Evaluation of Options for a

Twin Cities – Red Wing Inter-city Rail Passenger Service

Prepared by

LTK Engineering Services

in association with
SRF Consulting Group

for the
Ramsey County Regional Railroad Authority

January 21, 2008
# Table of Contents

**Executive Summary** ............................................................................................................ 1

1.0 Introduction .......................................................................................................................... 3

1.1 Red Wing .......................................................................................................................... 3

1.2 Treasure Island Resort and Casino ................................................................................. 4

2.0 Service Objectives ............................................................................................................. 5

2.1 Recreational Travel Market ........................................................................................... 5

2.2 Possible Routes .................................................................................................................. 6

3.0 Alignments, Stations and Terminals .................................................................................. 10

3.1 Minneapolis – Northstar Intermodal Station .................................................................. 10

3.2 Minneapolis to Saint Paul ............................................................................................... 11

3.3 Minnesota Union Depot ................................................................................................... 13

3.4 Hastings ............................................................................................................................ 14

3.5 Treasure Island ................................................................................................................ 15

3.6 Red Wing .......................................................................................................................... 16

4.0 Rolling Stock Options ....................................................................................................... 17

4.1 Equipment Types .............................................................................................................. 17

4.2 Self-Propelled Equipment ............................................................................................... 18

4.3 Equipment Assumptions ................................................................................................. 18

5.0 Operations and Related Issues ......................................................................................... 20

5.1 Railroad Capacity ............................................................................................................. 20

5.2 Current Amtrak Running Time ....................................................................................... 25

5.3 Illustrative Red Wing Schedule ....................................................................................... 26

5.4 Railroad Access ................................................................................................................. 27

5.5 Storing and Servicing Equipment ................................................................................... 27

5.6 Sponsorship Opportunities ............................................................................................. 28

5.7 Operator Alternatives ....................................................................................................... 30

6.0 Cost Estimates .................................................................................................................... 32

6.1 Initial Capital Costs ........................................................................................................... 32

6.2 Rolling Stock Acquisition ............................................................................................... 32

6.3 Minnesota Union Depot Modifications .......................................................................... 32

6.4 Train Layover Facilities .................................................................................................... 33

6.5 Freight Rail Line Capacity Improvements ...................................................................... 33

6.6 Red Wing Depot Modifications ....................................................................................... 34

6.7 Treasure Island Resort & Casino Station ......................................................................... 34

6.8 Hastings Depot Modifications ....................................................................................... 34

6.9 Operations and Maintenance Costs ................................................................................ 35

6.10 Passenger Ridership and Revenue ................................................................................. 36

7.0 Recommended Approach .................................................................................................. 38
Red Wing Inter-city Passenger Service

List of Figures

Figure 1: Saint Anthony Junction, between Saint Paul and Minneapolis, looking west, and showing the path currently followed by Amtrak ........................................... 12
Figure 2: Hastings Station, showing Mississippi River Bridge in background .................. 14
Figure 3: Potential Treasure Island Station Location - Sturgeon Lake Road grade crossing of Canadian Pacific mainline, Casino in background ............................. 15
Figure 4: Treasure Island Casino shuttle bus in operation ............................................. 16
Figure 5: Red Wing’s attractive Depot ........................................................................ 16
Figure 6: Freight train mile trends .............................................................................. 20
Figure 7: Typical Scene – Two Freights Passing at Hoffman Avenue Interlocking .......... 21
Figure 8: Track schematic for the existing Hoffman Avenue interlocking and adjacent area .................................................................................................................. 22
Figure 9: Current train paths between Saint Paul and Hastings .................................. 24
Figure 10: Potential long term train paths between Saint Paul and Hastings ................. 24
Figure 11: Conceptual Hoffman Avenue early phase capacity improvement ............... 25

Maps

Map 1: Downtown to downtown connection using BNSF, Midway Subdivision ............... 8
Map 2: Downtown to downtown connection using BNSF, Minnesota Commercial and CPR ................................................................................................................. 9

List of Tables

Table 1: Amtrak’s Empire Builder Schedule .................................................................. 26
Table 2: Sample Red Wing Starter Service Schedule .................................................. 26
Table 3: Sample Private Sector Passenger Train Service ........................................... 29
Table 4: Capital Cost Summary Table .......................................................................... 35
Table 5: Operating and Maintenance Costs for Various Scenarios ............................... 35

Appendix

Appendix A: Technical Memorandum: Red Wing-Twin Cities Ridership Potential
LTK Engineering Services, with the support of SRF Consulting Group, Inc., has conducted this evaluation of options for an intercity rail passenger service operating between Saint Paul and Red Wing. In addition, LTK was asked to perform a further evaluation of issues and costs associated with an extension of such a service from Minnesota Union Depot to the Downtown Minneapolis Northstar Intermodal station in order to serve Downtown Minneapolis and potentially also connect with trains to and from Duluth. These are the main findings:

1. A service between the Twin Cities and Red Wing could be designed as an everyday service, including as an extension of the proposed Red Rock commuter rail service between the Twin Cities and Hastings. Alternatively it could be established, possibly as the first phase of a long-term program to for inter-city service, as a “weekend and holiday only” recreationally-oriented service, perhaps with two round trips per day complementing the existing daily Amtrak *Empire Builder* service. Trains would generally follow the current Amtrak route between the Twin Cities and Red Wing, with intermediate stops at Hastings and Treasure Island Resort and Casino.

2. Red Wing is a small city, and therefore the potential for generation of ridership is not high. Depending upon the service alternative selected, studies suggest that ridership would probably be in the range of fewer than 300 trips per day.

3. A commuter level of service between Saint Paul and Red Wing would first require the investment in capacity infrastructure on the Canadian Pacific Railway (CPR) calculated in the Red Rock study, now under way. The most significant, but by no means the sole cost element, would be the grade separated track approach to the east end of Minnesota Union Depot, and the related capacity improvements at Hoffman Avenue in the vicinity of Dayton’s Bluff. Together, these would represent a cost of more than $100 million. If the Red Rock project were already implemented, however, those costs would presumably already be covered. A “starter” level of service, such as the recreational service considered as a first increment in development of this line, might involve an investment in the $22 – $77 million range. This is subject to discussion with the CPR.

4. Between Saint Paul and Downtown Minneapolis, there are two principal alternative railroad alignments – the CPR/Minnesota Commercial alignment currently used by Amtrak, and the BNSF Railway’s Midway Subdivision. These were evaluated in 2001 as part of the commuter rail alternative of the Central Corridor project. These railroad lines are congested with freight traffic; that is particularly true of the BNSF between Downtown Minneapolis, Minneapolis Junction and Saint Anthony Junction, which is just north of Midway Station. For a full commuter level of service, the 2001 study estimated a range of infrastructure costs of $44 – $68 million. A starter level of service might require...
5. Minnesota Union Depot will have sufficient space to accommodate a Red Wing service of any type, including, in all likelihood, a small maintenance and storage facility which could be located there to keep capital investment costs as low as possible.

6. If it were desired to accommodate Red Wing or Duluth passenger service on weekdays in Downtown Minneapolis, it would be necessary to modify the present design of the Minneapolis Intermodal Station. The Northstar weekday service concept will require midday storage of four commuter trainsets in the station, occupying all station tracks and platform faces. The site is very constrained. Any additional trains serving the station on weekdays will require the construction of more tracks and platforms, and vertical circulation to and from street level, or, alternatively, a remote storage yard for Northstar equipment. On weekends, with reduced commuter rail service and no midday storage of equipment Downtown, it should be possible to operate other passenger train routes to Downtown Minneapolis.

7. The lack of passenger train capacity in Downtown Minneapolis is an urgent transportation concern that requires study in the context of region-wide and statewide passenger rail development potential.

8. If it is desired to implement a passenger rail service to Red Wing, the following factors would appear to suggest the desirability of an incremental development strategy based on a weekend-holiday concept as a first step:

   • Ridership potential is not high
   • A limited recreationally-oriented service could be operated with a single, smaller trainset and a two-person crew, keeping operating costs low
   • There would be several different ways to develop subsequent increments in a development strategy

9. A modest, weekend-only recreational service offering two trips per day between Minnesota Union Depot and Red Wing might require an initial capital investment in the range of $31 – $106 million, with an annual operating cost of $3.5 – $4.2 million, minus fairly modest ticket revenue.

10. It is emphasized that the analysis is based on only very limited discussions with the operating railroads. No agreement by them with these conclusions is implied. If there is any interest in pursuing this service, discussions with the BNSF Railway and CPR should be undertaken as early as possible.
1.0 Introduction

The Ramsey County Regional Railroad Authority (RCRRA), in conjunction with other local and regional government entities, and community development representatives, is restoring historic Saint Paul Union Depot as the Minnesota Union Depot, a multi-modal transportation center, and gateway to the region and state. This facility will become a major multi-modal transportation hub for Saint Paul and East Metro, serving Downtown with bus, light rail, commuter rail, and inter-city rail passenger services, and providing a convenient location for transfers between intercity, regional and local transportation modes and carriers. The Minnesota Union Depot redevelopment will be staged in a manner to expand as the passenger service levels grow. In addition to terminal facilities for the Minneapolis-Saint Paul Central Corridor light rail service, the first phase of redevelopment will include railroad passenger platforms to serve Amtrak’s Chicago-Twin Cities-Seattle/Portland Empire Builder, as a replacement for the current Midway Station. Subsequent phases will include additional platforms and rail infrastructure improvements to accommodate expanded inter-city service and new rail commuter routes.

Other routes now being evaluated include the “Red Rock” commuter corridor (Twin Cities-Newport-Hastings), and a “Twin Cities-Twin Ports” intercity service between Minneapolis/Saint Paul, Hinckley, Superior and Duluth. In addition to these, RCRRA has engaged LTK Engineering Services to provide an evaluation of a recreation-oriented rail passenger service between Minneapolis/Saint Paul and the City of Red Wing, Minnesota. SRF Consulting Group has also been engaged as part of this effort to provide some initial estimates of potential ridership that might be generated by such a service.

