

Twin Cities - Milwaukee High-Speed Rail Corridor Program



Minnesota Department of
Transportation



U.S. Department of Transportation
Federal Railroad Administration



Project Status

- Two agency scoping meetings and seven public involvement meetings were held in November/December 2010
 - Public Involvement Round One: “This is what we are going to do”
- Technical workshops and weekly conference calls to apply criteria, evaluate each route, and narrow down corridor options
- Prepared DRAFT Alternatives Selection Report
 - Public involvement Round Two: “This is what we did”
 - Solicit public comments
- Prepare Draft Tier 1 EIS (target June 2013)
 - Public involvement Round Three: “Draft Tier 1 EIS document for public comment”



Project Purpose and Need

- The proposed action is to **construct and operate high-speed passenger rail service** between Milwaukee and Twin Cities
- **Purpose** is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin
- **Need** is driven by the limitations and vulnerabilities of available travel modes in the corridor to meet future travel demand

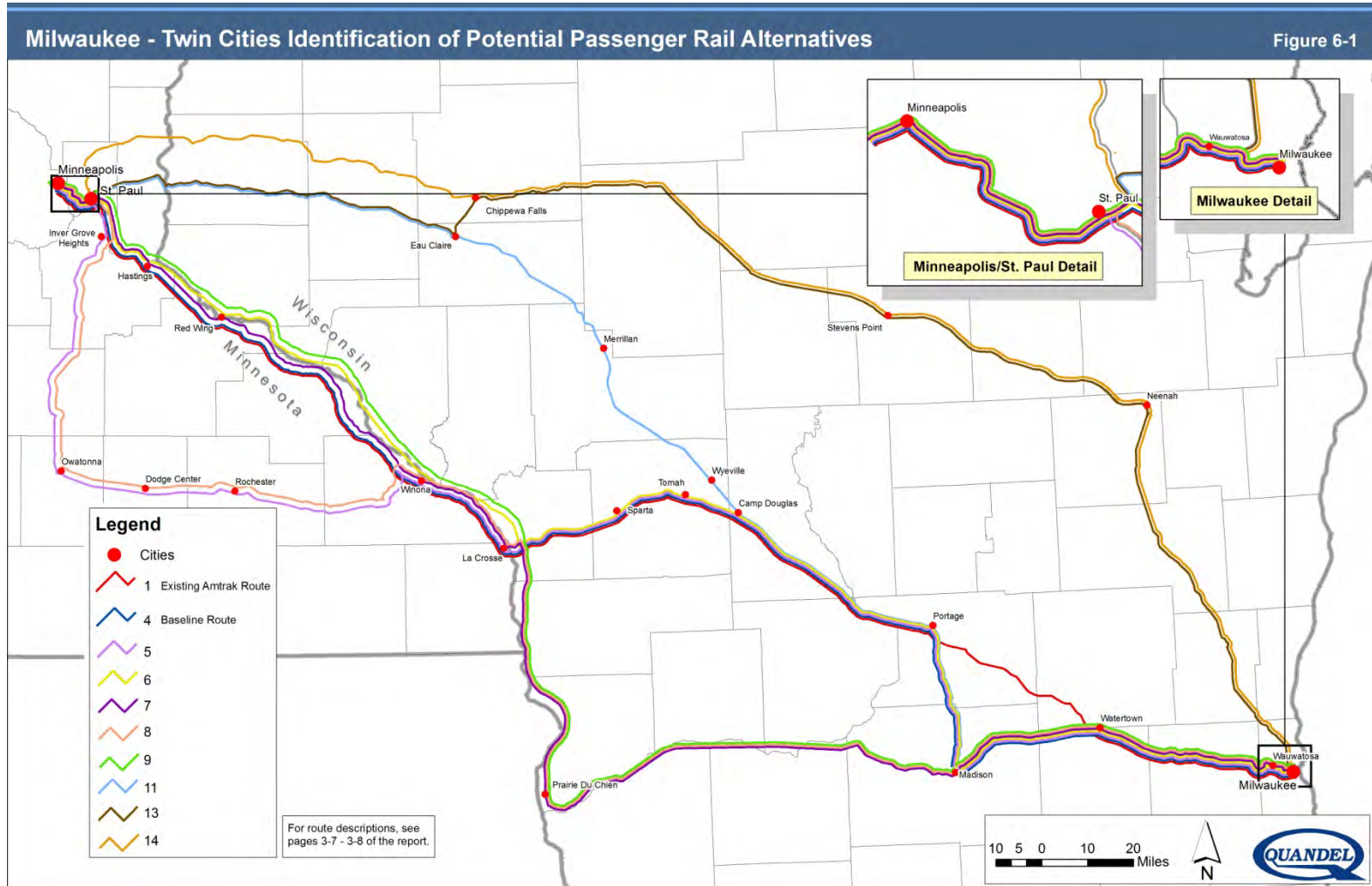


Project Purpose and Need

- 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;
 - Transportation systems require improved **reliability** to meet future demand;
 - **Intermodal connectivity** between rail and other forms of transportation are limited and require further development to meet future travel demand.



