J between Prairie du Chien and La Crosse and Segment Q between La Crosse and Hastings and will require a third track to be built into the river or into the slope of the bluff along the river; substantial environmental permitting and remediation will be required and in some areas, construction outside the railroad right-of-way will be prohibitive
  - A connection between westbound WSOR and northbound BNSF in Prairie du Chien must be constructed in the northeast quadrant. The property take required at Crawford increases as the maximum operating speed desired at the connection increases

Because Route 3 does not meet the project purpose of minimizing environmental impacts, Route 3 is eliminated from further analysis.

Because Route 6 does not meet the project purpose of minimizing environmental impacts, Route 6 is eliminated from further analysis.

Because Route 7 does not meet the project purpose of minimizing environmental impacts, Route 7 is eliminated from further analysis.

Because Route 9 does not meet the project purpose of minimizing environmental impacts, Route 9 is eliminated from further analysis.

12.4 Purpose and Need Sensitivity Analysis

12.4.1 Review of Project Purpose and Project Need

As stated in sections 1.4.2 and 1.4.3, the purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

In addition, the project will:

- Improve overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans
- Provide accessibility to major population centers,

- Improve freight rail mobility, and
- Minimize environmental impacts.

The need for the proposed action is based on the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities. Existing transportation modes, including highway, bus, and air travel, have inherent problems including congested highways near the Milwaukee, Madison, and Twin Cities metro areas and airport capacity issues at Minneapolis-St. Paul International Airport and Milwaukee's General Mitchell International Airport. Improved and expanded passenger rail service can provide an alternative mode and/or relief to these congested roadways and airports.

The need for the proposed action exists because:

1. **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure
2. **Competitive** and **attractive** alternative modes of travel do not exist in the corridor
3. As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes ;
4. **Intermodal connectivity** among existing transportation systems is limited.

It is essential to the success of the project that each of the identified reasonable and feasible passenger rail alternatives meets the purpose of the project. The remaining potential passenger rail alternatives, Routes 1, 4, 10, 11, and 12A are compared to the project purpose and the project need to identify any routes that do not meet the purpose or need. These routes that do not meet the project purpose and project need will be eliminated from further analysis.

12.4.2 Potential Passenger Rail Alternatives that do not Meet the Purpose and Need

Route 12A has a low number of connections to inter-city passenger rail lines, local bus lines, inter-city bus lines, airports, and bike paths/trails. Route 12A does not meet the project purpose of improving overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans, and the project need that intermodal connectivity among existing transportation systems is limited. Additionally, Route 12A has the lowest route population of all of the potential passenger rail alternatives. This indicates that Route 12A does not provide a good opportunity for a potential ridership base. Route 12A does not meet the project purpose of providing accessibility to major population centers. Therefore, Route 12A is eliminated from further analysis.

12.5 Identification of Reasonable and Feasible Passenger Rail Alternatives

12.5.1 Final Evaluation of Routes

A final evaluation is made to determine other distinct and significant variations between the remaining routes, Routes 1, 4, 10, and 11. Of these four routes, Routes 1 and 10 best met the purpose of decreasing travel time in the corridor, with essentially comparable end-to-end travel times determined by the TPC modeling. Notably, these two routes also were the only two that were ranked "green" or "more likely reasonable and feasible" without any "red" or "poor" assessments given in any single major category in the final cumulative analyses determined in the Consensus-Based Qualitative Assessment. In comparing these routes to one another, Route 1 has the following advantages over the other routes:

- Route 1 has 0.0 miles of significant grades while Route 4 has 4.87 miles, Route 10 has 14.38 miles, and Route 11 has 19.25 miles of significant grades.
- Travel time between MTI and Milwaukee is 33 minutes less than Route 4 (route that connects to Madison), 3 minutes less than Route 10 through Eau Claire, and 42 minutes less than Route 11 through Madison and Eau Claire;
- Capital cost of Route 1 is $141 million less than Route 4, $550 million less than Route 10, and $690 million less than Route 11;
- Track maintenance cost of Route 1 is $979,000 less than Route 4, $630,000 less than Route 10, and $1.608 million less than Route 11; and
- 99.8% of Route 1 has CTC while only 85.4% of Route 4, 45.5% of Route 10, and 29.8% of Route 11 have CTC

Additionally, Route 1 most successfully meets each purpose and need for the proposed action to construct and operate a high-speed passenger rail corridor between Milwaukee and Minneapolis/St. Paul.

The purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

Route 1 meets the project purpose since:

- It has one of the lowest travel times of all the routes and is 55 minutes shorter than the automobile travel time.

- It will allow for increased train frequency;
- It provides safe and reliable service as demonstrated in sections 8 and 9;
- It provides opportunities for intermodal connectivity as shown in section 10;
- It will provide opportunities for improved freight rail mobility through improvements to infrastructure; and
- It will have the lowest environmental impacts on the surrounding area because the route is currently utilized for Amtrak's *Empire Builder* route and minimal additional right-of-way takes are required.

The need for the proposed action is based on the limitations and vulnerabilities of available travel modes between Milwaukee and Twin Cities. Existing transportation modes, including highway, bus, and air travel, have inherent problems including congested highways near the Milwaukee, Madison, and Twin Cities metro areas and airport capacity issues at Minneapolis-St. Paul International Airport and Milwaukee's General Mitchell International Airport. Improved and expanded passenger rail service can provide an alternative mode and/or relief to these congested roadways and airports.

The need for the proposed action exists because:

1. **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure;
2. **Competitive and attractive alternative** modes of travel do not exist in the corridor;
3. As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes; and
4. **Intermodal connectivity** among existing transportation systems is limited.

The analysis demonstrates that Routes 1, 4, 10, and 11 meet the need of travel demand that is projected to increase within the corridor; provide reliable service with the proposed infrastructure improvements; and offer intermodal connectivity.

However, Route 1 provides the greatest advantage of all routes by offering a competitive and attractive alternative mode of transportation. In order to attract rail users, the proposed action must provide conveniences that are competitive with or better than conveniences provided by other transportation modes. This need is addressed by <u>decreasing travel time</u> from the current 6 hours and 30 minutes which is the existing travel time for the *Empire Builder* between the Twin Cities and Milwaukee and also <u>increasing the frequency</u> of passenger rail service. Development of this route would not only establish high-speed, high-frequency passenger rail service, but also complement existing Amtrak service and improve its flexibility. Section 6 of this Report details the costs to upgrade the route alternatives. Additionally, corridor project team members including FRA and Amtrak representatives are cognizant of the recent vacillation to completely fund the full high speed rail corridors in single funding cycle in favor of partial or incremental funding and building of a passenger rail route in phases allowing for incremental increases in frequency as well as “phased” reduction in travel time.

The Vision of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan is to develop a robust intrastate and interstate intercity passenger rail system which results in improved travel options, costs and speeds for Minnesota and interstate travelers. One of the priority program elements identified in the Statewide Rail Plan is to advance corridors incrementally and simultaneously with Mn/DOT’s support; sequencing depending on financing, ROW acquisition and agreements with freight railroads[135].

Project representatives considered the Vision and priority program of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan in the final evaluation. Section 4.2.2 of the draft Project Purpose and Need acknowledges that improvements to infrastructure and mitigation of freight capacity issues can allow for increased train frequency and reduced travel times for passenger rail service in the corridor. Route 1 currently has passenger service in that Amtrak’s *Empire Builder* serves the corridor, and, therefore, provides the best opportunity to implement a phased approach for infrastructure improvements and freight mitigation. The proper phasing of the improvements will achieve incremental reduction in travel time for each improvement allowing for an incremental increase in frequency of passenger rail service. In fact, Mn/DOT and WisDOT are currently exploring with Amtrak the feasibility of increasing the frequency of the current service from one round-trip per day to two with the introduction of the second *Empire Builder* train between the Twin Cities and Chicago via Milwaukee.