1.1 Red Wing

Red Wing, MN, is located approximately 42 miles southeast of Saint Paul on the Chicago – Twin Cities mainline of the Canadian Pacific Railway System (the former Milwaukee Road). Red Wing is a tourist and casino destination from the Twin Cities. In addition, several communities along the route have commuters going into the Twin Cities. Since an established rail corridor already exists between the destinations, the concept of establishing inter-city passenger service in an incremental way is attractive. This route already has Amtrak’s Empire Builder train service once daily in each direction serving Saint Paul and Red Wing.

This route is also part of the proposed Midwest High Speed rail system between the Twin Cities, Wisconsin, and Chicago. Line capacity improvements associated with development of a local inter-city service could potentially support the eventual High Speed service. Historically, the line has always been maintained as a freight and passenger mainline and much of it has roadbed that once carried double track. The current track structure is capable of carrying passenger trains up to 79 mph. An inter-city service may have less start-up costs than a commuter line because fewer new stations may be established and the frequency of service may require less rail line capacity.
1.2 Treasure Island Resort and Casino

The Treasure Island Resort and Casino is located approximately 8 rail miles north of the City of Red Wing. It is owned and operated by the Prairie Island Dakota Community, and is one of 18 such casinos established in recent years in Minnesota. In the aggregate, Indian casinos are the 12th largest employer in the state, and the Prairie Island Community is the largest employer in Goodhue County. Treasure Island is one of the two casinos located in closest proximity to the population of the Twin Cities Metropolitan Area, about an hour driving time under normal conditions. The casino features its own Mississippi River marina for boaters, and a 250-room hotel.

Like most such establishments, Treasure Island generates significant traffic between the casino and the Twin Cities. Judging from website advertising, the casino presumably draws some clientele from a large area in the upper Midwest. Red Wing is too small to support a commercial airport of its own, and it may be safely assumed that virtually all air access to the casino is via Minneapolis-Saint Paul International Airport, and either driving or a bus trip. (Rochester does have air service, but it is largely via Minneapolis-Saint Paul, and would still involve driving or a bus shuttle trip to reach the casino.)

A bus service does exist between the Twin Cities and the Casino, and between Rochester and the Casino, but it is limited and requires advance reservations, which can only be made during business hours on weekdays. A significant trip market must exist between a metropolitan area of about 3 million people and the closest large gambling and resort venue, but presumably this demand is currently being met almost entirely by driving. A target market of any regular public transportation service, such as the passenger train options discussed in this report, would include city dwellers who either lack access to an automobile for recreational trips (or at all), and those who have access to a car but who would prefer not to drive, particularly during periods of poor weather and hazardous road conditions. These markets have been found to exist elsewhere; on the East Coast, for example, Atlantic City casinos are underwriting the cost of new equipment and train operations in order to tap this very market.
2.0 Service Objectives

2.1 Recreational Travel Market

The service considered in this report is clearly distinguishable from that evaluated in greater depth in the Red Rock Corridor Project. The focus of the Red Rock study is a regular, weekday peak-period commuter rail service between Hastings, Saint Paul and Minneapolis, targeted to work trips and employment sites in the Twin Cities urban core. Trains would run every thirty minutes during the peak, with service oriented to work trips being made to the Central Business Districts and adjacent areas in the morning, returning in the late afternoon and evening. There would be intermediate stations at Cottage Grove, Newport and Lower Afton Road so that the service would be accessible to a larger suburban population. Commuter rail service is by definition a form of public transit service:

“…a passenger railroad service that operates within metropolitan areas on trackage that usually is part of the general railroad system. The operations, primarily for commuters, are generally run as part of a regional system that is publicly owned or by a railroad company as part of its overall service.”

(Transportation Research Board, Urban Public Transportation Glossary, 1989)

By contrast, an intercity service is not designed for a specialized submarket of commuters, or characterized by service that is limited to peak periods with the goal of attracting work trips. The Red Wing service looked at in this report does have identifiable market niches, but they are not commuter oriented. Red Wing itself, 42 miles from Saint Paul, is a small city, population 16,000. While it would certainly warrant a station on a commuter rail line if it were characterized by a more significant commuting population, a quick analysis provided by the City of Red Wing Planning Department suggests the numbers are not significant. The Census Bureau’s LEHD website indicates that only about 300 Red Wing residents commute to work in Downtown Saint Paul and Downtown Minneapolis and adjacent core areas; these people represent the prime market for commuter rail service (See Appendix A). For Red Wing to the entire Metro area, the count for residents living in Red Wing and commuting to work is larger, but most are employed in south suburban communities where market penetration by a commuter rail service would probably not be high.

Its picturesque riverside setting, beautifully preserved Victorian Downtown, famous footwear and pottery production, hotels and restaurants, taken together with its proximity to the Twin Cities metro area, give Red Wing a tourist-related traffic that is probably somewhat larger than the norm for a city of its size. Treasure Island Resort and Casino traffic, inherently recreational, reinforces this characteristic.

This report describes an analysis of a service intended to serve a niche market for recreational travel between a major metropolitan area and unique but not overwhelmingly
Red Wing Inter-city Passenger Service

large nearby destination. The intent is to ascertain whether a service could be conceived which meets certain principal criteria:

- minimal capital cost
- minimal operating cost
- reasonable ridership
- appropriate fare revenue recovery, compared to operating cost

Minimizing the capital cost depends primarily upon defining a service with minimal freight railroad capacity usage and/or economical incremental increases in freight railroad capacity. A low-cost approach to acquiring equipment is also important.

Minimal operating cost depends partly upon the equipment selected for the service, but also upon a service and timetable concept that minimizes labor cost. Several approaches were considered, but the concept costed in this report as a “base” or “starter” level of service assumes two daily round trips, complementing the Amtrak Empire Builder, that could be operated by one two-person crew, and whose entire duty cycle would fall within the twelve-hour federal on-duty “hours of service” limitation for operating railroad personnel. By doing this, any need for more operating employees is avoided in the initial stage of operations.

“Starter” service could operate daily, or as a lower-cost option could be limited initially to weekends and holidays. Ridership depends upon the availability of an attractive service people would want to use being available at the time people would want to use it. More service would attract more ridership, of course, and provide every-day connections in Minneapolis with a Twin Cities-Duluth service, if that is established. However, more service also is more expensive to run. The attractiveness of the service, producing ridership and passenger revenue, will have to be balanced against operating costs in order to decide whether it is worthwhile to proceed with concept refinement and development of a financing and implementation plan.

2.2 Possible Routes

Route options for this service would be limited. Between Downtown Minneapolis and Saint Anthony Junction, trains would use the trackage of the BNSF Railway Company (formerly The Burlington Northern and Santa Fe Railway Company). From that point to the Minnesota Union Depot, trains could be routed along the line of the Amtrak Empire Builder via the Minnesota Commercial Railroad and Canadian Pacific Railway (CPR) Merriam Park Subdivision, or via the BNSF Midway Subdivision north of downtown. Farther north, the BNSF Saint Paul Subdivision might theoretically be used, but its connections to Downtown Minneapolis are more awkward, and it would not appear to offer any advantages over the Midway Subdivision. There was no further consideration given to the Saint Paul Subdivision as an alignment option.
The only alignment considered in this evaluation between Saint Paul and Red Wing is the one used by Amtrak’s *Empire Builder*, the Canadian Pacific’s ex-Milwaukee Road, ex-SOO Line mainline between Saint Paul and Chicago. This is the only remaining railroad serving Red Wing. It is the line currently served by Amtrak.

Some alternatives south of Saint Paul were briefly considered at a purely conceptual level, and discarded.

The BNSF Railway Company’s mainline from Saint Paul to Chicago shares with CPR the tracks as far as Saint Croix Junction, and then follows the east bank of the Mississippi in Wisconsin to La Crosse. This important route once had intensive passenger operations, and service could conceivably be established over it to a station at, or in the vicinity of Bay City, across the river from Red Wing. However, this route would not directly serve either Red Wing or the Treasure Island Casino, and would have no advantages over the CPR relative to overcoming freight congestion problems at Hoffman Avenue in the Dayton’s Bluff area. This idea was not considered further.

The Chicago Great Western Railroad once reached Red Wing via a route which used the Robert Street railroad bridge, and ran south through Inver Grove Heights and Dakota County through Randolph and Cannon Falls. Its depot is still in existence as a coffee house in Red Wing. Most of this line was abandoned decades ago, and much of it has either reverted to farmland or pasture land, or been converted into a bike trail. While if it were still in existence it might have value as a potential future commuter rail line, and eventually part of a possible route to Rochester, reconstruction would be a very large and expensive undertaking, not consistent with the underlying theme of this analysis. It was also not considered further.

The possible use of the Robert Street Bridge to bypass the Hoffman Avenue problem was briefly looked it. With this concept, the route would cross the bridge into the “West Side,” then continue to the vicinity of the Union Pacific’s South Saint Paul Yard. Here, there is a second bridge that connects back into the south end of the CPR Pigs Eye Yard, and the CPR/BNSF joint mainline. However, the alignment is quite roundabout, and the connections all lead back into the yards and mainline in the wrong direction. This could be overcome with sufficient capital investment, but it would be unlikely to represent a significant cost saving over a more direct, and ultimately a probably more broadly beneficial investment in capacity improvements at Hoffman Avenue. This alignment concept was also not pursued further. For the same reason, a variant of this idea, involving a reconstruction of the abandoned double-deck (railroad and highway) Mississippi River at Inver Grove Heights, with a connection back into the CPR near Newport was also not pursued.
Red Wing Inter-city Passenger Service

MAP 1 - DOWNTOWN TO DOWNTOWN CONNECTION USING BNSF, MIDWAY SUBDIVISION

[Map Image with stations marked]

1/21/2008
3.0  Alignments, Stations and Terminals

To keep within a relatively small budget for service initiation, station considerations focused on sites with existing infrastructure expected by the beginning of this service. The following are stations projected to be operational with relatively little investments by the time of this service initiation:

- Minneapolis (if limited to weekend service)
- St. Paul
- Hastings
- Red Wing

The other station sites of interest for this service, but which needs station development is:

- Treasure Island Resort & Casino

This route utilizes the proposed Red Rock commuter line between Saint Paul and Hastings. Development of stations for this proposed intercity passenger service at sites without facilities that already exist (as at Hastings and Saint Paul) necessitates major capital investments both in station facilities and potential rail line capacity improvements. Therefore, stations for this service are not proposed at Cottage Grove, Newport or Lower Afton Road.