Identification of Potential Passenger Rail Alternatives

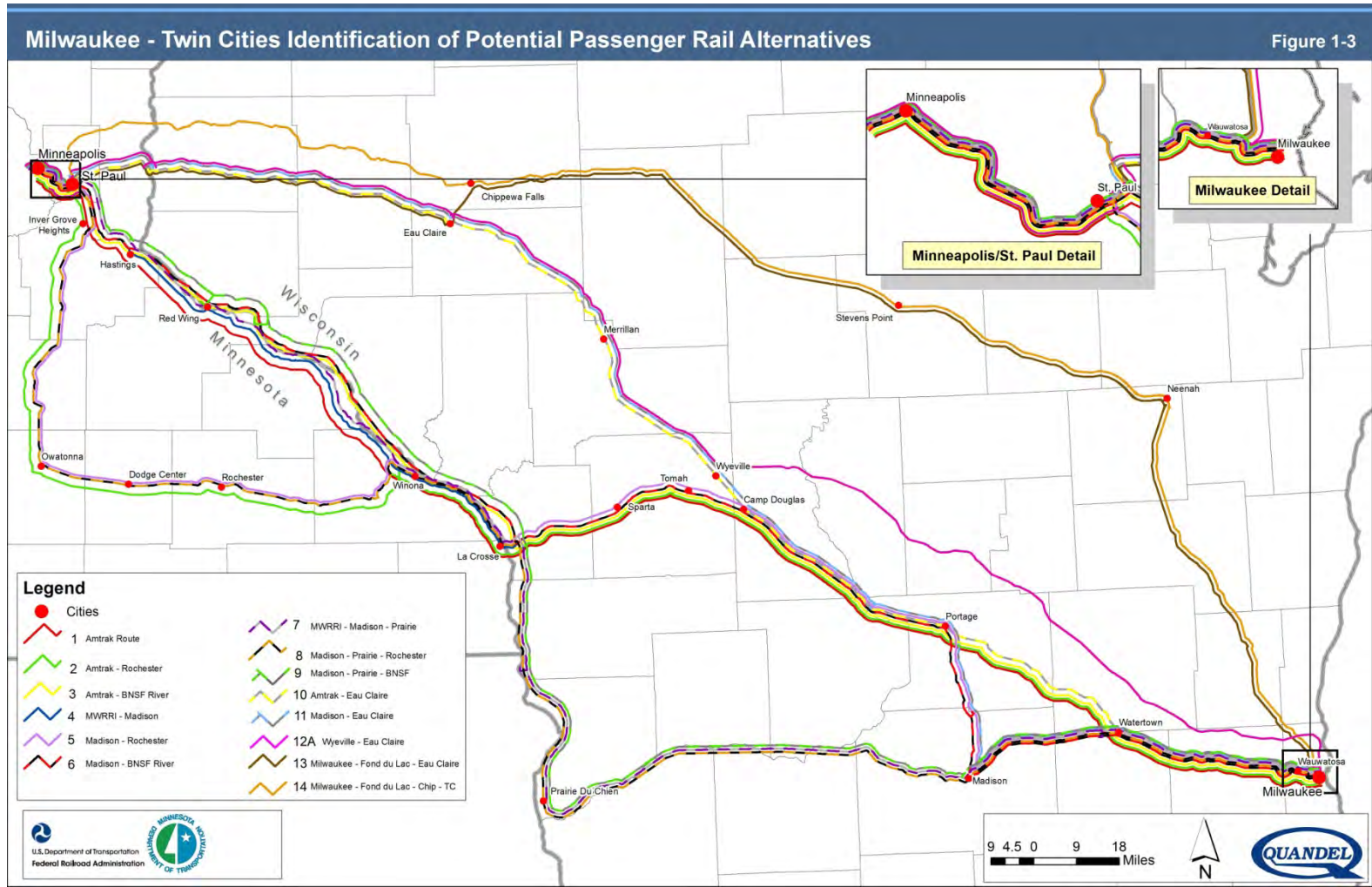


Identification of Potential Passenger Rail Alternatives

- Based on comments from the public and state and federal agencies, three(3) routes were identified to be reconsidered as potential Passenger Rail Alternatives:
 - Route 2 (Amtrak-Rochester)
 - Route 3 (Amtrak-BNSF River)
 - Route 10 (Amtrak-Eau Claire)
- One route was added:
 - Route 12A (Milwaukee/Wyeville-Eau Claire)



Identification of Potential Passenger Rail Alternatives



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Nine evaluation criteria and measures were used to identify which of the potential passenger rail alternatives meet the purpose and need
- The potential passenger rail alternatives that do not meet the purpose and need will be eliminated



Evaluation Criteria and Measures

Evaluation Criteria	Measure	Link to Purpose and Need
Route Characteristics	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Travel time at 110 mph (after accounting for recovery, dwell, and handoff times) • Travel time vs. automobile travel time 	Travel Time



Evaluation Criteria and Measures

Evaluation Criteria	Measure	Link to Purpose and Need
Market Size	<ul style="list-style-type: none"> • Population centers served within a 20-mile bandwidth • Intermodal station outside terminal area 	Travel Demand
Capital Cost	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Track maintenance costs (order of magnitude) 	Minimize Operating Costs



Evaluation Criteria and Measures

Evaluation Criteria	Measure	Link to Purpose and Need
Safety	<ul style="list-style-type: none"> • Number of rail-rail crossings • Number of at-grade crossings 	Competitive and Attractive Service; Reliability
Reliability	<ul style="list-style-type: none"> • 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; Reliability



