Final Report

Red Rock Corridor

COMMUTER RAIL FEASIBILITY STUDY

Submitted to:

Red Rock Corridor Commission

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TRANSPORTATION GROUP

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Executive Summary

Introduction

The Red Rock Corridor Commission (RRCC) was established in 1998 by agreement among the county regional rail authorities, cities and towns along the Corridor. The RRCC was created to provide leadership and direction to a process that would systematically address the transportation needs of the Red Rock Corridor. The first step of the process was to undertake a Phase One Commuter Rail Feasibility Study (started in January 2000) that would evaluate the constraints and opportunities of operating commuter rail service in the Red Rock Corridor. Through the course of the Phase One Study, the Red Rock Corridor Commission (RRCC) directed several Technical Studies that address the question of whether commuter rail service is feasible.

The Final Report is organized to present the major findings of the Technical Studies with a determination of feasibility and a discussion of next steps to be taken by decision-makers in the planning and project development process for commuter rail and transit service.

The Red Rock Corridor Feasibility Study employed a comprehensive and open process involving communities and the general public to develop multi-modal transportation strategies to improve mobility and safety in the Corridor.

An internet web site was created to provide more detailed and timely project information for review. The site is interactive allowing for questions and comments and also includes a survey.

The web site address is http://www.redrockrail.org

Description of the Corridor

The Red Rock Corridor extends approximately 30 miles from Hastings to downtown Minneapolis. The Red Rock Corridor has regional, statewide, and national significance as a primary transportation route for automobile, truck, and rail travel. The Corridor includes Trunk Highway (TH) 61, a principal arterial and part of the national scenic highway system.

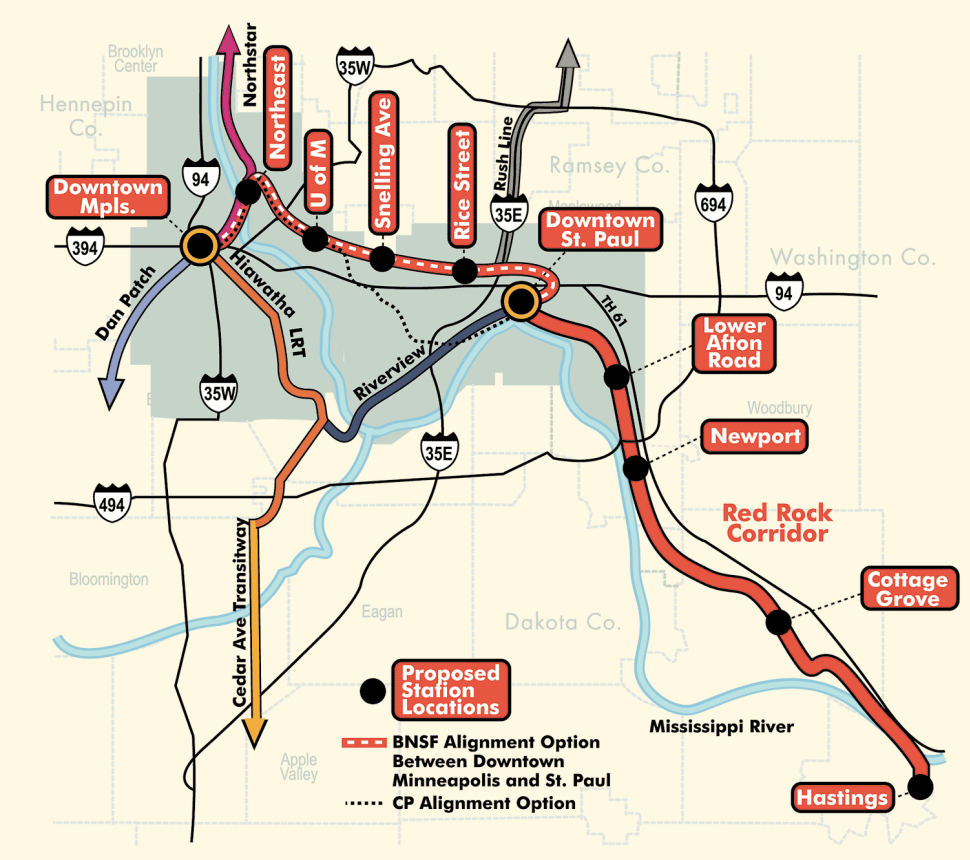
The study area as shown in the system map consists of an alignment on two segments that converge at a central ("midpoint") location in downtown St. Paul as follows:

- The 11-mile long west corridor segment is between downtown St. Paul and downtown Minneapolis with a connection assumed via the Burlington Northern Santa Fe (BNSF) - Southern alignment. The BNSF-South alignment was assumed because this is the route recommended in the Mn/DOT *Commuter Rail System Plan*, but further analysis will be needed to determine the exact

commuter rail route. Passenger station stops would be provided at downtown St. Paul, Rice Street, Snelling Avenue, University of Minnesota, northeast Minneapolis, and downtown Minneapolis.

- The 19-mile southeast corridor segment is between downtown St. Paul and Hastings and west of TH 61 along the set of rails operated by the BNSF and Canadian Pacific (CP) Railway. Passenger station stops would be provided at Hastings, Cottage Grove, Newport, Lower Afton Road, and downtown St. Paul.

Red Rock Corridor Commuter Rail System Map



The system map also shows important multi-modal connections with other transit projects that are being planned in the Twin Cities region, such as the Northstar commuter rail, Riverview busway, Rush Line transit, and the Hiawatha light rail (under construction, opening for service in the Fall 2004).

Purpose and Need

While there has been public mass transit service within the Red Rock corridor, it has been largely constrained to incremental increases in bus route capacity and enhancements to transit operations that reduce travel time. Highway capacity has been the predominate feature of the transportation investments that has served South Washington County to date.

Most of the growth in population and employment over the next 20-years will occur in the region's rapidly developing suburbs. This trend provides an opportunity to expand and integrate transportation services and facilities through a multi-modal strategy that includes: commuter rail, light rail transit, express bus and park-and-ride service, exclusive busways, and bus-only shoulders.

The need for transportation facilities and services along the Red Rock corridor is summarized as follows:

1. The demand for transportation facilities outpaces the "committed" transportation system. Despite enhancements and reconstruction of TH 61, peak-hour travel and average daily traffic volumes are growing. Commuter rail service provides relief to regional highway programming and congestion levels.

2. Regional corridor planning and proposed investment in commuter rail and other transit services necessitates a connection to the Red Rock Corridor. In particular, the Central Corridor project, which is analyzing transit opportunities between the two downtowns, provides a critical connection to downtown Minneapolis. The potential for multi-modal service integration exists throughout the Twin Cities metropolitan area.

3. There is not a corridor-wide, transit or multi-modal transportation choice available that is timely. Projections for commuter rail system indicates that rail passenger service outperforms, and provides a travel-time savings of up to 7 minutes compared to existing bus transit service.

Goals of the Project

The Red Rock Corridor Commission supports a regional principle to provide efficient transportation facilities to accommodate expected growth in a sustainable manner, while preserving the mobility that makes such growth possible. In meeting this principle, the Red Rock Corridor Commission promotes the following six goals:

1. Improve mobility and access for personal travel and goods movement.

2. Coordinate transportation investments to provide for a seamless, integrated regional multi-modal transportation network.