Station facility development investments include building of parking facilities, passenger platforms, and buildings/shelters. The Saint Paul – Hastings rail corridor handles heavy volumes of freight traffic over multiple tracks and with two routes between Newport and Hastings. Within this corridor are several major freight yards and customers, resulting in many occurrences of train movements at slow speeds due to working in this corridor. By avoiding station placement in this corridor, the host railroads will have full flexibility to route these trains on the most expedient path, minimizing capacity impacts this service brings.

3.1  Minneapolis – Northstar Intermodal Station

This station is the western end-of-the-line terminus utilizing the future newly built Northstar Intermodal Station near 5th Street and 5th Avenue North in downtown Minneapolis. This facility will have many desirable attributes:

- Easy automobile access through close proximity to I-394
- Ample parking facilities nearby (Target Center)
Red Wing Inter-city Passenger Service

- Adjoining Hiawatha Light Rail Line station
- Rail system connections directly towards Saint Paul

However, there are significant difficulties associated with running passenger trains between Minnesota Union Depot and Minneapolis.

The major limitation in using the Northstar Intermodal Station for other trains is the minimal size of the station’s track capacity as currently designed. Given a Northstar service plan that calls for storage of the Northstar fleet of four trainsets in Downtown Minneapolis on weekdays, with station tracks occupied all day by stored equipment, the limited passenger infrastructure leaves no room for other trains. Additional rail services on weekdays will require the building of other tracks in the area, construction of a remote storage yard and connecting track for Northstar equipment, or scheduling that avoids Monday through Friday daytime hours. Another unknown is whether or not trains to and from Duluth will be operating at this station. On weekdays, a Duluth service will face the same problem as Red Wing trains – no available track or platform capacity during the day. On weekends, the commuter platforms would presumably be available for intercity trains, and accommodation of both Duluth and Red Wing trains should be possible.

The rail corridor in downtown Minneapolis is very constrained, making the addition of tracks a potentially costly project. Train handling capacity is limited. Passenger amenities at the station will be minimal since it is being designed only to serve daily commuters as they pass through making Northstar-Hiawatha connections. Hennepin County is planning to evaluate how to expand the potentially important Downtown Minneapolis station, and until capacity expansion and service issues are sorted out, it is unclear how either Red Wing or Duluth trains could reasonably enter Downtown Minneapolis.

3.2 Minneapolis to Saint Paul

A railroad connection between Saint Paul and Minneapolis will also pose some significant challenges. Extension of Red Wing service west from Saint Paul into Downtown Minneapolis would potentially open up a larger ridership base. In the past, several railroad companies ran numerous long distance trains that served both of the Twin Cities’ Downtowns. With the demise of the private railroad operation of intercity passenger services in the 1960 – 1971 period, the railroad companies gradually cut back the rail network of the Twin Cities to a capacity consistent with the needs of freight traffic flows of the 1980s. This systemic contraction pulled out all but one railroad line in the Downtown Minneapolis area, leaving only limited routing options on the remaining rail network.

For a train to connect the Northstar Intermodal Station in Downtown Minneapolis to Minnesota Union Depot, only two feasible routes remain within the existing railroad network. One route uses the BNSF railroad the entire distance on heavily used freight routes through the Seventh Street interlocking east of Downtown Saint Paul, the other
uses the current Amtrak-CPR *Empire Builder* route through Midway station. The all-BNSF route has similar freight railroad capacity issues as the corridor does between Saint Paul to the southeast, as well as the necessity to reverse train directions in the Minnesota Union Depot. The Amtrak-Midway Station route uses a moderately used CPR line to a short segment of Minnesota Commercial route where Midway station is located. But most of the Midway to Minneapolis segment is on the BNSF and is the same as the all-BNSF route.

The Amtrak-CPR route uses 1.8 miles of the Minnesota Commercial Railroad’s line between Saint Anthony interlocking on the BNSF and Merriam Park Jct. on the Canadian Pacific. This trackage has a 10 mph speed restriction due to its layout through what has always been yard and industrial track areas. At each end of the segment are curves with geometries that not suitable for faster speeds without blazing a new route through nearby built-up urban areas. Until Amtrak switched the *Empire Builder* to this route in the 1970s, no passenger trains used this segment. Therefore, this segment, originally built for terminal freight functions, remains laid out for that function. This is most apparent at St. Anthony interlocking, as shown in Figure 1.

*Figure 1: Saint Anthony Junction, between Saint Paul and Minneapolis, looking west, and showing the path currently followed by Amtrak.*
Red Wing Inter-city Passenger Service

The eastbound *Empire Builder* diverts southward from the BNSF mainline at St. Anthony through a 10 mph turnout, then traverses a Minnesota Commercial Railroad yard lead operated with manually controlled switches to reach a through yard track leading to the station more than half a mile away. The current track layout leaves no room for improvements required, and would required significant reconstruction.

Besides St. Anthony, a Red Wing service extension to Minneapolis over the Amtrak route also traverses two other railroad junctions with sharp curves that require slow speeds: Merriam Park Jct. and Minneapolis Jct. Therefore, without significant capacity and speed improvements, passenger service extension between the two Twin Cities Downtowns is operationally difficult as well as slow. On top of that, at some point, the service needs to operate on heavily used freight segments where capacity is scarce.

In 2001, a commuter rail alternative was considered for the Central Corridor between Downtown Saint Paul and Downtown Minneapolis. Both the CPR-Amtrak and the BNSF Midway Subdivision alignments were considered. The alignments were evaluated, and operational simulations were made at that time to assess operability and facilitate the development of illustrative capital investment packages to make the alternatives “work”. Both alignments were found to be generally feasible, subject to negotiation and agreement with the two railroads, and consideration of their freight operational objectives; it was estimated that they would require comparable levels of infrastructure investment. At the time of that study, estimates in 1998 dollars for infrastructure required between the two Downtowns, excluding station costs, ranged from $50 million for the BNSF Midway Subdivision alignment, to $44-68 million for the CPR-Amtrak alignment, the spread in the latter depending upon whether or not the steam line co-occupying the CPR right-of-way would have to be retained and relocated. (We understand retirement of the steam line is being considered.) This was for infrastructure that would be required for a frequent two-way service (30-minute headway in both directions) for extended 2 ½ hour peaks, plus some midday trains.

No further significant engineering in this segment has been performed as part of this study. However, based on familiarity with the alignments, and the assumption that a more targeted lower cost might be possible for a less intensive starter service (recognizing that more investment might be required in later phases) we have estimated a target cost range of $19-29 million for this segment. (See further discussion of capital costs in Section 5.1.4, below). This might be achievable if the position of the BNSF is supportive, but, as noted elsewhere, there have been no discussions with the railroad, so the full nature of their possible demands for capacity investments in this segment under these circumstances is not known.

3.3    Minnesota Union Depot

Other issues aside, from the point of view of station capacity, Red Wing service initiation could occur upon completion of the early phases of the Minnesota Union Depot redevelopment. This includes the building of a platform and rail leads to service Amtrak’s *Empire Builder*. Since the Red Wing service uses the same route as the *Empire Builder*,
Red Wing Inter-city Passenger Service

Builder, no need exists for constructing additional track for connections. This site as several desirable attributes:

- Easy automobile access through close proximity to I-94
- Ample parking facilities
- Joint Central Corridor Light Rail Line station
- In-line rail system connectivity
- Main concourse accommodates passengers
- Sufficient station capacity

3.4 Hastings

Hastings has a depot building within walking distance of downtown and modest amounts of open space convertible to parking. CPR uses the building and the adjoining real estate to support their operations. Since passenger services currently do not use the depot, site enhancements are necessary as follows:

- Acquire interior space from the owner (presumably the CPR) and modernize with passenger amenities
- Build platforms on both main tracks for passenger boarding and egress
- Secure and construct appropriate parking spaces

Figure 2: Hastings Station, showing Mississippi River Bridge in background.
3.5 Treasure Island

At Treasure Island, a new station could be built specifically to serve the Treasure Island Resort & Casino. The tracks are within sight of the casino, but probably too distant to rely on a purely pedestrian connection. The logical location for a station would appear to be the grade crossing of the CPR mainline by Sturgeon Lake Road, the main highway access road for the casino.

The Treasure Island Resort & Casino complex sits approximately a half mile from the tracks, close enough for good accessibility by shuttle on the existing road. Property immediately adjoining the railroad right-of-way is undeveloped, permitting construction of access and shelters for passengers. No rail passenger station has occupied this site in recent history, necessitating the design and construction of an all new facility. Since the rail platform is close to the destination’s main attraction, minimal accommodations are necessary, mostly platform and shelter considerations.

![Figure 3: Potential Treasure Island Station Location - Sturgeon Lake Road grade crossing of Canadian Pacific mainline, Casino in background](image)

The building of a new passenger platform along the CPR’s mainline track would require the railroad’s concurrence. An emerging USDOT requirement for platform height and set-back from the track to fulfill ADA requirements conflicts with freight railroad’s clearance requirements. Several concepts exist to resolve freight train clearance requirements, including building a separate siding. Other issues with the CPR which would necessitate negotiations include: right-of-way occupancy, liability, maintaining drainage, preserving existing utility occupancies, stopped trains delay freight trains, and other unidentified items. In short, establishing station facilities for the Treasure Island Resort & Casino would require resolution of several engineering issues which could require significant expenses.
Treasure Island already operates a shuttle bus system, a service that could be expanded to link the Casino to the potential train station site.