Evaluation Criteria and Measures

Evaluation Criteria	Measure	Link to Purpose and Need
System Connectivity	<ul style="list-style-type: none"> • Number of intermodal facilities 	Intermodal Connectivity
Environmental Features	<ul style="list-style-type: none"> • Potential impacts of: <ul style="list-style-type: none"> ○ Floodplains ○ Wetlands ○ Threatened or Endangered Species ○ Cultural resources ○ 4(f)/6(f) protected properties ○ Environmental justice ○ Hazardous materials 	Minimize Environmental Impacts



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Interactive workshop: January 20, 2011 – FRA, MnDOT, and WisDOT
- Interactive workshop: March 11, 2011 – MnDOT, WisDOT, and Amtrak
- Data was presented and assessed for each of the nine evaluation criteria
- “Normative statements” were used
- A normative statement is a value judgment given to data for the purpose of qualitatively assessing that data



Identification of Reasonable and Feasible Passenger Rail Alternatives

- The normative statement allows each measure to be given a qualitative value judgement to 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; i.e. a “red flag”



Identification of Reasonable and Feasible Passenger Rail Alternatives

- The following matrix depicts the overall qualitative assessment

Routes	Route Characteristics	Travel Time	Market Size	Capital Cost	Operating Cost	Safety	Reliability	System Connectivity	Environmental Features
→ 1 – Amtrak Route	Yellow	Green	Yellow	Green	Green	Yellow	Green	Yellow	Green
2 – Amtrak-Rochester	Red	Yellow	Yellow	Green	Yellow	Red	Yellow	Yellow	Yellow
3 – Amtrak-BNSF River	Yellow	Green	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
→ 4 – MWRRI-Madison	Yellow	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
5 – Madison-Rochester	Red	Red	Green	Yellow	Red	Red	Yellow	Green	Yellow
6 – Madison-BNSF River	Yellow	Yellow	Green	Yellow	Yellow	Green	Yellow	Yellow	Yellow
7 – Madison-Prairie	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
8 – Madison-Prairie-Rochester	Yellow	Red	Green	Red	Red	Red	Yellow	Yellow	Yellow
9 – Madison-Prairie-BNSF River	Green	Yellow	Green	Yellow	Red	Yellow	Yellow	Yellow	Yellow
→ 10 – Amtrak-Eau Claire	Yellow	Green	Yellow	Green	Green	Yellow	Green	Yellow	Green
→ 11 – Madison-Eau Claire-TC	Yellow	Yellow	Green	Green	Red	Yellow	Yellow	Yellow	Green
12A – Wyeville-Eau Claire	Yellow	Green	Yellow	Green	Green	Yellow	Green	Red	Green
13 – Milwaukee-Fond du Lac-Eau Claire	Red	Yellow	Green	Green	Yellow	Yellow	Red	Yellow	Yellow
14 – Milwaukee-Fond du Lac-Chip-TC	Red	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow

Identification of Reasonable and Feasible Passenger Rail Alternatives

Travel Time Measures:

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

Identification of Reasonable and Feasible Passenger Rail Alternatives

Safety Measures:

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

Identification of Reasonable and Feasible Passenger Rail Alternatives

- Next step – identify “Routes of Concern”
- When assessed to the normative statements, these routes were assigned a “red” rating for multiple evaluation criterion



Identification of Reasonable and Feasible Passenger Rail Alternatives

- The following matrix depicts the 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
2 – Amtrak-Rochester	X		X					X					3
5 – Madison-Rochester	X	X	X	X			X	X					6
7 – Madison-Prairie			X										1
8 – Madison-Prairie-Rochester		X	X	X		X	X	X					6
9 – Madison-Prairie-BNSF River							X						1
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



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 2 - Amtrak-Rochester (3 “red flags”)
 - Route Characteristics - Route 2 encounters significant grades between Winona and Rochester with a 600 ft elevation change from the river basin area west to Rochester. Route 2 received an overall “red” assessment for this criterion.
 - Automobile Travel Time – Since the travel time for Route 2 is similar to the automobile travel time, the route received a “red” assessment (group consensus was that if you are not saving more than 20 minutes between automobile travel time and rail travel time, the route would receive a “red” assessment)
 - Safety – Route 2 has a high number of rail-rail crossings and at-grade crossings compared to the other routes