Routes 4, 10, and 11 do not offer this benefit since each route requires significant capital investment prior to the introduction of any passenger rail train service. Appendix L details the capital cost estimates for each route alternative. The Watertown- Madison-Portage segments need building prior to the introduction of passenger rail service on Route 4. The estimated capital improvements for these segments are in excess of $500 million. Route 10 requires the complete build of the Camp Douglas-Eau Claire-St Paul segments from Camp Douglas. Route 11, which also serves Eau Claire, would require the complete build of the Route 4 and Route 10 segments. The estimated capital improvements for Route 10 and 11 needed prior to introducing any passenger rail service is in excess of $1.8 billion and $2.3 billion, respectively. While Route 10 in particular is indicated as a viable option for future expansion if and when a large and full-coverage funding source can be obtained, waiting for this resource to materialize may unduly delay service implementation.

Given all of the aforementioned considerations, project representatives determined that one reason to identify Route 1 as the reasonable and feasible passenger rail alternative is because of the opportunities to incrementally implement a reduction in travel time and increase in frequency by phasing the build-out of the route. This phased approach

135 *Minnesota Comprehensive Statewide Freight and Passenger Rail Plan*, February 2010

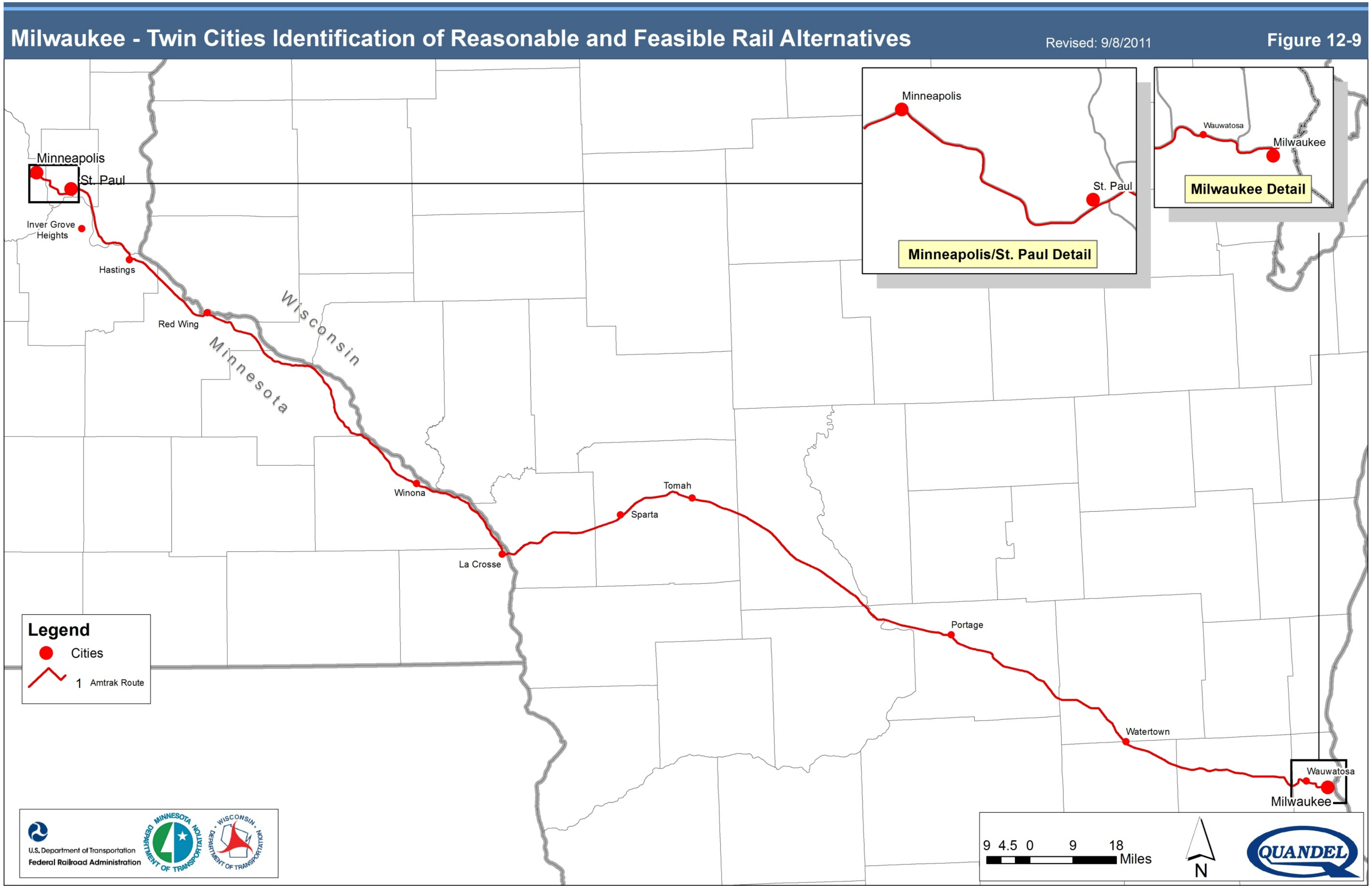
recognizes the constraints associated with funding requirements for major infrastructure improvements at the state and federal levels and is consistent with the Minnesota Statewide Rail Plan.