![Figure 4: Treasure Island Casino shuttle bus in operation](image1)

### 3.6 Red Wing

Red Wing has a preserved passenger station serving Amtrak’s *Empire Builder* adjacent to the downtown area. The restored building houses Red Wing Visitors & Convention Bureau and the Red Wing Arts Association. Some of the floor space is dedicated as a waiting room for rail passengers and contains railroad motif decorations. The station is adjacent to Red Wing’s downtown and historic district. Covered parking is nearby.

![Figure 5: Red Wing’s attractive Depot](image2)
4.0 Rolling Stock Options

Since the operations of the proposed service will be on mainline railroad track, rolling stock must comply with the safety and structural requirements of the Federal Railroad Administration (49 CFR Part 238), i.e., the usage of conventional “railroad” equipment. In addition, the service also will need to comply with other applicable regulations, such as the Americans with Disabilities Act (ADA), necessitating the equivalent of two wheelchair spaces per car (i.e., six spaces on a three-car train). Several candidate equipment options exist with the following characteristics:

- Alternative Equipment Concepts
  - New – delivered directly from builder
  - Secondhand – single prior owner (20-30 years old)
  - Vintage – over 50 years old

- Motive Power Alternatives
  - Diesel locomotive hauled trains
    - Push-pull
    - Pull only
  - Self propelled diesel multiple units (DMUs)

Keep in mind that the pool of equipment required for Red Wing service, even allowing for spares to ensure reliability, will not be large. As conceptualized in this report, a “starter” service might require only one train set in operation at any one time. As an example, a service with a single train would call for perhaps two locomotives, two to four intermediate coaches, and two cab coaches, or four self-propelled diesel cars (one three-car train, plus one spare).

4.1 Equipment Types

The initial Red Wing service envisioned caters to special events, pleasure outings, and recreational purpose. Therefore, only one train set will operate between the Twin Cities and Red Wing, making two round trips three days a week. This service schedule is relatively light usage for passenger equipment, making it plausible that older and special interest equipment may be economical to use. With that in mind, equipment types can be assessed as new, secondhand, or heritage/vintage.
Red Wing Inter-city Passenger Service

New equipment generally includes pieces delivered directly from the builder, although previously owned equipment less than five years old generally will have the technological characteristics of new. Expectations of new equipment include fully compatible with the current regulations, including FRA, ADA, and EPA. Also, no refurbishment is necessary upon delivery as well as expecting at least 15 years before a major overhaul program.

Secondhand equipment typically is at the end of the economic life of the original owner who has bought a replacement fleet. A typical age for this equipment is in the 20 to 30 years of age. For cars, the largest market of cars comes from commuter agencies, resulting in a variety of equipment. Locomotives typically in this market typically are rebuilt units, or will need rebuilding. Despite that this equipment is typically near an economic life for the original owner, a less intensive service application such as limited trips to Red Wing may prolong the economic life. Expect to refurbish the equipment and deal with various regulatory rules for compliance or waivers.

Tourist and museum operators typically use vintage equipment and it mostly will be at least 50 years old. Interest may exist to pursue vintage equipment to create novelty to the service as part of the overall marketing strategy catering to recreational travelers. A wide variety of equipment exists and with an active secondary market for small quantities, sufficient for a Red Wing start-up service. Most heritage equipment will need refurbishment, particularly for a regular service. Most also need upgrading to meet current regulations for operations on common carrier rail lines.

4.2 Self-Propelled Equipment

Two basic types of propulsion systems are suitable for this service: locomotive hauled trains and diesel multiple units (DMU). Other types of propulsion, particularly electrical, require infrastructure not currently in place in this area.

Also needed with this service is the ability for the train to reverse directions without the need for physically turning the train. DMUs typically have cabs on each end, permitting a train reversal. New and secondhand locomotive hauled commuter trains typically are set up to reverse directions by having a locomotive on one end of the train and a specially equipped car with a cab on the other end. Heritage equipment generally will predate the adoption of cab cars, so a train with quick reversal characteristics can be set up with locomotives on each end of the train.

4.3 Equipment Assumptions

This study uses a least cost approach for equipment acquisition. New equipment is much more expensive that second-hand and vintage equipment. New equipment requires less maintenance and repairs than older equipment, but the debt amortization may exceed this benefit. Since the proposed Red Wing service runs only on weekends and accumulates modest mileage, acquiring and maintaining older equipment is more economical than acquiring new equipment.
Conceptually, the Red Wing service could use Northstar Commuter Rail equipment since the proposed Red Wing service does not coincide with Northstar service patterns. Usage of the equipment would save acquisition expenses as well as having to establish a storage and maintenance base facility. Logistically, for the Red Wing service to use the Northstar equipment on weekends, Northstar trains would have to move from their Big Lake facility back into the Twin Cities each weekend. This would require additional expense and operations coordination with the BNSF. It could also adversely impact planned equipment maintenance programs if weekends is the scheduled maintenance time. Because of the uncertainty of coordinating with Northstar, the cost estimates do not use this option. Additional analysis, including discussions with the Northstar Corridor Development Authority, would more fully assess this concept’s feasibility. This concept may be more workable and useful in the event of a more significant commitment to a railroad connection between Downtown Minneapolis and Minnesota Union Depot.

The low cost equipment acquisition “starter” concept for this study is acquiring enough vintage equipment to assemble one train set for the service with spares to cover equipment unavailability due to maintenance and repairs. Vintage equipment in this report refers to streamline styled passenger locomotives built in the 1950s and streamline type passenger equipment built in the late 1940s through the 1950s. This class of equipment is associated with the heyday of rail passenger travel and generates nostalgic interest with potential riders. Also, since the Red Wing service envisions catering to recreational travelers, modest but necessary passenger amenities are doable with vintage equipment.

A significant amount of this equipment exists, some in duty on tourist and museum operations, and others privately held. A few railroad equipment dealers handle this type of equipment and a modest secondary market exists. This study assumes three locomotives and four cars are necessary, with the operating train having a locomotive on each end and three cars, leaving one locomotive and one car as a spare.

Initial acquisition costs of much of this equipment are very low, but, most equipment in this market needs refurbishing which results in the dominant set-up expense. Locomotives most likely will need a major overhaul for regular operations, for acceptance on the host railroad, and to comply with regulatory and safety requirements. Likewise, cars most likely will need refurbishment to create an attractive appeal and attain necessary mechanical integrity for regular service. Nevertheless, many limited operations successfully operate vintage equipment after overhauling it.
5.0 Operations and Related Issues

Several other issues must be addressed as part of developing and implementing a successful project.

5.1 Railroad Capacity

Railroad freight capacity is increasingly becoming a valuable intangible asset throughout the North American railroad industry. The U.S. railroad network has been contracting since about 1920, with substantial abandonments and network reductions occurring between 1960 and 1990. This overall rail network reduction freight onto fewer routes, and also reduced the number of tracks on many remaining routes. Since the mid 1980s, however, the number of freight trains has been growing, as indicated by Association of American Railroad train-mile statistics:

![United States Freight Train Miles](image)

*Figure 6: Freight train mile trends.*

It seems virtually certain that railroad freight growth will continue with overall economic expansion. In 2003, the American Association of State Highway and Transportation Officers (AASHTO) published the *Freight Rail Bottom Line Report* predicting freight rail growth of 44% by 2020. Since the report’s publication, the US Class 1 railroads experienced 9% growth in tons moved between 2003 and 2006.

The Twin Cities developed as a regional transportation center, stemming from proximity to regional agricultural and other resources to the navigable end of the Mississippi River. Because of the inherent freight traffic base, the Twin Cities quickly emerged as a major regional railroad hub during the heyday of railroad building between the Civil War and World War I. This prominence still exists today, with major rail traffic flows of the upper Midwest coming through the Twin Cities. The vast majority of this rail freight
volume passes through a railroad traffic funnel in the Dayton’s Bluff area of Saint Paul, located on the Saint Paul to Red Wing route. The estimated number of daily freight moves through this area is 60 – 70, roughly one train every 20 minutes.

At Dayton’s Bluff there is an important track junction, Hoffman Avenue interlocking. (An “interlocking” is “…an arrangement of switch, lock and signal devices, interconnected in such a way that their movements must succeed each other in a predetermined order, thereby preventing opposing or conflicting train movements.” Urban Public Transportation Glossary, Transportation Research Board). At Hoffman Avenue, trains can cross over among multiple tracks, depending on their origin and destination. Trains are restricted to a maximum of 25 mph through the interlocking, unless they are changing tracks, in which case maximum permitted speed is reduced to 10 mph. The majority of freight trains exceed 5,000 feet in length, so that it generally takes several minutes for a train to pass through Hoffman Avenue. With so many trains trying to make their way through this area, there is a lot of congestion, and trains often have to stop to wait for another train to clear the interlocking switches and signals. With this train frequency and time requirements to go through the area, at least one train is usually within sight of Hoffman Avenue.

Hoffman Avenue interlocking is a major rail freight operations bottleneck. Despite multiple tracks going through it, its overall layout, designed during the period of contracting expectations, is obsolete, and it will increasingly become more of a constraint to the free flow of trains as growth continues. During the LOCATE Committee meetings held during 2002-2003 to consider the establishment of a multimodal terminal at Union Depot, the freight railroads emphasized the need to increase throughput capacity of Hoffman Avenue as a precursor to establishing significant volumes of passenger trains.
Long term rail passenger services envisioned to use this corridor include Midwest High Speed Rail to Chicago, as well as Red Rock commuter trains. These types of services have very tight schedules that require a high degree of reliability, predictability, and unimpeded paths on the rail corridor. Both of the services, once fully developed, will have numerous trains per day. Although these trains are much shorter and faster than freight trains, for reliable operations, commuter trains require track space and a track time commitment that extend for several miles and minutes beyond their specific schedule.

A typical commuter service reliability measure is: a train is late if arrival is more than five to six minutes past schedule. On the other hand, freight railroads measure reliability in hours, with premium services gauged on arriving within three to four hours of schedule. Part of this variability stems from a process to get a train into and out of a yard. With freight train lengths exceeding 5,000 feet, a train departing a yard needs to have an inspection and brake test, and then it typically pulls through a series of very slow speed switches. In busier yards, it may need to stop as crews wait for a conflicting move or line switches. In short, moving a long freight train out of a yard and getting it up to speed on a mainline is a time consuming process. Hoffman Avenue is the entrance to rail freight yards of the CPR and Union Pacific (UP). The below figure is a schematic of the rail lines running through Hoffman Avenue interlocking, as well as important adjacent interlockings.