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 5 – Madison-Rochester (6 “red flags”)
 - Route Characteristics - Route 5 has 211 miles (53% of the total route miles) of single track without second roadbed; the route encounters significant grades between Winona and Rochester with a 600 ft elevation change from the river basin area west to Rochester. Route 5 received an overall “red” assessment for this criterion.
 - Travel Time - Route 5 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester.
 - Automobile Travel Time - Route 5 has a travel time greater than the automobile travel time.
 - Overall Travel Time – Because Travel Time and Automobile Travel Time both received “red” assessments, the overall travel time rating is red.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 5 – Madison-Rochester
 - Operating Costs - Route 5 had one of the highest track maintenance costs.
 - Safety - Route 5 has a high number of rail-rail and at-grade crossings compared to the other routes.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 8 – Madison-Prairie-Rochester (6 “red flags”)
 - Travel Time - Route 8 was assessed as having one of the worst travel times because of the increased distance traveled through Madison and Rochester.
 - Automobile Travel Time - Route 8 has a travel time greater than the automobile travel time.
 - Overall Travel Time - Because Travel Time and Automobile Travel Time both received “red” assessments, the overall travel time rating is red.
 - Capital Costs - The cost to upgrade to high-speed rail was high and the cyclic capital costs were high for Route 8.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 8 – Madison-Prairie-Rochester
 - Operating Costs - Route 8 had the highest track maintenance cost of all the routes.
 - Safety - Route 8 has a high number of rail-rail and at-grade crossings compared to the other routes.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 13 – Milwaukee-Fond du Lac-Eau Claire (3 “red flags”
 - Route Characteristics – 65% of the total track miles is single track without a second roadbed; only 6% of the total track miles is double track; and the route has almost 21 miles of grades greater than 1%. Route 13 received an overall “red” assessment for this criterion.
 - 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.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 13 – Milwaukee-Fond du Lac-Eau Claire
 - Reliability - Route 13 has a high number of freight conflicts and handoffs between railroads. UPRR carries unit coal trains from Wyoming's Powder River Basin to St. Paul, continuing to Hudson using the St. Croix River swing bridge. 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.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 14 – Milwaukee-Fond du Lac-Chip-TC (3 “red flags”)
 - Route Characteristics – 91% of the total track miles is single track without a second roadbed; only 4% of the total track miles is double track. Route 14 received an overall “red” assessment for this criterion.
 - 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.
 - 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.



Identification of Reasonable and Feasible Passenger Rail Alternatives

- The following routes are eliminated from further consideration:
 - Route 2 (Amtrak-Rochester),
 - Route 5 (Madison-Rochester),
 - Route 8 (Madison-Prairie-Rochester),
 - Route 13 (Milwaukee-Fond du Lac-Eau Claire), and
 - Route 14 (Milwaukee-Fond du Lac-Chip-TC)
- The following routes remained for further analysis (9 routes):
 - Route 1 – Amtrak Route
 - Route 3 – Amtrak-BNSF River
 - Route 4 – MWRRI Madison
 - Route 6 – Madison-BNSF River
 - Route 7 – Madison-Prairie
 - Route 9 – Madison-Prairie-BNSF River
 - Route 10 – Amtrak-Eau Claire
 - Route 11 – Madison-Eau Claire-TC
 - Route 12A – Wyeville-Eau Claire



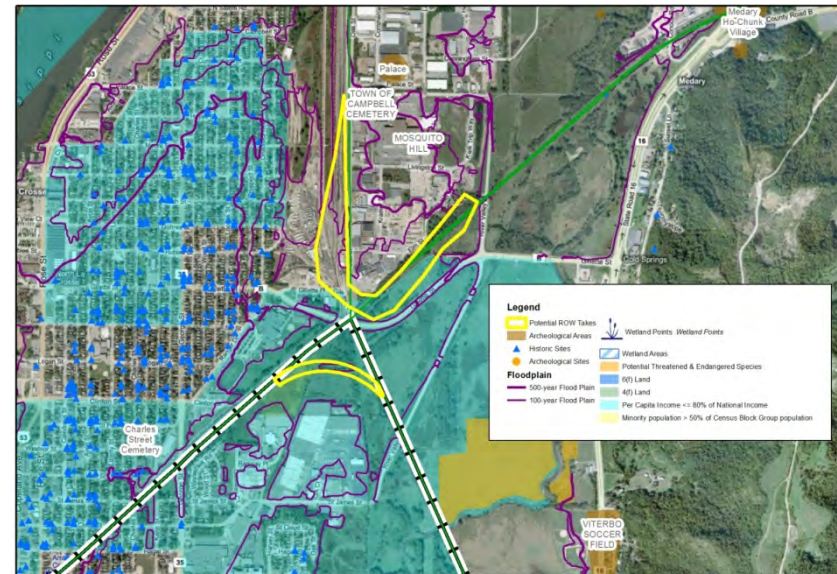
Identification of Reasonable and Feasible Passenger Rail Alternatives

- Next step – Environmental Sensitivity Analysis
- Routes with the potential for severe environmental concerns are eliminated from further analysis



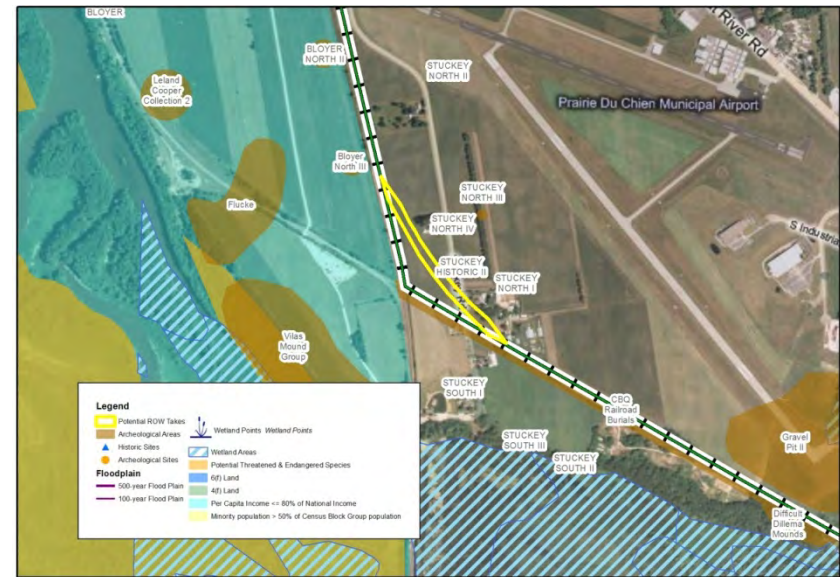
Identification of Reasonable and Feasible Passenger Rail Alternatives