3. Encourage the implementation of transit supportive development.

4. Promote positive environmental impacts.

5. Support a stable and reliable capital and operating funding source for transportation investments.
6. Improve safety conditions for vehicular traffic and pedestrians.

Alternatives Analysis

The objective of the Alternatives Analysis was to document a systematic process that was carried out to identify and evaluate potential transit technology and intelligent transportation system (ITS) applications that would meet the Purpose and Need, and thereby should be considered and incorporated into transit system alternatives in the Red Rock Corridor.

The screening of transit system alternatives was accomplished by comparing the physical characteristics of transit technologies with conditions and constraints in the Corridor.

The following conclusions were reached as a result of the technology screening process:

- Transit system should be capable of speeds 30 mph or greater
- Basic vehicle passenger capacity should be:
  - 7 to 24 for circulator service
  - 25 to 220 for line haul service
  - 221+ for commuter rail service
- Operated in mixed traffic for bus
- Power supply should be self-contained
- Propulsion should be diesel or hybrid diesel/electric
- Control/Communication should be manual
- Vehicles can be single, articulated or capable of being combined into trains
- Suspension should be rubber tire or rail

The transit technologies that meet criteria from the evaluation process include the following:

- Local and express Bus
- Advanced bus
- Commuter rail

As an additional check, a review was made to verify that that the above recommended transit technologies are consistent with and supportive of the goals and objectives for the Red Rock Corridor Commission. It was concluded that implementation of the recommended transit technologies would, in fact, serve to achieve the goals and objectives for the Corridor.

Based on the alternatives analysis and technology screening, commuter rail was selected as the locally preferred alternative (LPA) because it:

- Provides reliable and high-capacity, fixed guideway service on existing railroad infrastructure;
- Can be fully integrated with other commuter rail systems in the Twin Cities region;
- Can be complemented with feeder and circulator bus transit service; and
- Achieves economic development and transit-oriented development objectives.

The LPA/Build Alternative for the Red Rock Corridor project would establish passenger commuter rail service on the existing Burlington Northern Santa Fe (BNSF) and Canadian Pacific (CP) railroad tracks between downtown Minneapolis and Hastings. Establishment of commuter rail service will require rail capacity and signaling improvements along the existing railroad. As proposed, five passenger stations would be located between Hastings and downtown St. Paul, and another five stations would be located from downtown Minneapolis to downtown St. Paul. The stations would be constructed adjacent to the tracks and each station would include bus waiting areas and passenger boarding facilities. The alternative includes a feeder bus system that would establish new bus routes and reorient existing bus service to feed the commuter rail stations. Many of the stations would include parking within the immediate station area.

On December 7, 2000, the Federal Transit Administration (FTA) issued new guidelines (49 CFR Part 611) for new start transit projects that require two alternatives to be considered in the process of preparing an Alternative Analysis (AA) and environmental documentation. Matching the transit technologies found appropriate for the Corridor with the federally mandated scenarios results in the following transit system alternatives:

- Baseline - including existing, planned facilities, and low capital-intensive improvements such as conventional, express and advanced bus transit service.
- Build - based on a major capital investment such as commuter rail passenger service.

It is recommended that these same alternatives should be used in the process of preparing the alternative analysis, environmental documentation, and undertaking preliminary engineering (PE) for the Red Rock Corridor Project.

Station Area Planning

The effective design and location of stations will be a major factor in the eventual success of the proposed Red Rock Corridor commuter rail line. The commuter rail stations and supporting facilities provide the interface between the trains and the passengers who will use the service. Successful commuter rail stations need to exist compatibly within the framework of each city where they are proposed.

There are a number of tools and a range of options to be pursued by the Red Rock Corridor Commission and local jurisdictions to implement commuter rail facilities and transit-oriented development (TOD) around commuter rail stations. Issues such as land assembly for commuter rail facilities and transit-oriented development projects are essential prerequisites for the successful operation of a commuter rail system.

Local governments may facilitate TOD by amending long-range land use and Comprehensive Plans, regulatory ordinances and similar policy documents. The most important land use and planning tools are:

- Comprehensive plan amendments
- Station Neighborhood development plans
- Land use plans
- Zoning regulations
- Subdivision regulations

Commuter Rail Service Plan

Service Concept

The proposed operating schedule for the Red Rock Commuter Rail system would provide weekday peak hour (two-hour peak periods in the morning/evening) operation of ten daily trains supported by feeder bus service every 30-minutes between Hastings and downtown Minneapolis - four trips in each direction plus one reverse-commute trip in each direction.

Commuter trains would share BNSF/CP freight trackage and contribute track and signal upgrades. A connection into downtown Minneapolis from St. Paul is assumed via the BNSF-South alignment segment. Stops would be provided at Hastings, Cottage Grove, Newport, Lower Afton Road, downtown St. Paul, Rice Street, Snelling Avenue, University of Minnesota, northeast Minneapolis, and downtown Minneapolis. The Red Rock service will connect to Northstar Commuter Rail service and an extended Hiawatha LRT line at a joint inter-modal station in downtown Minneapolis, and the Saint Paul Union Depot "hub" with a potential convergence of bus rapid transit, light rail and commuter rail service.

The main service concept designs are:

- Service will be provided by modern diesel-electric locomotives propelling double-decked passenger cars in push-pull operation.
- An operating crew of two persons - an engineer and a conductor, will run trains.
- Americans with Disabilities Act (ADA)-compliant access to trains for persons with mobility impairments will be provided by means of small ramps deployed conductors.

Demand Forecast

Commuter rail ridership was forecast for service operating between downtown Minneapolis and an end-of-line station in Hastings. Daily ridership along the Red Rock Corridor is estimated at 5,900 total riders per weekday in year 2020. Of this ridership, it is estimated that 4,200 riders are new riders to the transit system and 1,700 riders transfer to commuter rail from bus transit. About 60 percent of the total ridership is attributable to the segment of the Red Rock Corridor with an origin or destination at Hastings, Cottage Grove, Newport or Lower Afton Road.

Rolling Stock

Based on the service concept and ridership forecast noted above, and consideration of projected passenger loads, it is anticipated that the Red Rock Corridor commuter rail service fleet should consist of the following:

Locomotive with Head End Power Unit Engine (includes one spare)	5
Bi-Level Coach Cab Cars (includes two spares)	6
Bi-Level Coach Cars	12
Total Fleet	23

Maintenance and Layover Facilities

Two types of facilities are proposed: Maintenance and a Layover Facility. The former is a facility for storage of the fleet, fueling and servicing, and routine maintenance and running repair of locomotives and cars, and would be located at a site to be determined. The site should be conveniently located near the Corridor.

The end-of-the line Layover Facility proposed for a location in Hastings will have the capacity to store trains over night for initial morning dispatch. The facility will also provide storage for off-peak periods during the day.

Capacity Improvements

The Red Rock Corridor service will be operated over the mainline tracks of the CP Rail Road and BNSF Railway, both major freight facilities that also accommodates daily long-distance Amtrak service. Commuter rail would share the existing tracks with 20 to 60 freight trains a day. To support passenger rail service without unduly burdening the railroads ability to operate its freight service, capacity improvements will be implemented as part of the overall Red Rock Corridor Rail Project. The extent and scope of those improvements will be decided at a later phase of the project, but the following are typical track and signal improvements:

- Double tracking where single tracks now exist;
- Increasing track capacity at select locations;
- Additional crossovers;
- Sidings at select locations; and
- Signal system improvements.