Figure 8: Track schematic for the existing Hoffman Avenue interlocking and adjacent area.
These factors weigh heavily in proposing the introduction of new passenger services on this corridor. An intensive passenger service with high reliability requirements, such as the Red Rock commuter rail service, necessitates substantial capacity improvements, conceptually identified as additional tracks and a rail line grade separation between Minnesota Union Depot and Hoffman Avenue.

However, an incremental program of service implementation and capacity improvements might be acceptable to the railroads. Development of a more limited passenger service on this corridor might be possible if its impact on overall corridor capacity is small and can be managed effectively, and if it were a part of a program of capacity improvements that would benefit freight operations. An initial weekend-only service with a running time schedule that has a modest built-in allowance for delays might minimize capacity impacts to an acceptable level for the freight carriers; the carriers may request guarantees for subsequent capacity improvements if train service increases. Discussions with the owning freight carriers are necessary to gauge the corridor capacity to assess if even a relatively small incremental capacity consumption of a limited passenger service would be acceptable. To date, discussions of that level have not been held.

Even though railroads singled out Hoffman Avenue as the constraining bottleneck, developing more corridor capacity involves analysis of the broader area and long term railroad usage growth. For example, to handle an incremental passenger service through Hoffman Avenue, an immediate solution could conceivably include upgrading existing turnouts for higher speeds and permitting parallel train moves by adding more turnouts.

However, in the long term, adding through running tracks for passenger trains will probably be required, as well as a grade separated lead into Minnesota Union Depot. Funding the grade separation and reconfiguring the track in the corridor will require a significant capital investment. Allocating the entire cost of these capacity requirements to the first new passenger service introduced in this corridor may inflict so large a financial burden on the proposed service that it may not be economically viable. On the other hand, if a long term capacity expansion strategy develops a phased long-range capital investment strategy, the economic burden of any one project may be palatable.

For example, the majority of trains through Hoffman Avenue, particularly BNSF and some CPR freights, have no inherent need to stop because they are through trains. Some of the trains go into the adjoining yards, potentially creating conflicting moves, making other trains stop to wait for the conflict to clear. While a minority number of trains enter/exit the yard, the overall number is significant since these yards are vital to the CPR and UP Twin Cities operations.
Conceptually, when looking at the rail corridor from Hastings to the east side of downtown Saint Paul, if through trains used the land side tracks, and trains for the yards used the river-side tracks, conflicting train moves could be minimized. With freight conflicts minimized through this arrangement, a passenger route in the corridor could run in the middle from Hoffman Avenue east to Newport and potentially to Saint Croix Jct., across the river from Hastings. The conceptual grade separation contemplated east of Union Depot may take a different configuration than initially contemplated, but is necessary nonetheless. Under this concept, the Seventh Street interlocking, just to the east of downtown Saint Paul becomes the primary freight train route diverging point.
Oakland interlockings, and reconfigures Seventh Street for a long term plan; the Hoffman Avenue interlocking itself is left unchanged with this concept, although there is an additional sixth track present next to the bluff. This concept provides double track for through trains between Seventh Street and Oakland, and the third main for yarding trains and the lead to Saint Paul Union Depot.

Figure 11: Conceptual Hoffman Avenue early phase capacity improvement.

The point of the above discussion is that long term corridor capacity improvements may involve de-emphasizing train route diversions where trains slowly crossing over from one track to another at Hoffman Avenue through improving arrangements at other nearby interlockings along with adding tracks. A long term plan potentially permits the phasing of capacity improvements in affordable increments.

The above illustrations show one potential concept; other concepts doubtless exist. Further detailed analysis and full dialogue with the freight carriers are necessary to develop long term capacity expansion to handle desired additional passenger train frequencies. Without this dialogue, the freight railroad acceptance of additional demands of capacity is unknown. Now that the railroad industry has seen 20 years of train growth, the carriers increasingly protect excess and easily constructed capacity, reserving it for their future freight traffic.

5.2 Current Amtrak Running Time

Amtrak currently runs most of this route with one daily pair of trains, the Empire Builder, with the following schedule:
Red Wing Inter-city Passenger Service

Table 1: Amtrak’s Empire Builder Schedule

<table>
<thead>
<tr>
<th></th>
<th>Train #7</th>
<th>Train #8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Westbound</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(from Chicago)</td>
<td>Read Down</td>
<td>Eastbound</td>
</tr>
<tr>
<td></td>
<td>Station</td>
<td>(to Chicago)</td>
</tr>
<tr>
<td><strong>Read Down</strong></td>
<td>7:50 PM Winona</td>
<td>10:11 AM</td>
</tr>
<tr>
<td></td>
<td>8:52 PM Red Wing</td>
<td>8:54 AM</td>
</tr>
<tr>
<td></td>
<td>10:31 PM St. Paul – Minneapolis</td>
<td>7:50 AM</td>
</tr>
<tr>
<td></td>
<td>(Midway Station) Dp</td>
<td></td>
</tr>
<tr>
<td>Source: Amtrak public timetable effective April 2, 2007.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This schedule demonstrates that a running time of about an hour (eastbound) is the minimum amount of time between Saint Paul and Red Wing. Amtrak’s westbound time includes an allowance to provide schedule make-up time for miscellaneous unscheduled delays west of Chicago.

5.3 Illustrative Red Wing Schedule

Table 2: Sample Red Wing Starter Service Schedule

<table>
<thead>
<tr>
<th>Read Down</th>
<th>Miles</th>
<th>Station</th>
<th>Read Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:40 am</td>
<td>1:40 pm Dp</td>
<td>0 Saint Paul</td>
<td>12:10 pm 6:10 pm</td>
</tr>
<tr>
<td>10:25 am</td>
<td>2:25 pm Dp</td>
<td>19 Hastings</td>
<td>11:25 am 5:25 pm</td>
</tr>
<tr>
<td>10:40 am</td>
<td>2:40 pm Ar</td>
<td>32 Treasure Island</td>
<td>Dp 11:10 am 5:10 pm</td>
</tr>
<tr>
<td>10:50 am</td>
<td>2:50 pm Ar</td>
<td>40 Red Wing</td>
<td>11:00 am 5:00 pm</td>
</tr>
</tbody>
</table>

This timetable is an example of a lowest-cost first increment of service that might be established between Minnesota Union Depot and Red Wing, with stops at Hastings and Treasure Island. A running time of one hour and ten minutes is assumed, which is more than generally required by the Empire Builder, which makes no intermediate stops. This is an average scheduled speed of about 40 mph, which seems reasonably conservative for initial study purposes. This service could be operated with a single trainset based in Saint Paul, and would fit within the federal 12-hour service day limitation for a single train crew. With a two-person crew, this arrangement would probably represent the minimum attainable labor cost for a “starter” service to Red Wing.

If an initial increment of service on weekends only were acceptable, then two trips could be made each way on Saturdays and Sundays, leaving Saint Paul at 9:40 AM and 1:40 PM, and returning from Red Wing at 11:00 AM and 5:00 PM. This service would appear to nicely complement Amtrak’s Empire Builder, which would provide an earlier departure from Saint Paul, and a later trip to Saint Paul from Red Wing. Overall, this would make day trips, short round-trip excursions, and weekend overnight excursions from the Twin Cities to Treasure Island and Red Wing possible. The effect of the overall
Red Wing Inter-city Passenger Service

service level might be enhanced if it were possible to enter into some kind of joint excursion ticketing with Amtrak, perhaps if limited to available seating in the extra Chicago-Twin Cities “local” coach, currently added to the train during the summer, but perhaps speculatively a negotiable feature of the train all year,

5.4 Railroad Access

As with all proposals to operate passenger trains on a freight railroad, the agreement and cooperation of the owning railroad is paramount. An evaluation of the traffic patterns in the region shows that the Canadian Pacific line is a moderately to heavily used freight artery, and is the CPR’s mainline access to the Chicago hub from Western Canada and the Western US. It is private property and its use for public purposes must be proposed and negotiated with the company. Similarly, operation through to Minneapolis would involve congested lines of the BNSF Railway, as discussed above.

The study team has conducted highly preliminary and informal discussions with the CPR concerning a weekend-only Red Wing service. The Railway’s initial response is that this service goes through a capacity constrained corridor that is essential to the company’s business, and that therefore accommodation of passenger service will require capacity mitigation.

Further analysis and discussions with the CPR will be necessary to determine whether a suitable plan could be devised that might be less capital intensive than that outlined in the Red Rock commuter rail study. Less mitigation than Red Rock may work since the Red Wing service is less frequent and potentially looser schedule. However, even if capacity exists now, the freight railroads will be protective of it for their future freight growth. Railroads are also protective of permitting inexpensive capacity improvements for non-freight purposes, leaving them expensive improvements in the future for their expansion. In addition, the CPR recognizes that the establishment of a first increment of service is just that – a first increment, and that if it is successful, there will be a desire to run more trains and run them on weekdays as well as weekends. Consequently, the CPR will regard a first increment of service as setting in motion a process that could affect the long-term viability of their core business, and accordingly they would insist upon having capacity issues addressed as part of any agreement to allow a Red Wing service to operate on their tracks. While discussions have not been held with the BNSF Railway over the use of their lines to extend a Red Wing service to Minneapolis, it is safe to assume that they will take a similar position.

5.5 Storing and Servicing Equipment

St. Paul is the projected base of the Red Wing service. As part of the overall station complex, RCRRA might be able to provide a track and other space to a perspective operator to store and service the equipment in the Union Depot area. If feasible, this could save the operator the cost of establishing a maintenance and storage area elsewhere and having to ferry the equipment to Union Depot for the scheduled runs. Depending on
the equipment type, it could also serve as a draw to the depot as a static display or serve as special events accommodations.