- La Crosse, WI-Grand Crossing, WI
 - Needed ROW in northwest quadrant crosses 100-year and 500-year floodplains
 - Needed ROW in southwest quadrant crosses 100-year and 500-year floodplains, low income block group and a 4(f) Statewide Habitat area
 - Affects
 - Route 3 (Amtrak-BNSF River),
 - Route 6 (Madison-BNSF River),
 - Route 8 (Madison-Prairie-Rochester), and
 - Route 9 (Madison-Prairie-BNSF River)



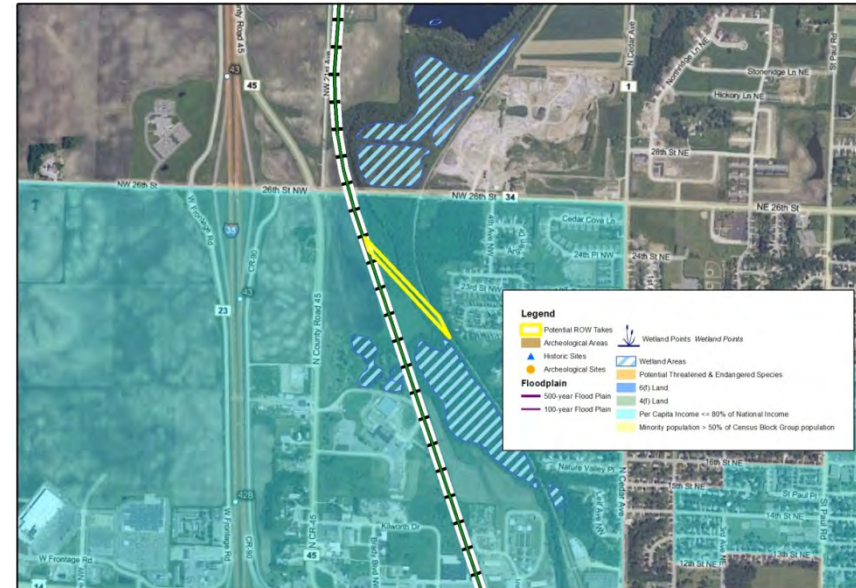
Identification of Reasonable and Feasible Passenger Rail Alternatives

- Prairie du Chien, WI - Crawford, WI
 - Needed ROW impacts houses and archaeological sites
 - Affects
 - Route 7 (Madison-Prairie),
 - Route 8 (Madison-Prairie-Rochester), and
 - Route 9 (Madison-Prairie-Rochester)



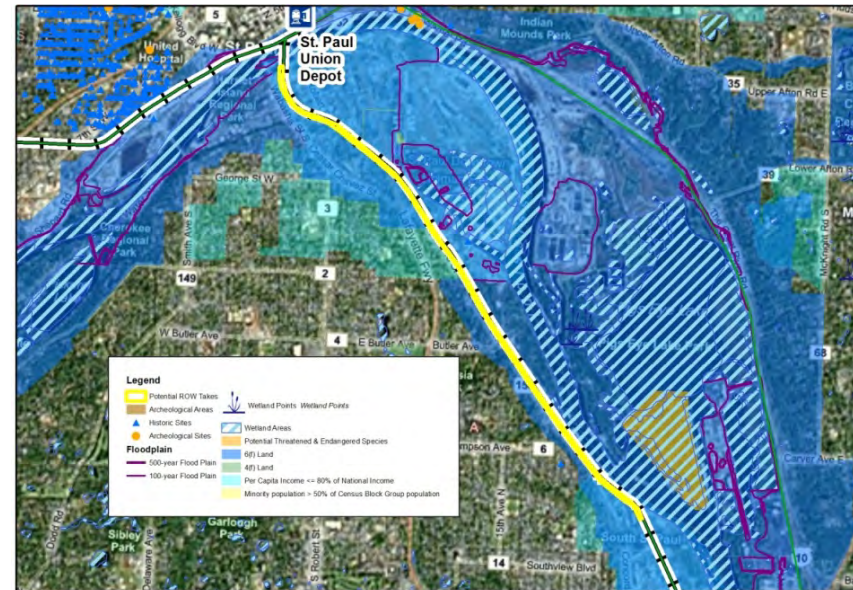
Identification of Reasonable and Feasible Passenger Rail Alternatives

- Owatonna, MN
 - Requires the construction of a very expensive structure and property takes to connect the at-grade CP to the 30-40 foot lower UPRR
 - Needed ROW impacts low income and minority block groups and wetlands
 - Affects
 - Route 2 (Amtrak-Rochester),
 - Route 5 (Madison-Rochester), and
 - Route 8 (Madison-Prairie-Rochester)