The approximate location of the track and signal improvements are near Hastings, St. Croix Tower, Newport-Dunn, and the St. Paul Union Depot. Additional capacity improvements may be needed for a commuter rail alignment between downtown St. Paul and downtown Minneapolis.

Financial Analysis

Capital Costs

The total estimated cost for the Red Rock Corridor commuter rail service is $261.6 million (in 2001 dollars) and $421.8 million (in 2010 dollars). These costs are a preliminary estimate and are subject to refinement as additional information is gathered. The capital costs include potential elements that could be jointly used by other transit systems, such as Saint Paul Union Depot station, Maintenance & Operations Facility, and portion of a commuter rail vehicle fleet.

Operating and Maintenance Costs

The annual operations and maintenance costs for commuter rail service (and associated feeder bus) from Hastings to downtown Minneapolis was estimated at $7.9 million (in 2010 dollars).

Environmental Analysis

A preliminary assessment of environmental constraints and opportunities was completed along the Red Corridor from Hastings to downtown St. Paul. This assessment identified several potential impact categories that merit further attention during future environmental review to occur at the next phase of the project. In sum, no environmental issues - based on existing data - were identified that would preclude the operation of commuter rail service along the southeast corridor segment.

Recommendations and Next Steps

The goals and objectives established by the Red Rock Corridor Commission guided the study and highlighted the fact that the ability to properly engineer and construct the needed improvements is not the only factor in determining commuter rail feasibility. Determining feasibility weighs several factors such as affordability, availability of funding sources, environmental impacts, land use and development potential, ability to operate passenger rail service within an active freight corridor, and community acceptance.

Overall, the magnitude and extent of the technical issues studied during the Phase One Study do not indicate a "fatal flaw" nor preclude advancement to the next phase of project development. Thus, it is recommended that the Red Rock Corridor Commuter Rail Project is a viable transportation option that should be advanced to Phase Two of implementation.

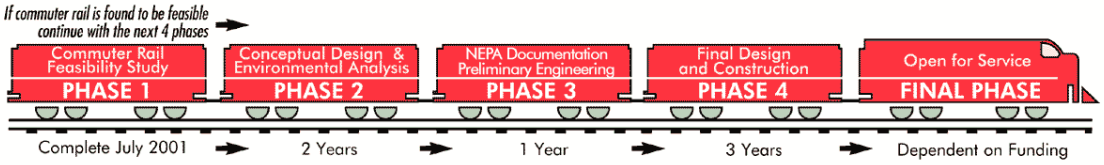
This recommendation is substantiated by the following findings:

- The projected weekday ridership of 5,900 passengers (year 2020) is at a reasonable level and comparable to commuter rail ridership from other systems in North America.
- At an estimated $14 million per mile (in 2010 dollars), the physical improvements can be made at a reasonable cost compared to other transportation alternatives for the Corridor, and the projected costs are comparable to similar systems in North America.
- The estimated annual operating and maintenance costs are reasonable and comparable to those of other commuter rail systems.
- The estimates of one-time capital and annual operating costs are reasonable and fundable. Several federal and local funding arrangements can be pursued to finance the commuter rail system.
- The physical improvements such as tracks, signals, and stations facilities can be made without too much difficulty and will provide adequate operational capacity along the Corridor.

- There were no environmental issues identified that would preclude the project, but further study is needed to confirm this in subsequent phases of the project.
- There is general acceptance of the commuter rail project in communities and neighborhoods along the Corridor.
- The commuter rail stations can be designed, constructed and operated that are compatible with local community policies, requirements and preferences.
- The Phase One Feasibility Study process and technical studies supported the goals of the Red Rock Corridor project.

In summary, based on the results and findings of the Phase One Commuter Rail Feasibility Study, it is recommended that the Red Rock Corridor Commuter Rail Project be advanced to Phase II of implementation. This recommendation is consistent with the previous Mn/DOT recommendation of feasibility for Commuter Rail in the Red Rock Corridor contained in the Commuter Rail System Plan (February 2000) for the Twin Cities' region that identifies the Red Rock Corridor as a high commuter rail priority. In addition, the recommendation also supports the Metropolitan Council's Transit 2020 Master Plan (February 2000) and Transportation Policy Plan (December 2000) that targets the Red Rock Corridor to be the second commuter rail corridor in operation after the Northstar Corridor.

The completion of the Commuter Rail Feasibility Study constitutes the end of Phase One for the project. The remaining implementation phases with a proposed timeline are illustrated as follows:



Introduction 1.0

The Red Rock Corridor is rich with history. The name "Red Rock" is the English rendering of the Dakota designation eyah-shaw, referring to a boulder covered with red pigment and honored by Native Americans. The name of the Corridor was taken from a granite boulder that resides in Newport. Historically, the Red Rock was the northernmost site of a steamboat landing used by early settlers and missionaries.

Today, the Red Rock Corridor is also part of a regional multi-modal transportation system that connects the Minneapolis-St. Paul (Twin Cities) metropolitan area and growing southeast suburban cities/towns.

The Red Rock Corridor Commuter Rail Feasibility Study (Phase One) began in January 2000 and was designed to evaluate the constraints and opportunities of operating commuter rail transportation service in the Red Rock Corridor on shared railroad right-of-way between the City of Hastings and downtown St. Paul with connection to downtown Minneapolis. Through the course of the Phase One Study, the Red Rock Corridor Commission (RRCC) directed several Technical Studies that address the question of whether commuter rail service is feasible. This Final Report is organized to present the major findings of the Technical Studies with a determination of feasibility and a discussion of next steps to be taken by decision-makers in the planning and project development process for commuter rail and transit service.

1.1 Description of the Red Rock Corridor

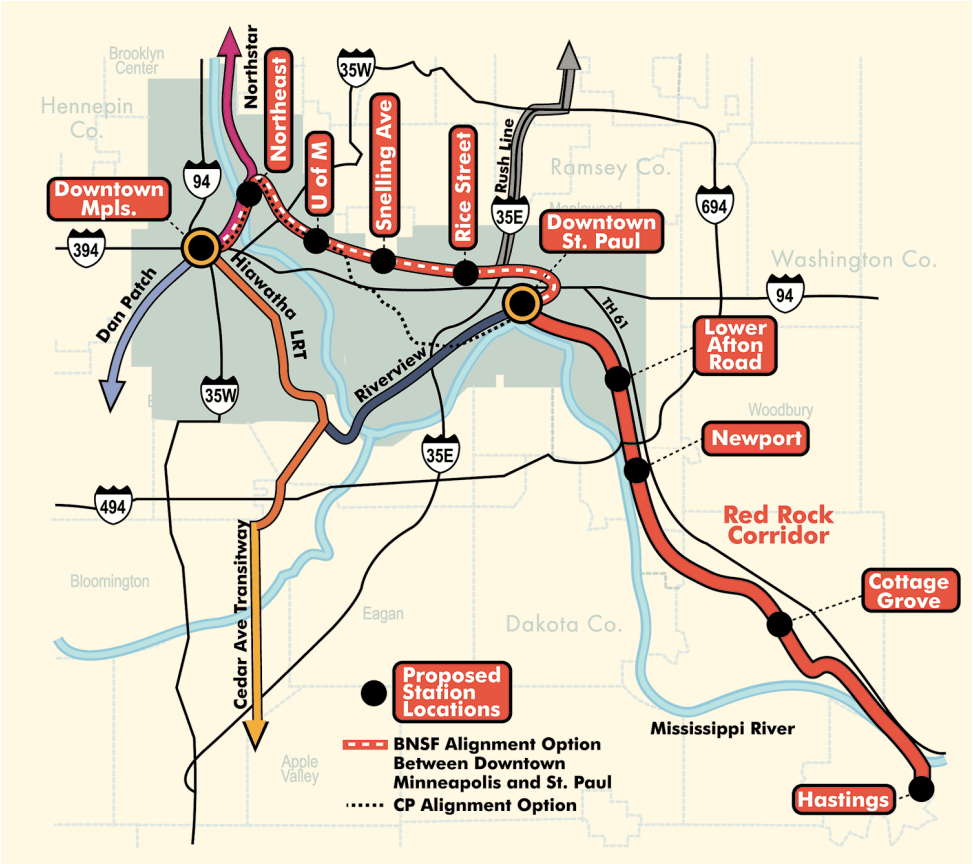
The Red Rock Corridor extends approximately 30 miles from Hastings to downtown Minneapolis. The Red Rock Corridor has regional, statewide, and national significance as a primary transportation route for automobile, truck, and rail travel. The Corridor includes Trunk Highway (TH) 61, a principal arterial and part of the national scenic highway system.