In the early phases of the Minnesota Union Depot build out, an open area east of the platform area can hold a storage track and a supply shelter. A track approximately 700 feet long can hold all of the rolling stock. A portable type building can house necessary supplies and serve as a crew facility. This will also serve for daily inspection, light running repairs, and necessary train pre-trip preparation. While the exact alignment of the Union Depot terminus of the Central Light Rail Line is still under study, and this is also a possible location for a light maintenance or storage facility for light rail, we believe there could be enough room on the Depot track level to accommodate both these functions.

The Twin Cities area has several railroad repair facilities serving the freight carriers, with the carriers owning most of them. With this in mind, the Red Wing service operator can likely find a provider of equipment maintenance and inspection services. By outsourcing moderate and heavy maintenance, as well as mandated periodic FRA inspections, a shop facility is not necessary.

5.6 Sponsorship Opportunities

The Red Wing service as envisioned in this report targets the recreational traveler with a relatively low cost structure for a rail service. Rail services can be relatively expensive when compared to other transportation alternatives due to costly equipment, fully burdened infrastructure costs, and a stringent operating environment. Despite these apparent disadvantages, urban policy makers increasingly view rail as an economical transportation offering in some situations, particularly in urban areas where highway expansion is problematical, rail alternatives often are a low cost solution.

The RCRRA chose to redevelop Minnesota Union Depot as a multi-modal facility with a prominent rail interface because rail long-term will play a vital role in maintaining mobility to the city center. The development of a vibrant system of passenger rail routes into Saint Paul is many years into the future, but development of an economical inter-city route with a low initial investment could spark interest in rail while increasing utilization of the Union Depot facility.

Rail service initiation often encounters controversial debates on who will pay for the operations. Relatively few rail passenger services throughout the world fully recover operating expenses through fares collected. Passenger rail services are growing in many regions as society accepts that rail has less harmful externalities than other modes, even if the other modes fare recovery pays for operations. A Red Wing service requires financial backing and possibly subsidies, necessitating the project needing a sponsor.

Rail passenger sponsors generally are public sector entities, although private sector sponsorship occurs in niche situations. Public sector rail passenger sponsors in the USA include:
Red Wing Inter-city Passenger Service

- Federal government (Amtrak, Federal Transit Authority)
- State government (Illinois, Michigan, California, New York, and others)
- Regional multi-jurisdictional bodies (Northstar, Chicago’s Metra, and many others)
- Municipal or local bodies (Minneapolis Hiawatha, and many others)

Public sector sponsored trains typically attempt to serve broad markets covering a variety of reasons, particularly economical (to the user) mobility, congestion relief, and reduced emissions. Measurement of financial effectiveness, or conversely the amount of subsidy, is the fare-box recovery ratio, with a majority of agencies targeting 40-50%, although several are significantly less.

In the private sector, a few passenger service examples exist:

- Denver Ski Train
- Reno Fun Train
- Grand Canyon Line
- Numerous museum, tourist, and charter entities

Private operators recover their costs of operations and equipment. Their contribution to the underlying infrastructure cost varies based on the circumstance – the Denver Ski Train and Reno Fun Train use Union Pacific Railroad tracks; Grand Canyon solely owns and maintains its line. Each of these services offers various classes of service and provides many amenities onboard. These examples contain train services that support a broader recreational experience. Below is a table with key summary operating statistics:

<table>
<thead>
<tr>
<th>Train Size (No. of passengers)</th>
<th>One-way distance (mi)</th>
<th>One-way ride time (hrs)</th>
<th>Base round-trip coach fare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver Ski Train 750</td>
<td>56</td>
<td>2.25</td>
<td>$49</td>
</tr>
<tr>
<td>Reno Fun Train 600</td>
<td>236</td>
<td>7-8</td>
<td>$209</td>
</tr>
<tr>
<td>Grand Canyon 500*</td>
<td>65</td>
<td>2.25</td>
<td>$70</td>
</tr>
</tbody>
</table>

* 2006 average daily ridership is 657 in a mix of one and two round trips per day.

Certain aspects of the proposed Red Wing service fit the pattern of these private sector services. In particular, Red Wing has a well developed civic, out-doors activities, and is in close proximity of Treasure Island Resort & Casino. Conceivably, a strong promoter
could create a package of recreational events using the train service as a sub-part of an overall experience.

For this scenario, the public sector needs to create a favorable environment for the private sector to operate with a result of relatively little or no direct operating subsidy. For example, the public sector, as part of the Minnesota Union Depot renovation, can create the appropriate space and facilities to host events tied to the train service as well as the train maintenance space. RCRRA might also work with the freight carriers to improve the rail line capacity, creating time slots for passenger services while increasing the freight carrier’s capacity.

Creating an environment attractive to private sector participation can increase the likelihood of implementation in the intermediate term. Federal transportation policies favor infrastructure investments with public sector funds, but abhor operational subsidies. Without developing an innovative method to recover operating costs, this inter-city concept may take years to develop necessary political support to provide operational subsidies.

5.7 Operator Alternatives

There are several potential operators of a Red Wing train service. Operators in this report’s context refer to the physical handling of the train over the line, particularly handling train crews and the operational interface with the host carrier. Potential contractors to operate the Red Wing trains include Amtrak, the CPR, established rail passenger operators, or an established charter operator. In any case, train crews would have to become qualified to operate over the entire alignment:

- **Amtrak** – The nation’s largest inter-city passenger rail operator, with extensive experience in contracted operations. Amtrak would need to establish a crew base in the area and work through other set-up tasks in an area that is relatively isolated from their other established bases. If the service is infrequent, keeping qualified personnel in the area could be problematic.

- **Canadian Pacific** – The CPR is also a possible operator, with several strong points in its favor. The CPR operates commuter trains in Vancouver and Montreal, has a ready pool of train crews, controls dispatching of this line, which it owns, and has expressed a willingness to discuss consideration of such a role; if agreement could be reached, the CPR would seem to be an ideal choice.

- **Established rail passenger operators** – This group of operators includes Herzog and Viola, who are contract operators for commuter agencies. These would not seem to be as likely an operator as Amtrak or the CPR as they lack qualified crews in region, creating a need to hire, train, and move crews to the Twin Cities. If the service is infrequent, labor utilization will be poor. They would also need to negotiate operating agreement with host railroads.
Red Wing Inter-city Passenger Service

- **Established charter operator** – This group of operators runs specialty train service, typically catering to recreational travelers. Most of these operators are more promoters with a mix of capabilities of actually operating. Local to the Twin Cities area is a group “Friends of the 261” experienced in running steam hauled excursions throughout the upper Midwest. The CPR also runs a passenger service, mostly out of Calgary, that fits this description. Other groups also run special trains on occasion, such as the Minnesota Transportation Museum and the Lake Superior Railroad Museum in Duluth. Museums generally run on their own property, but some have experience on freight carriers.
6.0 Cost Estimates

Development of passenger services requires initial capital expenditures to acquire equipment, build stations, improve the infrastructure, and ancillary support facilities. After project implementation, there are ongoing costs to operate it. Revenues collected offset operating costs, but generally are insufficient to cover fully the operational costs.

6.1 Initial Capital Costs

The following items are major capital expenditures for initiating service to Red Wing:

- Rolling stock acquisition
- Minnesota Union Depot modifications
- Train layover facilities
- Freight rail line capacity improvements
- Red Wing depot modifications
- Treasure Island Resort & Casino station
- Hastings depot modifications

The informal discussions with CPR reveal that agreement on freight line capacity improvements will be necessary before CPR accepts additional trains on their line. A determination of the level of improvements is out of the scope of this report, but likely requirements exceed the capital costs of all the other items combined.

6.2 Rolling Stock Acquisition

A wide variety of rolling stock options exist with a commensurate range of purchase prices. This study assumes the usage of vintage rolling stock to assemble one moderately sized train. While less than a $1 million can purchase un-rebuilt rolling stock, the rehabilitation program increases the overall total to $5-6 million. All new equipment in the form of three bi-level tourist cars, either as self propelled or locomotive hauled, have an estimated cost of $20 million for the fleet.

6.3 Minnesota Union Depot Modifications

This report assumes that the initial Minnesota Union Depot construction phase provides a single platform with two tracks to serve Amtrak’s Empire Builder train. Not only will the redevelopment provide platform space, but also the necessary connections on both the east and west ends. The Red Wing service uses exactly the same route as the Empire
Red Wing Inter-city Passenger Service

*Builder*, therefore, the Red Wing service will use those infrastructure improvements without modification.

### 6.4 Train Layover Facilities

A modest expenditure for additional spur track for train storage within the Depot property is $300,000. A small building, such as a prefabricated unit, is necessary for crew quarters and small supply storage with an estimated $100,000-$300,000 cost. A prefabricated unit permits easy relocation as subsequent Depot build-out phases may require relocating this facility.

### 6.5 Freight Rail Line Capacity Improvements

As explained in earlier report sections, the route of the Red Wing service utilizes freight rail lines that are already capacity constrained. The Red Rock Corridor study identified rail line capacity improvements necessary to accommodate Hastings – Saint Paul commuter trains. Commuter trains, due to their frequency and demands for high on-time performance, significantly impair freight operations during the morning and afternoon peak period travel times. The 2007 estimate for Red Rock line capacity improvements (specifically Hoffman Avenue “duck under” and other track additions) for commuter trains is $77 million.

The $77 million line improvement figure does not include additional charges the freight carriers may charge for capacity consumption of passenger trains over and above what the line improvements mitigate. Estimating this charge is speculative since it is highly dependent on the rail line usage and the extent that line capacity improvements overcome capacity infringements. Recent transactions in other parts of the United States suggest this fee can be on the order of one to three times the costs of the line improvements.

A stand alone Red Wing weekend service needs less track capacity than the Red Rock commuter service due to fewer trains with long headways. Rail freight carriers may consider Red Wing a less intense train service than Red Rock commuter and accept a lower level of capacity mitigation for the Red Wing service. In informal conversations with CPR, CPR anticipates capacity mitigation for the addition of any passenger services in this corridor. As presented in Section 5.1, smaller capacity improvements as for Red Rock may be identified that mitigate passenger service capacity impacts in incremental steps. The example shown in Section 5.1 (adding an additional main track between Oakland and Seventh Street interlockings) costs $22 million. If the freight carriers accept limited line capacity improvements, they also will carefully limit the passenger services and require additional capacity enhancement as the number of passenger trains grow.