Identification of Reasonable and Feasible Passenger Rail Alternatives

- South St. Paul, MN - St. Paul Union Depot, MN
 - 50 to 100' of additional ROW is required from Grand Avenue in South St. Paul to the Robert Street Bridge over the Mississippi River just south of SPUD to accommodate HSR passenger track – 4.4 miles
 - Needed ROW impacts 6(f) protected land (Mississippi National River and Recreation Area), low income, and minority block groups



Affects

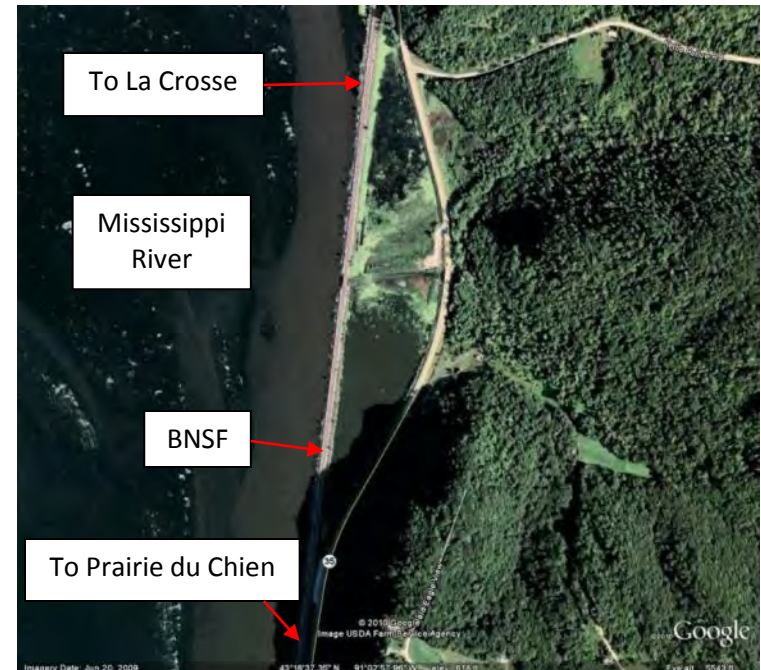
- Route 2 (Amtrak-Rochester),
- Route 5 (Madison-Rochester), and
- Route 8 (Madison-Prairie-Rochester)



Identification of Reasonable and Feasible Passenger Rail Alternatives

Environmental Impacts along the Mississippi River

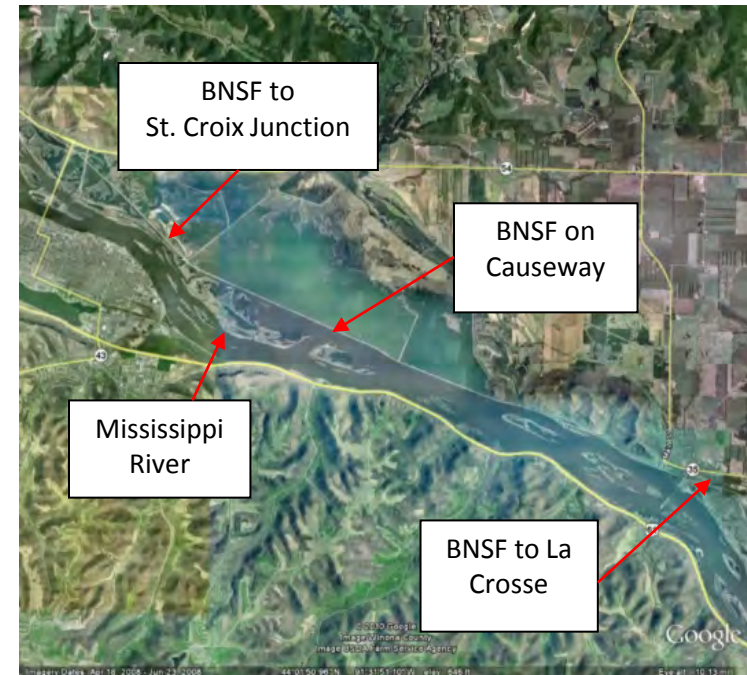
- Prairie du Chien, WI - La Crosse, WI
 - Requires a third track to be built into the river or into the slope of the bluff along the river; substantial environmental permitting and remediation will be required and in some areas, construction outside the railroad right-of-way is needed
 - Affects
 - Route 7 (Madison-Prairie) and
 - Route 9 (Madison-Prairie-BNSF River)



Identification of Reasonable and Feasible Passenger Rail Alternatives

Environmental Impacts along the Mississippi River

- La Crosse, WI - Hastings, MN
 - Requires 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 is needed
 - Affects
 - Route 3 (Amtrak-BNSF River),
 - Route 6 (Madison-BNSF River), and
 - Route 9 (Madison-Prairie-BNSF River)



Identification of Reasonable and Feasible Passenger Rail Alternatives

- The following routes are eliminated from further consideration:
 - Route 3 (Amtrak-BNSF River),
 - Route 6 (Madison-BNSF River),
 - Route 7 (Madison-Prairie), and
 - Route 9 (Madison-Prairie-BNSF River)
- The following routes remained for further analysis (5 routes):
 - Route 1 – Amtrak Route
 - Route 4 – MWRRRI Madison
 - Route 10 – Amtrak-Eau Claire
 - Route 11 – Madison-Eau Claire-TC
 - Route 12A – Milwaukee/Wyeville-Eau Claire