In their oversight role, the Federal Railroad Administration has consistently sought to address concerns raised by interested parties from Wisconsin and Southeastern Minnesota, who advocate for a different routing, by explaining that the EIS is intended to look at “near-term” options for expanded passenger service in the corridor (e.g. “Phase 1” of the MWRRI), and that a full build-out of the corridor in the longer term will examine other route alternatives. The project partners continue to operate in the context of the long-range vision that this is the first incremental step or a ‘near-term’ focus of a high-speed passenger rail alternative in a highly viable corridor, one that in future phases will provide significantly better service in terms of speeds, frequency, supplemental routes and connections, and service coverage area as part of a full, robust system, ultimately with much enhanced levels of effectiveness and economic benefits. The state DOT representatives and the FRA are in concurrence on this approach and vision.

Additionally, on August 31, 2011, Wisconsin’s Secretary of Transportation sent a letter to Mn/DOT stating that the Wisconsin Department of Transportation will no longer pursue the continuation of the Milwaukee-Twin Cities Passenger Rail Study at this time. The letter further stated that WisDOT will continue to support intercity passenger rail by focusing Wisconsin’s resources on the *Hiawatha* and *Empire Builder* routes that have successfully serviced Wisconsin residents over the last 20 years. The letter further states that improving and enhancing these routes is Wisconsin’s first priority. The letter is attached as Appendix P.

Because Route 1 more clearly meets the purpose and need, specifically related to a phased approach for implementation of high-speed intercity passenger rail service, Mn/DOT has identified Route 1 as the Reasonable and Feasible Passenger Rail Alternative. Figure 12-9 depicts the Reasonable and Feasible passenger Rail Alternative.

Figure 12-9. Milwaukee-Twin Cities Identification of Reasonable and Feasible Passenger Rail Alternatives



12.5.2 Next Steps

The next step in the project is to identify the preferred passenger rail alternative within a Tier 1 EIS document. Tiering is a staged approach to NEPA described in the Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508). Tiering addresses broad programs and issues in initial (Tier 1) analyses, and analyzes site-specific proposals and impacts in subsequent tier studies. The tiered process supports decision-making on issues that are ripe for decision and provides a means to preserve those decisions.

Within the Tier 1 EIS, the reasonable and feasible passenger rail alternative and a no build alternative will be evaluated to identify the preferred passenger rail alternative. The alternatives are evaluated based on:

- Conceptual Engineering
- Track Concepts
- Capital Cost Estimate
- Station Location Analysis
- Environmental Analysis
- Ridership
- Operating Costs
- Assessment of Benefits

The tiered environmental process will include a Draft Tier 1 EIS, a Final Tier 1 EIS, and a Tier 1 Record of Decision (ROD) to conclude Tier 1. Upon the conclusion of the Tier 1 study, a preferred alternative will be selected by FRA and projects to be studied in Tier 2 will be identified.