The study area as shown in Figure 1.1.1 consists of an alignment on two segments that converge at a central ("midpoint") location in downtown St. Paul as follows:

- The 11-mile long west corridor segment is between downtown St. Paul and downtown Minneapolis with a connection assumed via the Burlington Northern Santa Fe (BNSF) southern alignment. The BNSF-South alignment was assumed for the west segment analysis because this is the route that was recommended in the Mn/DOT *Commuter Rail System Plan*. Passenger station stops would be provided at downtown St. Paul, Rice Street, Snelling Avenue, University of Minnesota, northeast Minneapolis, and downtown Minneapolis.
- The 19-mile southeast corridor segment is between downtown St. Paul and Hastings and west of TH 61 along the set of rails operated by the Canadian

Pacific Railway (CP) and BNSF railroads. Passenger station stops would be provided at Hastings, Cottage Grove, Newport, Lower Afton Road, and downtown St. Paul.

Figure 1.1.1: Red Rock Corridor Commuter Rail System Map



1.2 Management

The Red Rock Corridor Commission (RRCC), a joint powers board, was established in 1998 to address the transportation needs of the corridor. The RRCC is comprised of elected officials from the county regional railroad authorities, cities, and townships within the corridor. The metropolitan planning organization (Metropolitan Council), transit providers (Metro Transit), and the Minnesota Department of Transportation (Mn/DOT) also participate, but are not official members of the Commission. The RRCC includes the following representatives: Washington, Ramsey, Dakota and Hennepin County Regional Rail Authorities, Newport, St. Paul Park, Cottage Grove, Hastings, and Denmark Township.

The RRCC provides the overall direction and management of the study. Commission meetings were held at 3:30 p.m. in the Cottage Grove City Hall the last Thursday of each month.

Technical direction and input was provided by the Technical Advisory Committee (TAC). The TAC includes representatives from the Minnesota Department of Transportation, the Metropolitan Council, Metro Transit, Washington, Ramsey, Hennepin, and Dakota Counties, and the cities of St. Paul, Newport, Cottage Grove, and Hastings. TAC meetings were held on the morning of the first Thursday of the month at the Metropolitan Council.

1.3 Study Overview

The impetus for this study was State Legislative action. At the request of the State legislature, the Minnesota Department of Transportation (Mn/DOT) initiated the Twin Cities Metropolitan Commuter Rail Study in September 1997. The Mn/DOT study evaluated 19 commuter rail corridors from transportation hubs emanating from Minneapolis and St. Paul. In January 1999, Mn/DOT presented results of the Phase II *Twin Cities Metropolitan Commuter Rail Feasibility Study* to the State legislature. The legislature then passed M.S. 174.80 to 174.90 that gave the Mn/DOT Commissioner the authority to plan, design, construct, and operate commuter rail in the State of Minnesota. The Commissioner was also charged with the responsibility of developing a commuter rail system plan that would ensure that commuter rail would be part of an integrated transportation system that would interface safely and efficiently with all other forms of transportation and facilities including Light Rail Transit (LRT), buses, park and ride, bicycles, and pedestrians. The Mn/DOT Commuter Rail System Plan published in February 2000 establishes a framework for the Red Rock Corridor Commuter Rail Feasibility study. The System Plan identifies the Red Rock Corridor as a high commuter rail priority. It is proposed to be the second corridor implemented (Hastings to downtown Minneapolis), that would connect with the Northstar Corridor (the first commuter rail corridor planned to be implemented).

As stated earlier, the Red Rock Corridor Commuter Rail Feasibility Study (Phase One) started in January of 2000. It was designed to evaluate the constraints and opportunities of operating commuter rail transportation service in the Red Rock Corridor on shared right-of-way of the Burlington Northern Santa Fe (BNSF) and the Canadian Pacific Railway (CP) transcontinental railroad mainlines between the City of Hastings and downtown St. Paul to downtown Minneapolis via BNSF Southern right-of-way alignment. The RRCC directed ten Technical Studies that assess the overall viability and feasibility of commuter rail service. The Phase One work plan also provided an understanding of the viability of transit technology alternatives that could be considered within the southeast TH 61 corridor to Hastings.

The Red Rock Corridor Feasibility Study employed a comprehensive and open process involving communities and the general public to develop multi-modal transportation strategies to improve mobility and safety in the Corridor.

A series of ten Technical Memoranda, listed in Table 1.3.1, were prepared that document the results of these analyses and the methodologies that were employed for the southeast and west segments of the Corridor. The RRCC did not complete the analysis for all of the elements for both segments. The focus of this study was between Hastings and downtown St. Paul (southeast segment). Some analysis was completed for the west segment as documented in the table. The BNSF-South alignment was assumed for the west segment analysis because this is the route that was recommended in the Mn/DOT *Commuter Rail System Plan*.

The Ramsey County Regional Railroad Authority (RCRRA) will be completing additional analysis for commuter rail service between the two downtowns. The Central Corridor Coordinating Committee (the policy Board advising Ramsey County regarding the analysis) is leading a study entitled "Central Corridor Commuter Rail Technical Feasibility Study".

Table 1.3.1: Red Rock Corridor Commuter Rail Feasibility Study Elements

Technical Memoranda Study Elements	Southeast Segment (BNSF/CP alignment) Hastings To downtown St. Paul	West Segment (BNSF-So. alignment) downtown St. Paul To downtown Mpls.
Purpose & Need	◆	
Alternatives Analysis of Transit Technologies	◆	
Railroad Capacity Modeling and Proposed Infrastructure Improvements	◆	
Estimate of Engineering and Capital Costs	◆	◆(1) (3)
Environmental Analysis	◆	
Station Area Planning and Implementation Tools	◆(2)	
Ridership Forecasts	◆	◆(3)
Service Plan	◆	◆(3)
Operations Planning and Costs	◆	◆(2)
Financial Analysis	◆	◆

(1) The west segment costs are based on the Mn/DOT Phase II Commuter Rail Study (January 1999).

(2) Analysis for the stations between northeast Minneapolis and downtown St. Paul was not completed in the Red Rock Corridor Project.