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Next Step - Purpose and Need Sensitivity Analysis
- It is essential to the success of the project that the identified reasonable and feasible passenger rail alternative(s) meets the purpose of the project
- Remaining routes that do not meet the project purpose and project need will be eliminated from further analysis



Identification of Reasonable and Feasible Passenger Rail Alternatives

- Route 12A (Milwaukee/Wyeville-Eau Claire) 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
- Route 12A (Milwaukee/Wyeville-Eau Claire) has the lowest route population of all of the potential passenger rail alternatives - Route 12A does not meet the project purpose of providing accessibility to major population centers
- Route 12A – Milwaukee/Wyeville-Eau Claire is eliminated from further analysis



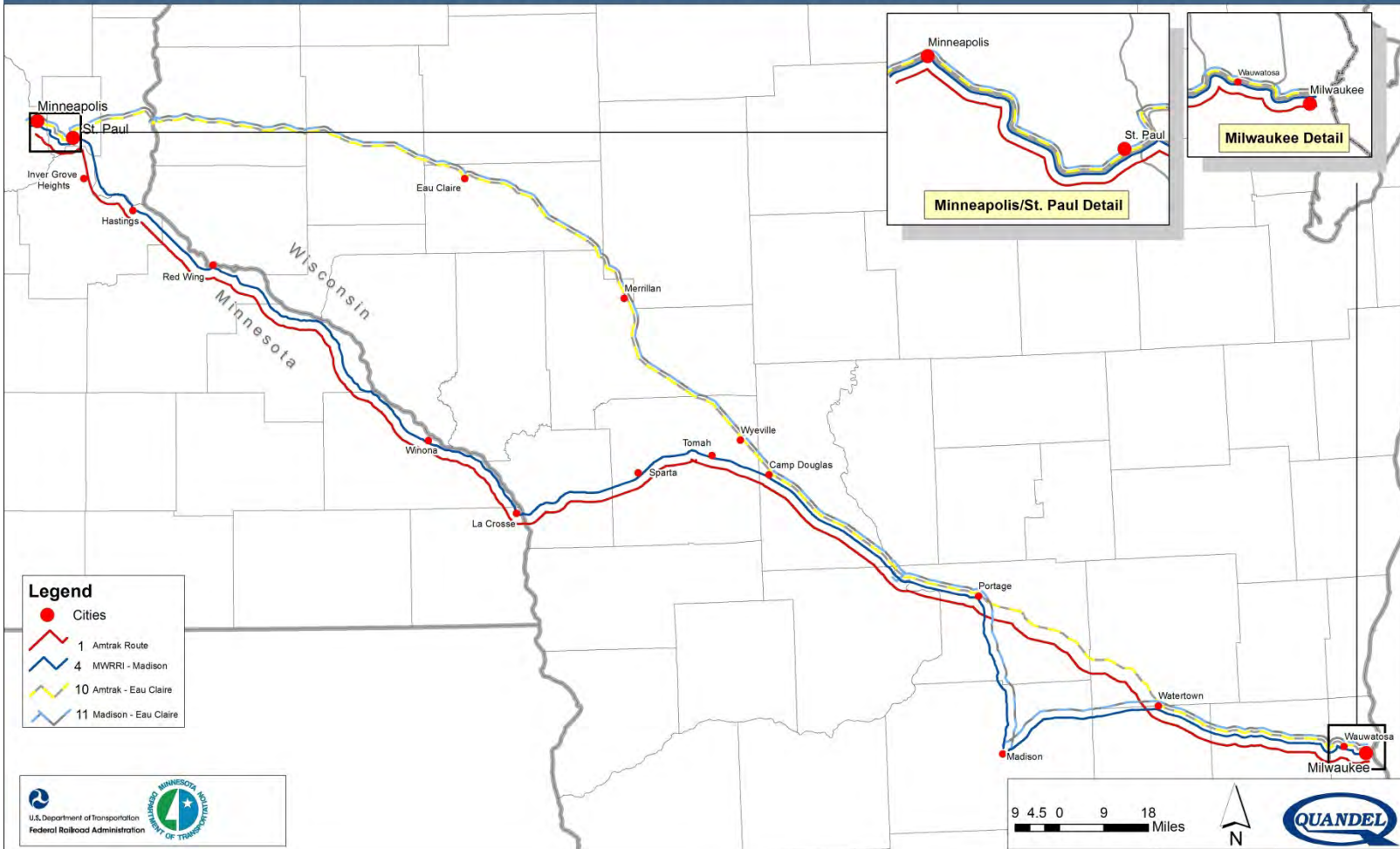
Identification of Reasonable and Feasible Passenger Rail Alternatives

- The following routes remained (4 routes):
 - Route 1 – Amtrak Route
 - Route 4 – MWRRI Madison
 - Route 10 – Amtrak-Eau Claire
 - Route 11 – Madison-Eau Claire-TC



Identification of Reasonable and Feasible Passenger Rail Alternatives

Milwaukee - Twin Cities Identification of Reasonable and Feasible Rail Alternatives