Extending Red Wing service to the Downtown Minneapolis Northstar Intermodal station requires traversing busy freight rail lines, particularly segments in eastern Minneapolis. As part of BNSF requested corridor improvements for Northstar, they requested the installation of a second main track between St. Anthony and Minneapolis Jct. interlockings, with an estimated cost of $19 million. BNSF is not constructing this
Red Wing Inter-city Passenger Service

improvement as part of initiating Northstar service. As noted above, Central Corridor commuter rail studies of 2001 suggested the need for capital investment that might reach the $60-90 million range.

The route through Midway station is on the Minnesota Commercial Railroad and goes along the edge of switching yards. Increased passenger train frequency may impact their operations, triggering a request for more capacity. Likely improvements for this stretch include upgrading the track, installing remote train control through a new signaling system, and potentially reconfiguring/building track to separate passenger operations from freight. Without discussions with Minnesota Commercial, a speculative cost estimate for this stretch is $10 million. This level of improvement does not significantly increase running speeds over this stretch of track.

This study assumes other segments have adequate capacity, particularly between Minneapolis Jct. and downtown Minneapolis, and CPR’s Merriam Park Subdivision between Minnesota Union Depot and Merriam Park Jct. Also, an alternative route over the BNSF between Union Depot and St. Anthony interlocking may have adequate capacity upon building previously described improvements between Seventh St. and Oakland interlockings. This study also assumes adequate capacity between St. Croix interlocking and Red Wing.

6.6 Red Wing Depot Modifications

The restored Red Wing depot actively functions as a passenger depot, housing businesses compatible with passenger traffic. Therefore, this study assumes no station modifications costs to implement the Red Wing service.

6.7 Treasure Island Resort & Casino Station

This station is situated near Treasure Island’s parking facilities with the assumption the Treasure Island will provide shuttle bus service between it and their facilities. Therefore, the assumed facility is primarily a platform, a relatively simple shelter, and enough road access for shuttle service to load next to the platform. Based on Red Rock Corridor station platform estimates, scaled down to a one four-car platform, the cost is $1-2 million. Often the entity benefiting from a station pays for it, resulting in a design and practicality suited to the local environment.

6.8 Hastings Depot Modifications

Although Hastings has a standing depot building next to the tracks, no passenger service uses it. To convert it for passenger services, arrangements are necessary with the owner, presumably the CPR, for possession of some of the building and construction of subsequent improvements. For the Red Rock commuter rail projected $6 million for station acquisition, renovation, two platforms, and 300 parking spaces. A stand alone Red Wing service may require fewer improvements.
### Table 4: Capital Cost Summary Table

<table>
<thead>
<tr>
<th>Capital Improvement Description</th>
<th>Low Estimate ($ millions)</th>
<th>High Estimate ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling stock acquisition</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Union Depot modifications</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Train layover facilities</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Freight rail line capacity improvements St Paul – Red Wing only</td>
<td>22</td>
<td>77</td>
</tr>
<tr>
<td>Red Wing depot modifications</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Treasure Island Resort &amp; Casino station</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Hastings depot modifications</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>Subtotal St. Paul – Red Wing</strong></td>
<td><strong>31</strong></td>
<td><strong>106</strong></td>
</tr>
<tr>
<td>Freight rail line capacity improvements St Paul – Minneapolis only</td>
<td>19</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total Minneapolis – Red Wing</strong></td>
<td><strong>50</strong></td>
<td><strong>135</strong></td>
</tr>
</tbody>
</table>

*Not included are freight carrier one time capacity fees.*

### 6.9 Operations and Maintenance Costs

Summary estimated operating and maintenance costs are in the following table:

### Table 5: Operating and Maintenance Costs for Various Scenarios

<table>
<thead>
<tr>
<th></th>
<th>Red Wing – Saint Paul ($000)</th>
<th>Red Wing – Saint Paul ($000)</th>
<th>Red Wing – Minneapolis ($000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vintage Train</td>
<td>Bi-Level DMU</td>
<td>Vintage Train</td>
</tr>
<tr>
<td>Train crews</td>
<td>158</td>
<td>158</td>
<td>228</td>
</tr>
<tr>
<td>Equipment Maintenance</td>
<td>370</td>
<td>407</td>
<td>430</td>
</tr>
<tr>
<td>Fuel</td>
<td>110</td>
<td>43</td>
<td>137</td>
</tr>
<tr>
<td>Trackage fees</td>
<td>113</td>
<td>109</td>
<td>213</td>
</tr>
<tr>
<td>Administration</td>
<td>390</td>
<td>390</td>
<td>390</td>
</tr>
<tr>
<td>Contingency</td>
<td>401</td>
<td>396</td>
<td>465</td>
</tr>
<tr>
<td><strong>Total Direct Operating</strong></td>
<td><strong>1,542</strong></td>
<td><strong>1,503</strong></td>
<td><strong>1,863</strong></td>
</tr>
<tr>
<td>Insurance &amp; Access Fee</td>
<td>2,017</td>
<td>2,012</td>
<td>2,344</td>
</tr>
<tr>
<td><strong>TOTAL Op. &amp; Maint.</strong></td>
<td><strong>3,559</strong></td>
<td><strong>3,515</strong></td>
<td><strong>4,207</strong></td>
</tr>
</tbody>
</table>

The following are key assumptions used in the development of the operating and maintenance estimate:

- One two man crew operates per day, crew paid on an hourly rate.
- One mechanic full time for equipment repair and inspection, plus car cleaners as needed between runs.
- Fuel costs $2.30 per gallon.
• Trackage fees cover a prorated amount for infrastructure annual maintenance plus prorated costs of dispatching and paid to owning carrier.

• Administration includes the salary of a full time general manager, full time administrative assistant, a part time customer service representative, fare collection costs, and miscellaneous professional services.

• Contingency is a 15% reserve for unforeseen expenditures.

• Dollars are for the year 2007.

• Insurance and access fees cover railroad liability insurance premiums as well as railroad expectations for returns for capacity consumption. Due to the magnitude of these estimates, further analysis for insurance options may significantly reduce premiums. Likewise, railroad access fees could be highly variable and it may be possible to reduce this through other considerations, such as capacity improvements that benefit freight rail operations.

### 6.10 Passenger Ridership and Revenue

Appendix A of this report is a technical memorandum prepared by SRF Consulting Group, Inc. of Minneapolis, that addresses the ridership potential of a Red Wing passenger rail service. The memorandum presents ridership forecasts for these service alternatives:

- a commuter rail service consisting of the extension of Red Rock (Saint Paul-Hastings) commuter trains, now under study, from Hastings to Red Wing

- the same, but operating to and from Minneapolis

- a recreational service alternative consisting of two daily round trips between Minneapolis, Saint Paul and Red Wing on weekends and holidays

The estimates of ridership potential were developed by using the MnDOT Collar County travel demand model. Details of the application of this model, and “reasonableness” checks made on the results, are provided in the Appendix.

The results of the study are presented in summary form in Table 1 of the Appendix. Briefly, it is concluded that the ridership potential is low. Commuter ridership to and from Red Wing and other stations on an extension south from, but not including Hastings, was found to range from 60 to 200 per day with a Saint Paul terminal, and 75 to 245 per day with a Minneapolis terminal. On an annual basis this would equate to a range of 15,100-50,400 with a Saint Paul terminal, and 18,900-61,700 with a Minneapolis terminal.
The two round-trip service on weekends and holidays between the Twin Cities and Red Wing is estimated to generate 45-140 passengers on two round trips, slightly more productive than the every day commuter service. This would equate to 5,100-15,800 annually. This is a small number, and it would not be realistic to attempt to distinguish between recreational trips attracted to alternative Twin Cities terminals.

On this basis, assuming the current one-way Amtrak fare of $13 and no discounts, the weekend-only service might be expected to generate in the range of $66,300 – $205,400 in fare revenue annually.
7.0 **Recommended Approach**

- If there is a decision to go ahead, the balance of costs and ridership suggest the advisability of a modest start

- Service concept: a low cost starter operation – 2 daily round trips, weekends only (probably all year)

- Timetable concept: loose enough running time to permit trains to incur some freight-related delay at Hoffman Avenue Interlocking

- Capacity investments: attempt to negotiate a solution in this area that is less capital-intensive than the complete Red Rock commuter capacity concept; initial discussion with the CPR does not suggest optimism with this objective

- Base service at Minnesota Union Depot

- Operate Saint Paul-Red Wing in first stage; avoid capacity investments between Saint Paul and Minneapolis in the first increment, and rely on Central Corridor light rail or local bus transfer at Union Depot initially

- Coordinate with Duluth Service: A direct transfer between trains is clearly desirable, but it is unclear where Duluth trains will operate on weekends. Weekday service cannot operate to Minneapolis unless major station expansion is undertaken, suggesting Midway or Union Depot if that replaces Midway, as planned.

- Equipment: single trainset, lowest possible cost

- Capital costs: $50 – $135 million

- Annual operating costs: $3.5 – $4.2 million, less revenue of $66 – $205,000

- Future growth options (extension to Minneapolis – Northstar or even Lake Street; second trainset – third or fourth round trips – more capacity investments likely)
MEMORANDUM

TO: Tom Matoff  
LTK Engineering Services

FROM: Steve Wilson, Principal  
SRF Consulting Group, Inc.

DATE: December 28, 2007

SUBJECT: RED WING-TWIN CITIES COMMUTER RAIL RIDERSHIP POTENTIAL

This memorandum analyzes the potential ridership of commuter rail service between Red Wing, Minnesota and St. Paul-Minneapolis urban core. The general sources of information reviewed for this analysis are:

- The Minnesota Department of Transportation’s “Collar County” travel demand model
- The US Census Bureau’s Longitudinal Employment-Household Dynamic database
- The Metropolitan Council’s 2000 Travel Behavior Inventory
- AMTRAK, the federal railroad operating agency

A range of potential ridership for the year 2030 is presented to account for uncertainty in estimating the travel behavior of non-traditional commuter rail markets, such as the tourism/recreational activities in Red Wing.