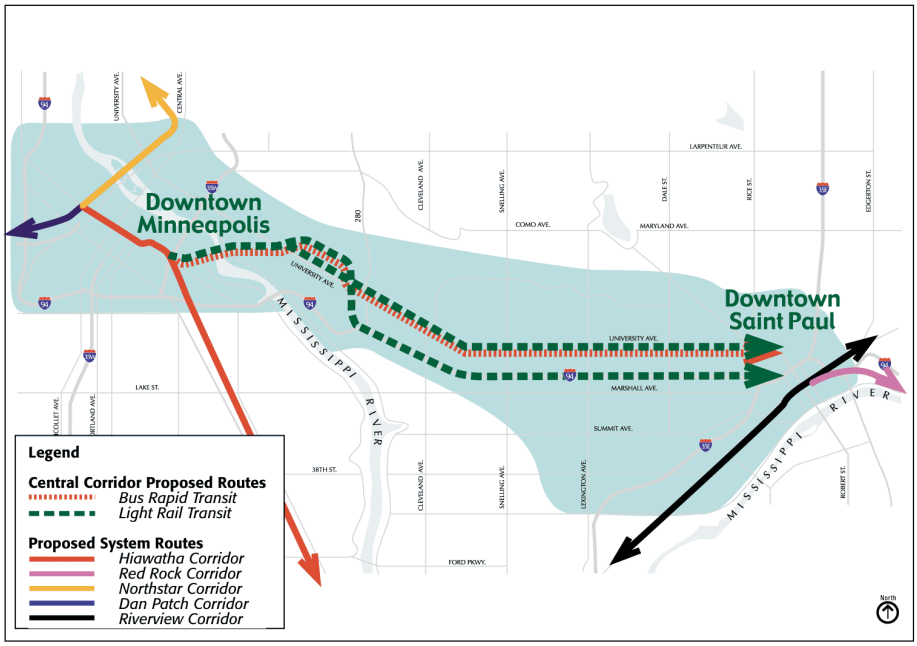
(3) Central Corridor analysis is expected to have additional service between the two downtowns. With a revised service plan, there will be revised ridership figures, operations/maintenance costs and capital costs.

This technical feasibility study for the Central Corridor analyzes the BNSF Southern right-of-way and the Canadian Pacific right-of-way between downtown St. Paul and downtown Minneapolis to determine the viability of commuter rail operations on shared railroad right-of-way. Study tasks are similar to the Red Rock Corridor project and include: service plan concepts, railroad capacity analysis, conceptual engineering for modifications to infrastructure that may be necessary to maintain current level of performance, costs associated with the capital improvements, a possible project timeline and a outline of possible railroad operating agreements. A Final Report is anticipated to be available in October 2001.

The study is expected to recommend a preferred alignment for commuter rail between the two downtowns. The RRCC will coordinate closely with the Central Corridor Coordinating Committee to ultimately determine the preferred commuter rail alignment between the two downtowns.

In addition, the Central Corridor Coordinating Committee under a separate process is examining transit options consisting of bus rapid transit and light rail transit between downtown St. Paul and downtown Minneapolis within an Environmental Impact Statement (EIS) process. Figure 1.3.1 shows the Central Corridor Study Area and alignment options to be studied in the EIS. Lastly, it is important to note that although two commuter rail options were studied during preliminary phases of the Central Corridor Transit Study, based on regional commuter rail connections and system planning, funding and operating agency responsibility; the evaluation of the commuter rail option will be deferred to a separate environmental document.

Figure 1.3.1: Central Corridor Study Area



THE CENTRAL CORRIDOR Central Corridor Study Area / Route Map
April 11, 2001

Public Involvement Program 2.0

Public involvement and outreach are critical elements in any transportation development project. Public involvement begins at the earliest phase of planning and continues through design and construction of the project. For the Red Rock Corridor Commuter Rail Feasibility Study, public involvement was facilitated through six primary components which are described below.

2.1 TAC and RRCC Meetings

The monthly meetings of the TAC and RRCC provided a formal process for input and oversight by all stakeholders directly impacted by the project. The TAC provided technical direction and oversight for the project. The primary responsibility of the TAC was to provide direction, input, and review of all technical components of the study. The RRCC provided overall management and policy direction for the project.

Meetings of the TAC and RRCC were open to the public.

2.2 Open Houses

Two public Open Houses were held at key points during the study to present project information and provide an opportunity for public review and comment. Maps, graphics, and data were prepared to present project details and information. Project representatives were available to explain the information and answer questions. Comment Cards were used to collect written input, concerns, and questions regarding the project. The two Open Houses were held as follows:

- April 6, 2000 – Cottage Grove City Hall
- June 12, 2001 – St. Paul Union Depot

2.3 Land Use Forum

A Land Use Forum was held on May 3, 2000, at the St. Paul Park City Hall. The purpose of the Land Use Forum was to provide information to agencies, elected officials, and citizens regarding commuter rail and the associated land use impacts. Specific topics of discussion included transit oriented development, funding sources, station area facilities and amenities, parking and access management, circulation and connectivity, and case studies from other communities. The Land Use Forum also served as a precursor to the Station Area Planning Workshops.

2.4 Station Area Planning Workshops

Station Area Planning Workshops were conducted in each of the communities where a station location was proposed. The purpose of the workshops was to provide each community with an opportunity to discuss the issues relating to the proposed stations and to identify opportunities to maximize the benefits of transit service in the Red Rock Corridor. The Station Area Planning Workshops were held as follows:

• Hastings	June 28, 2000	Hastings City Hall
• Cottage Grove	September 14, 2000	River Oaks Golf Course
• St. Paul	September 21, 2000	Metropolitan Council
• Newport	September 26, 2000	Newport City Hall

2.5 Newsletters

Two project newsletters were prepared and distributed during the course of the study as a public informational outreach tool. The newsletters provided a general overview of the project, progress updates, announced upcoming events such as the Open Houses and Station Area Planning Workshops, and provided information on the project web site.

2.6 Web Site

An internet web site was created to provide more detailed and timely project information for review. The site is interactive allowing for questions and comments and also includes a survey.

The web site address is http://www.redrockrail.org

Purpose and Need 3.0

3.1 Corridor Characteristics and Trends

The Red Rock Corridor has regional, statewide, and national significance as a transportation route for automobile, truck and rail travel. U.S. Trunk Highway 61 (TH 61) is a principal arterial, part of the national highway system, and a national scenic roadway.

The Twin Cities' region is expected to add 650,000 people and 410,000 jobs between 1995 and 2020. Most of the growth in the next 20-years will occur in the Twin Cities region's rapidly developing suburbs. This growth will fuel future travel demand and increase current levels of congestion. Growth in peak period miles traveled over the last decade, particularly in the Twin Cities area, has strained the ability of existing facilities to accommodate this increased demand.

The majority of the Red Rock Corridor is within South Washington County and is characterized by suburban housing, rural living, active farmland, parks and industrial sites. Downtown St. Paul is experiencing significant urban revitalization and job growth with associated increases in commercial office space and housing. Historically, other cities and towns along the corridor have functioned as "bedroom" communities for the major job destinations located in downtown St. Paul and Minneapolis, the airport complex, and the I-494 corridor.