Milwaukee-Twin Cities High-Speed Rail Corridor Program

Identification of Reasonable and Feasible Passenger Rail Alternatives

- In comparing the four remaining routes, Route 1 (Amtrak Route) has the following advantages:
 - 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



Identification of Reasonable and Feasible Passenger Rail Alternatives

- MnDOT's recommendation is to identify Route 1 (current *Empire Builder* route) as the reasonable and feasible passenger rail alternative based on cumulative advantages of Route 1
- FRA is supportive of MnDOT moving forward with just the one reasonable and feasible alternative



Other Considerations

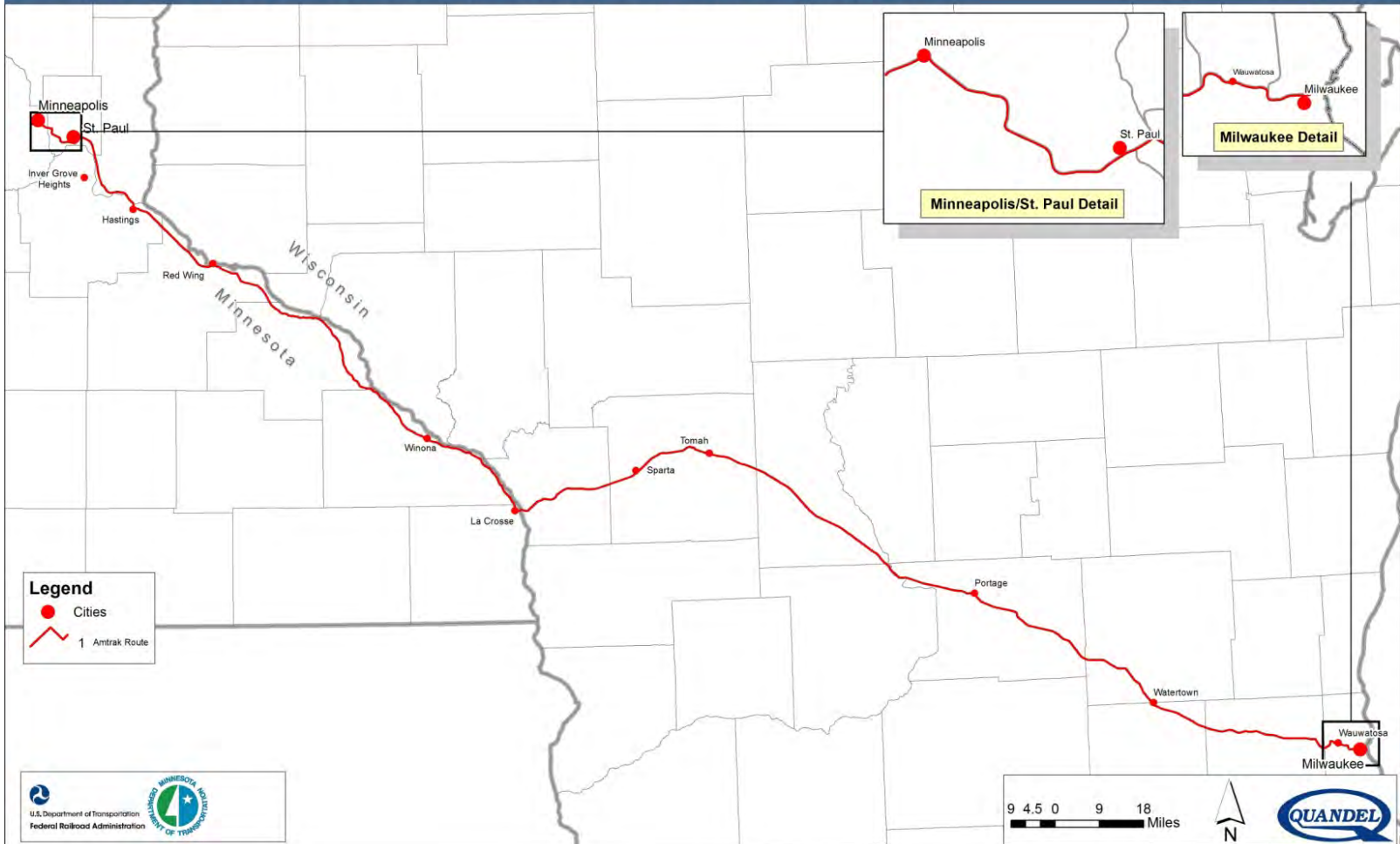
- The Vision of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan is to develop a robust passenger rail system
- Priority – incremental or phased approach with sequencing depending on financing availability
- Wisconsin – withdrew from project, decision to focus on *Hiawatha* (Chicago-Milwaukee) and *Empire Builder* routes



Identification of Reasonable and Feasible Passenger Rail Alternatives

Milwaukee - Twin Cities Identification of Reasonable and Feasible Rail Alternatives

Figure 12-9



Next Steps

- A Tier 1 Environmental Impact Statement will evaluate the one build alternative and a no-build alternative
 - Determine what best meets the purpose and need
 - Identify environmental consequences and measures necessary to mitigate environmental impacts in site-specific detail
- Prepare Draft Tier 1 EIS
 - Public and agency review and comments
- Prepare and submit Final Tier 1 EIS to FRA



Comments