Forecasts were prepared for the following alternatives:

1. A "commuter service" consisting of an extension from Hastings to Red Wing of the Red Rock commuter rail service now being studied in another project.

2. A "recreational" service consisting of the addition to the current Amtrak "Empire Builder" schedule of a morning and afternoon round trip (total 3 trains each way) on weekends and holidays.

B. An estimate of the additional ridership potential for these two alternatives if they were extended from Saint Paul Union Depot to the Northstar Intermodal station in Downtown Minneapolis.
The results of the forecasts are shown in Table 1. “Low” forecasts are based generally treatment of the travel markets as traditionally estimated using travel demand modeling techniques. “High” forecasts provide an additional ridership potential based on factors such as enhanced perception of rail transit as a mode of travel, low fares, plus allowances for tourist-related travel that is not generally modeled.

We observed in the demand modeling process that a significant portion of users have an end destination in the downtown Minneapolis area regardless of the terminus of the line. This was affected by the availability of a high-performance transit option (the Central Corridor LRT line) as a connector; it also demonstrates the ridership market is a function of service availability rather than time or cost competitiveness with the automobile. The ridership provided is for the extension of the line from Hastings to Redwing, and not the overall corridor.

**Table 1**

**Summary of Potential Year 2030 Rail Ridership:**

<table>
<thead>
<tr>
<th>Ridership Generated on Hastings to Red Wing Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAILY RIDERS</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weekday Commuters</td>
</tr>
<tr>
<td>Weekday Discretionary Riders</td>
</tr>
<tr>
<td>Total Weekday Riders</td>
</tr>
<tr>
<td>Weekend/holiday Riders (Average per day)*</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

* Assumes service to downtown Minneapolis in both scenarios

** Assumes equivalent of 252 weekdays, 104 weekend days and 9 holidays

**BACKGROUND AND ASSUMPTIONS**

Red Wing, Minnesota is a community of 16,300 located in northeast Goodhue County, with a projected population of 18,400 by 2030. In addition to its general economic base, it includes a significant tourism and recreation industry based on it location in the Mississippi River Valley, with an historic downtown area, bike trails, hiking opportunities and nearby Treasure Island Casino. US 61, which serves as Red Wing’s principal arterial connection with the Twin Cities area, carries approximately 17,000 vehicles per day as it leaves the Red Wing area. The I-494/I-694 beltway is approximately 40 highway miles from downtown Red Wing.
The potential commuter rail route would use the BNSF tracks that run through the City, including service to the restored, historic depot in downtown Red Wing as an extension of the Red Rock Corridor. The assumed route is shown in Figure 1.

The assumed fare for the service of $6.50 was based on general parameters being used in transit system planning in the Twin Cities for commuter rail or approximately one dollar for ever six miles. As a sensitivity test, a run assuming regional express transit fares ($2.75) was used.

**Figure 1**
**Study Area**

AMTRAK Ridership

Red Wing is currently served by two passenger rail trains per day. The AMTRAK Empire Builder includes service to the downtown Red Wing station southbound (to Chicago) in the morning and northbound (to the Twin Cities and points west) in the evening. The timing of this service makes it possible to take AMTRAK to Red Wing from the Twin Cities as a “day trip”, with departure from the Twin Cities at 7:50 a.m. and returning to the Twin Cities at 10:30 p.m.. The train ride is scheduled at 66 minutes running time.
Approximately 1,789 passengers rode AMTRAK between the Twin Cities and Red Wing in 2006. However, this represented only 19 percent of the total 9,657 AMTRAK boardings or alightings at Red Wing. Red Wing was the third largest ridership of the 11 Minnesota AMTRAK stations. Twin Cities-oriented AMTRAK ridership is significantly higher in the summer and autumn months (Figure 2) as well as on Fridays and Saturdays (Figure 3), which is indicative of a strong recreational travel market.

**Figure 2**
Monthly Variation in Twin Cities-Red Wing AMTRAK Ridership

![Graph showing monthly variation in Twin Cities-Red Wing AMTRAK ridership](image)

Source: AMTRAK
US Census Longitudinal Employment-Household Data (LEHD)

The US Census has developed a method to tabulate worker characteristics including the location of residences. This makes it easier to identify commuting patterns more frequently than the decennial census. The dataset was used to define a potential Red Wing commuter rail service area, where commuters would be likely to park-and-ride (or walk) to a Red Wing commuter rail station. This area would include portions of Western Wisconsin as well as northern Goodhue County. The LEHD information for the Red Wing station identifies 11,700 workers in the area. However, as shown in Table 2, about 40 percent of that workforce is employed in Red Wing, which, along with several others of the top communities, would not be considered as a potential market for commuter rail.

Additional detailed analysis of the LEHD data indicates approximately 98 Red Wing area residents are employed in downtown St. Paul, and 230 are employed within reasonable transit access (one transfer to a high-frequency route) of the likely Union Depot commuter rail weekday terminus in downtown St. Paul. The 230 commuters include an estimated 85 working in downtown Minneapolis (which was assumed as a one-transfer ride, although it currently involves a short walk to the I-94 express service). The majority of Red Wing area commuters to the Twin Cities are employed in south suburban communities where transit is not a convenient option.
Table 2
Cities/Towns Where Area Residents are Employed (2004) (1)

<table>
<thead>
<tr>
<th>Cities/Towns</th>
<th>Count</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Wing</td>
<td>4,742</td>
<td>40.5%</td>
</tr>
<tr>
<td>Lake City</td>
<td>469</td>
<td>4.0%</td>
</tr>
<tr>
<td>Rochester</td>
<td>418</td>
<td>3.6%</td>
</tr>
<tr>
<td>Mankato</td>
<td>349</td>
<td>3.0%</td>
</tr>
<tr>
<td>Owatonna</td>
<td>292</td>
<td>2.5%</td>
</tr>
<tr>
<td>Hastings</td>
<td>287</td>
<td>2.5%</td>
</tr>
<tr>
<td>St. Paul</td>
<td>276</td>
<td>2.4%</td>
</tr>
<tr>
<td>Zumbrota</td>
<td>239</td>
<td>2.0%</td>
</tr>
<tr>
<td>Lakeville</td>
<td>204</td>
<td>1.7%</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>191</td>
<td>1.6%</td>
</tr>
<tr>
<td>All Other Locations</td>
<td>4,240</td>
<td>36.2%</td>
</tr>
</tbody>
</table>

Source: US Census (http://lehd.did.census.gov)

(1) Area defined as likely area where commuters would walk or park-ride to a station at Red Wing

Travel Behavior Inventory External Survey

The Metropolitan Council conducts travel surveys on a decennial basis to track changes in travel behavior. In 2000, a survey of traffic on TH 61 was conducted at the Dakota-Goodhue County border. Table 3 shows that TH 61 has a high percentage of non-work traffic, which is generally not a transit market. In addition, as was found with the Census data, very little of the traffic was destined for the transit-oriented urban core, with only 7.0 percent of the traffic destined for Minneapolis or St. Paul, and less than two percent destined for either downtown.

Table 3
Travel Characteristics of TH 61 Traffic

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All Traffic</th>
<th>Red Wing-based Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home-based Work Trips</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>Home-based Other Trips</td>
<td>36%</td>
<td>39%</td>
</tr>
<tr>
<td>Non-Homed-based</td>
<td>29%</td>
<td>29%</td>
</tr>
</tbody>
</table>

Source: 2000 Metropolitan Council Travel Behavior Inventory
Travel Demand Model

The Mn/DOT Collar county travel demand model was used to develop the forecasts. This model is nearly identical to the model used by the Metropolitan Council as the basis for transit planning of other corridors (including the Red Rock Corridor). However, the Collar County model has a more sophisticated treatment of travel in the counties surrounding the seven-county metropolitan area. The mode choice (transit market share) component of the Collar County model is fully consistent with that of the Metropolitan Council model.

The base Red Rock Corridor was assumed, and the service was extended to Redwing with a 20.3 mile extension along the BNSF railroad. A 60 MPH speed was assumed, reflecting dwell time and reduced speed and acceleration/deceleration through the urban portions of Hastings and Red Wing.

Four peak-direction and one offpeak direction train per peak period were modeled. Base offpeak service consisted of one train, with additional frequency assumed for testing weekend service.

The potential commuter park-ride catchment area was modeled to include any location within 25 miles of Red Wing. However, it should be noted that the Hastings station would compete for users from areas to the northwest of Red Wing.

Sensitivity tests were performed to model the extent to which the ridership forecasts were influenced by factors such as service frequency, speed, fares and the perception of travel time. The high estimate shown includes a “perceived” 25 percent reduction in travel time together with a 25 percent increase in service frequency. These adjustments were made on a hypothetical basis internal to the model, without a determination of whether such improvements would be feasible.

A second “reasonableness” check was made by reviewing the calculated transit market share from Red Wing to downtown St. Paul and nearby areas. Figure 4 shows that a commuter rail service between Red Wing and St. Paul or Minneapolis could have a transit market share similar to that of other transit services in the region (as high as 20 percent for St. Paul and 50% for Minneapolis). However, as discussed previously, the number of commuters from Red Wing to downtown St. Paul or downtown Minneapolis is limited. Most of the commuter trips from Red Wing are to areas with areas with Non-work trips (Figure 5) have significantly lower market share than work trips.

Weekend travel is not modeled by the regional travel demand model. This data was estimated by reviewing the AMTRAK ridership data, supplemented with Mn/DOT Automatic Traffic Recorder data for weekday/weekend traffic relationships in recreational areas. A base-level model including non-work/non-peak travel patterns was modeled to a downtown Minneapolis terminus. No additional ridership was factored in for special events trains that that may be operated (such as Gophers, Vikings or Twins games). However, the amount of additional ridership would be within the potential uncertainty of the estimated annual ridership.