Significant congestion and safety issues exist along the corridor study area. Congestion frequently occurs during peak periods on both TH 61 and I-494. The most recent count data available from Mn/DOT on TH 61 south of the 12th Street intersection in Newport shows an average daily traffic (ADT) of 24,990 northbound, and 24,892 southbound (year 1998 data). Most of the intersections and freeway ramps in the study area operate at unacceptable Levels of Service during peak periods (LOS E & F).

3.2 Project Need

The portion of TH 61 in the Red Rock Corridor study area is classified as an expressway, with several at-grade intersections and access locations. Traffic on TH 61 has increased through the years, as the metropolitan area and the developing communities of Washington County have grown. The average daily traffic (ADT) on TH 61 in 1996 was 49,500; and the daily traffic is projected to increase to 70,000 ADT by 2020, an increase of more than 41 percent.

Major improvements are planned for TH 61 and I-494 within the corridor study area, including reconstruction of the TH 61/I-494 interchange and replacement of the Wakota Bridge over the Mississippi River. TH 61 will be upgraded to freeway standards south of Carver Avenue to Hastings Avenue in Cottage Grove. This will require the removal of at-grade intersections at 20th Street, Glen Road, and 12th Street in Newport, and the closing of all right in-right out access locations. Construction will occur in several stages and is currently scheduled to begin in 2002 and will be completed in 2008. Additional right-of-way needed to further expand the capacity of TH61 would be very difficult and expensive to obtain.

While there has been transit service within the Red Rock corridor, it has been largely constrained to incremental increases in bus route capacity and enhancements to transit operations that reduce travel time (e.g., shoulder bus lanes on TH 61). Highway capacity has been the predominate feature of the transportation investments that has served South Washington County to date.

Most of the growth in population and employment over the next 20-years will occur in the region's rapidly developing suburbs. This trend provides an opportunity to expand and integrate transportation services and facilities through a multi-modal strategy that includes: commuter rail, light rail transit, express bus and park-and-ride service, exclusive busways, and bus-only shoulders.

The need for transportation facilities and services along the Red Rock corridor is summarized as follows:

1. The demand for transportation facilities outpaces the "committed" transportation system. Despite enhancements and reconstruction of TH 61, peak-hour travel and average daily traffic volumes are growing. Commuter rail service provides relief to regional highway programming and congestion levels.

2. Regional corridor planning and proposed investment in commuter rail and other transit services necessitates a connection to the Red Rock Corridor. In particular, the Central Corridor project, which is analyzing transit opportunities between the two downtowns, provides a critical connection to downtown Minneapolis. The potential for multi-modal service integration exists throughout the Twin Cities metropolitan area.

3. There is not a corridor-wide, transit or multi-modal transportation choice available that is timely. Projections for commuter rail system indicates that rail passenger service outperforms, and provides a travel time savings of up to 7 minutes compared to existing bus transit service.

3.3 Goals, Objectives, and Criteria

The Red Rock Corridor Commission supports a regional principle to provide efficient transportation facilities to accommodate expected growth in a sustainable manner, while preserving the mobility that makes such growth possible. In meeting this principle, the Red Rock Corridor Commission promotes the following goals, objectives, and criteria.

A. Improve mobility and access for personal travel and goods movement.

Objectives

1) Improve existing transit service to complement corridor transit service.
2) Improve accessibility of transit in the community.
3) Improve connections between all modes of transportation.
4) Reduce congestion and travel delays.
5) Improve level of services and travel time.

Criteria

1) Residential population and employment locations with ¼ mile walking distance of stations.
2) Number of health care, educational, recreational, commercial, and social service locations within ¼ mile of stations.
3) Decrease in total travel time for a representative sample of trips within the corridor and trips with one end outside of the corridor.
4) Decrease in shipment delays.
5) Improvements in ratio of freight volumes to transaction time.

B. Coordinate transportation investments to provide for a seamless, integrated regional multi-modal transportation network.

Objectives

1) Invest in infrastructure, facilities and services that improve the connectivity, transfer and circulation of the region.
2) Coordinate with other regional commuter rail, transit, light-rail transit, and road projects.
3) Maintain working relationship with transportation partners, including the Metropolitan Council, Mn/DOT, counties, cities, regional railroad authorities, and related agencies.
4) Provide efficient connections to other transportation corridors and modes.
5) Work with the Midwest Regional Rail System.

Criteria

1) Number of multi-modal transfer points and stops.
2) Number of transportation investment projects that meet the above goal.

C. Encourage the implementation of transit supportive development.

Objectives

1) Locate transit and/or commuter rail stations in locations where development or reduction of existing neighborhoods can readily occur.
2) Facilitate transit-supportive guidelines and policies.
3) Provide transit that complements neighborhoods, housing, and business developments.

Criteria

1) Qualitative - location of stations and positive influence on land use.
2) Number of adopted transit supportive policies and guidelines.
3) Number of transit-supportive developments.
4) Number of mixed uses.
5) Change in land use density.
6) Number of development projects within targeted TOD districts.

D. Promote positive environmental impacts.

Objectives

1) Improve environmental quality by promoting alternative transportation.
2) Preserve historical and cultural resources.
3) Provide connections to existing and planned recreational facilities.
4) Reduce traffic congestion.
5) Protect environmentally sensitive areas.
6) Minimize right of way takings and displacement of homes and businesses.

Criteria

1) Reduction in monitored\observed, air quality emissions.
2) Reduction in localized concentration of vehicle exhaust pollutants.
3) Changes in noise levels at residential, institutional, and other sensitive land-uses.
4) Reduction in vibration levels at institutional, health and public land uses.
5) Minimize displacements, damage, impact on function or accessibility, or impact on environment.

E. Support a stable and reliable capital and operating funding source for transportation investments.

Objective

1) Meet FTA goals as they relate to cost effectiveness.

Criteria

1) Percent of annualized capital and operating cost covered by available resources for capital and operating costs.
2) Qualitative - risk assessment as to the sustainability of financial resources.
3) Risk assessment of constructability.

F. Improve safety conditions for vehicular traffic and pedestrians.

Objectives

1) Plan and develop transit stations with applicable FRA safety guidelines.
2) Provide safe corridor crossing locations for vehicles and pedestrians.

Criteria

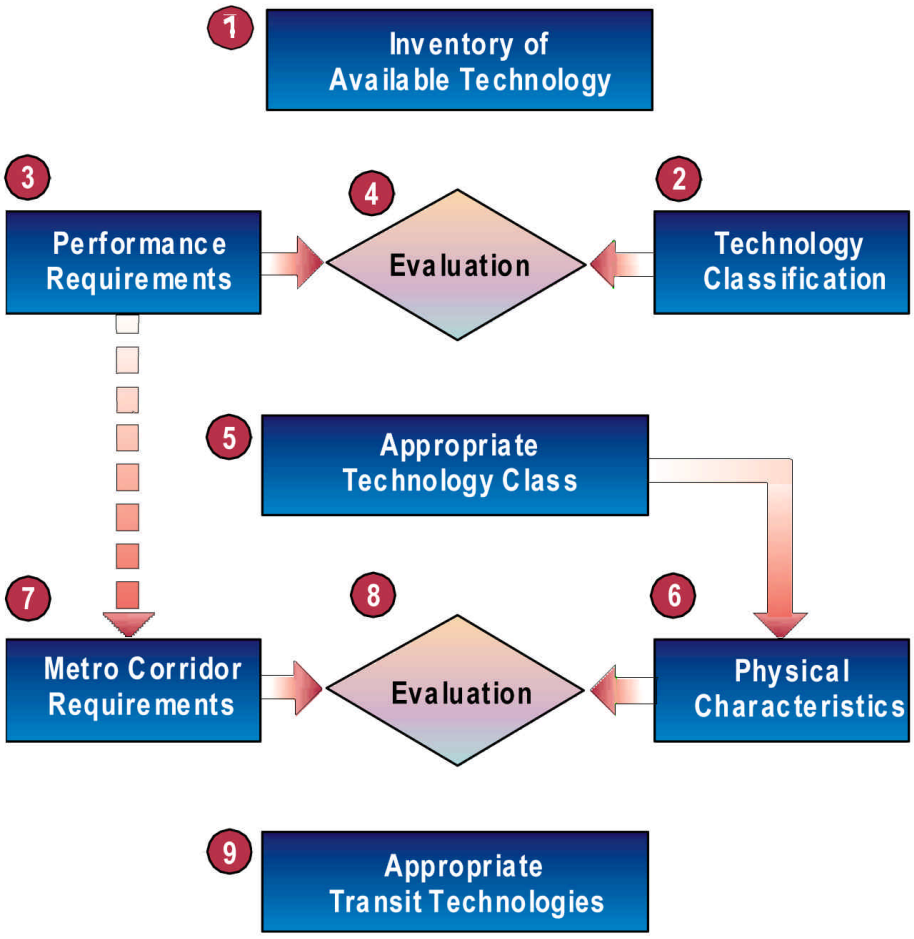
1) Decrease in number of train/traffic movement conflict points weighted by volume potential.
2) Minimize the number of pedestrian rail and traffic crossings necessary to access stations.
3) Clear sight distance available to train operators.
4) Change in accident rates based on comparative data.
5) Reduction in the number and severity of vehicular and bicycle crashes and pedestrian accidents.
6) Improvements in the safety of rail operations within the corridor.

Section 3.0 identified the purpose and need for transportation improvements in the Corridor. Given that there are a wide variety of transit technologies available in the world today, the objective of the Alternatives Analysis of Transit Technologies was to document a systematic process that was carried out to identify and evaluate potential transit technology and intelligent transportation system (ITS) applications that would meet the purpose and need, and thereby should be considered and incorporated into transit system alternatives in the Corridor. The details of the screening process are documented in the Technical Memorandum, Alternatives Analysis of Transit Technologies, July 2000.

4.1 Screening of Transit Technology Options

The screening of technology assessment process was carried out in a series of nine steps that are illustrated below in Figure 4.1.1.

Figure 4.1.1: Technology Assessment Screening



The screening of transit system alternatives was accomplished by comparing the physical characteristics of alternative transit technologies with transportation conditions and constraints in the corridor. The results of the initial screening process focus on the most promising modal elements. Major findings of the screening process propose transit technologies for an alternatives analysis and environmental documentation (either EIS or EA) to occur at the next phase of project implementation. In addition, this screening process preempts repetition of a technology screening typically completed within an alternative analysis. Most importantly, this process establishes the transit technology most appropriate as the "Build" alternative.

What follows is a summary of key steps undertaken in the screening process:

4.1.1 Corridor Requirements - Opportunities and Constraints

There are several opportunities and constraints relative to implementation of transit along the Corridor that will affect the viability of transit technology options. These include the following:

- Available transportation or utility corridors. The public or private right-of-way available along the corridor is TH 61 and the shared CP/BNSF rail corridor.
- Existing railroad tracks may be available for rail operations. Track configuration at the St. Paul Union Depot (SPUD) and south of the proposed Newport station have been identified as presenting operational constraints (Mn/DOT, *Final Commuter Rail Study Summary Report*, Appendix).
- Availability of right-of-way. There is no existing railroad or utility right-of-way available to implement light rail transit (LRT) in the corridor.
- Alignment options relative to improvement along TH 61. The planned improvement along the TH 61 corridor from north of I-494 at Carver Avenue to Cottage Grove will require close coordination and integration with surface and rail transit options.
- Alignments within TH 61 right-of-way. Preliminary investigation has determined that there is not adequate right-of-way within the TH 61 corridor to construct a transitway that is physically separated from traffic lanes, either in the center of the roadway or along one edge of the right-of-way. Bus rapid transit (BRT) could therefore be implemented in the corridor only if it is determined that traffic lanes for TH61 can be dedicated exclusively to BRT operation or additional ROW is acquired and TH61 traffic lanes/structures are reconstructed. Express bus service could be operated on existing planned highway facilities.
- River crossing options. It has already been determined in the Mn/DOT *Commuter Rail System Plan* (2000) that rail passenger service can be accommodated on the existing CP bridge crossing the Mississippi River into Hastings.

4.1.2 Evaluation of Alternatives

The screening of transit system alternatives was accomplished by comparing the physical characteristics of transit technologies with conditions and constraints in the Corridor. Factors and conclusions from this evaluation process are summarized in Table 4.1.1.

Table 4.1.1**: **Transit Technology Evaluation

Technology	Evaluation Screening Factors	Appropriate for Red Rock Corridor
Conventional Bus	• No limitations	Yes
Trolley Bus	• Overhead Wires	No
Advanced Bus	• No limitations	Yes
Hybrid Bus	• No limitations	Yes
Bus Rapid Transit (BRT)	• No available ROW for dedicated lanes • Ridership not likely to justify cost of acquiring dedicated ROW	No
People Mover	• Separate Guideway • Cost of aerial structure	No
Monorail	• Separate Guideway • Cost of aerial structure	No
Automated Guideway Transit (AGT)	• Separate Guideway • Cost of aerial structure	No
Light Rail Transit	• Separate lane or dedicated right-of-way • Cost of tracks and power supply	No No
Heavy Rail Transit	• Dedicated ROW for tracks and power supply • Cost of tracks and power supply	No
Commuter Rail	• Available tracks and stations	Yes

4.1.3 Appropriate Transit Technologies

The following conclusions were reached as a result of the technology screening process:

- Transit system should be capable of speeds 30 mph or greater

- Basic vehicle passenger capacity should be:
  - 7 to 24 for circulator service
  - 25 to 220 for line haul service
  - 221+ for commuter rail service
- Operated in mixed traffic for bus
- Power supply should be self contained
- Propulsion should be diesel or hybrid diesel/electric
- Control/Communication should be manual
- Vehicles can be single, articulated or capable of being combined into trains
- Suspension should be rubber tire or rail

The transit technologies that meet criteria from the evaluation process include the following:

- Local and Express Bus
- Advanced bus
- Commuter Rail

On December 7, 2000, the Federal Transit Administration (FTA) issued new guidelines (49 CFR Part 611) for new start transit projects that require two alternatives be considered in the process of preparing an alternatives analysis and environmental documentation. Matching the transit technologies found appropriate for the Corridor with the federally mandated scenarios results in the following transit system alternatives:

- Baseline - including existing, planned facilities, and low capital intensive improvements such as conventional, express and advanced bus transit service.
- Build - based on a major capital investment such as commuter rail passenger service.

It is recommended that these same alternatives should be used in the process of preparing the alternative analysis, environmental documentation, and undertaking preliminary engineering (PE) for the Corridor.

As an additional check, a review was made to verify that that the above recommended transit technologies are consistent with and supportive of the goals and objectives for the Red Rock Corridor Commission. It was concluded that implementation of the recommended transit technologies would, in fact, serve to achieve the goals and objectives for the corridor. Specifically, Commuter Rail is highly responsive to the following objectives:

TABLE 4.1.2: Commuter Rail Responsiveness to Project Objectives

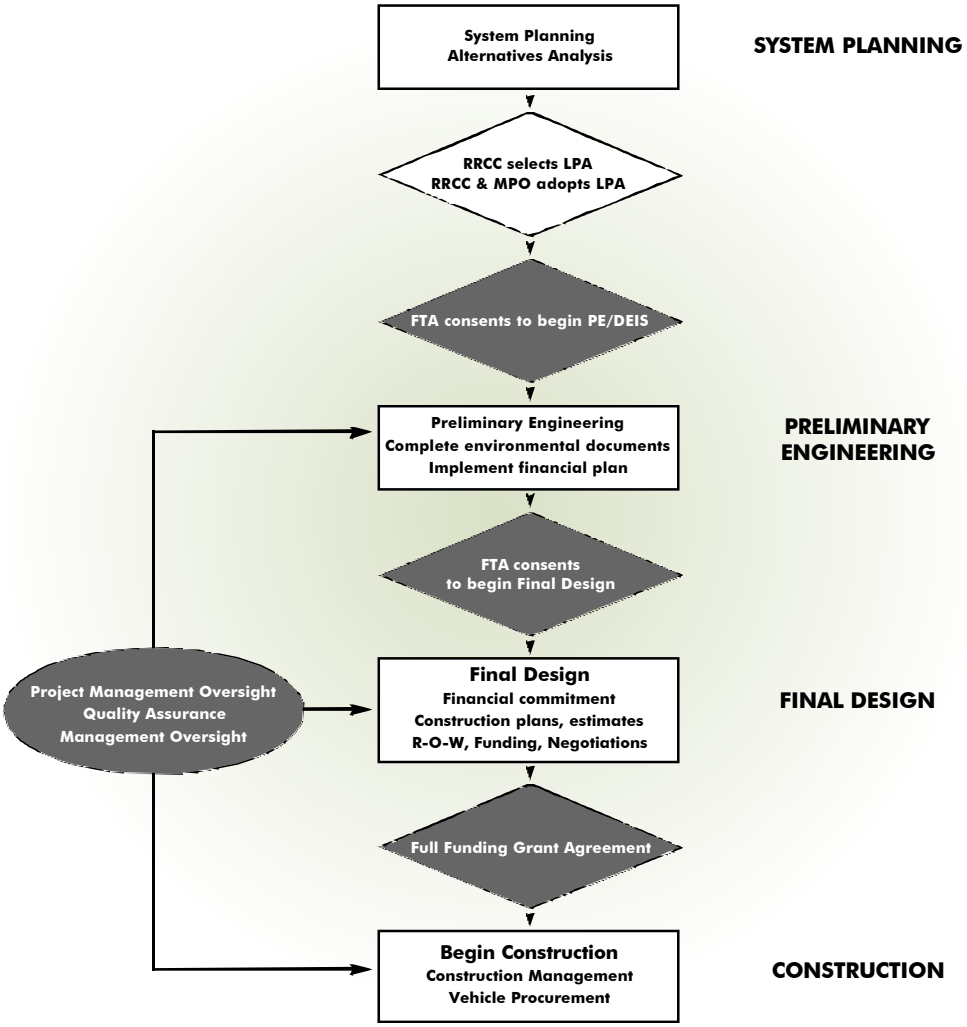
Objective	Support/Compliance
Improve existing transit service to complement corridor transit service.	• Local and express bus service would be improved to complement commuter rail operating in the corridor.
Improve connections between all modes of transportation.	• Commuter rail operating in the corridor can interface directly with commuter rail operations in other corridors including Central and North Star. • Stations will provide transfer opportunities between commuter rail and other modes including walk, bicycle, auto, local bus and LRT.
Improve level of service and travel time.	• Commuter rail would be faster than existing bus service.
Invest in infrastructure, facilities and services that improve the connectivity, transfer and circulation of the region.	• Commuter rail would connect or provide transfer to other modes in the region.
Coordinate with other regional commuter rail, transit, light rail transit and road projects.	• Direct connection to other commuter rail lines and transfer to light rail and bus.
Provide efficient connections to other transportation corridors and modes.	• Accessible to park-and-ride lots with direct connection to commuter rail and transfer to light rail and bus.
Work with Midwest Regional Rail System.	• Commuter rail would share tracks and stations with Midwest Regional Rail System.
Locate transit and/or commuter rail stations in locations where development or redevelopment of existing neighborhoods can readily occur.	• Stations ideally suited to accomplish this objective.
Minimize right of way takings and displacement of homes and businesses.	• Commuter rail would require minimal new right of way compared to other modes such as LRT or BRT.
Meet FTA goals as they relate to cost effectiveness.	• Commuter rail can be implemented with relatively low capital cost with capacity that matches potential passenger volumes for the corridor.
Plan and develop transit stations with applicable FRA safety guidelines.	• Existing rail facilities can be enhanced to improve compliance with FRA safety guidelines for both freight and passenger service.
Provide safe corridor crossing locations for vehicles and pedestrians.	• Existing crossing locations can be improved for increased safety of vehicles and pedestrians, especially at station areas.

4.2 Summary of New FTA Rules for Major Capital Investments

The definition of alternatives has been revised in accordance with new FTA regulations. The following is a summary of the new regulations.

On December 7, 2000, the Federal Transit Administration (FTA) issued the long awaited final rule implementing the criteria for evaluating new public transit and passenger rail projects entitled, "Major Capital Investment Project - Final Rule" (49 CFR Part 611). The rule establishes the methodology by which FTA will evaluate new starts transit projects. The rule only applies to projects seeking New Starts funds. Projects seeking less than $25 million in New Starts funds remain exempt from the criteria, but still must meet the planning and environmental review requirements. Decisions regarding full funding grant agreement (FFGAs) will be based on the results of the evaluation. Figure 4.21. displays the process for new start project development.

Figure 4.2.1: FTA New Starts Planning and Project Development Process



The data for this evaluation is collected during the alternatives analysis (AA) and preliminary engineering (PE) phases of a project. Applicants for new starts funds must follow these rules in order to be eligible for capital grants and loans. FTA uses this information to make findings to authorize projects to advance into preliminary engineering and final design. The information collected is also included in the FTA Annual Report to Congress regarding Funding Levels and Allocation of Funds.

A new starts project must emerge form a regional multimodal planning process in order to be eligible for funding. In addition, a project may only be approved if it is based on results of an AA and PE, and when project justification criteria have been met. A project sponsor must conduct a corridor level analysis of mode and alignment alternatives, which provides benefits, costs, and impacts of alternate strategies, which leads to the selection of the locally preferred alternative (LPA). An Environmental Assessment (EA) or Environmental Impacts Statement (EIS) is to be completed based on the AA and engineering.

At this point the project sponsor makes a request to enter into PE (Phase III of the Corridor's schedule). The request must include information regarding project readiness, including adoption in the transportation improvement program (TIP) and information regarding the technical capability to undertake the PE. FTA then evaluates the project and determines whether the project advances into PE.

During PE local project sponsors refine the project design and develop estimates of project costs benefits, and impact. PE will also address the new starts evaluation criteria. The National Environmental Protection Act (NEPA) requirements must also be met during this phase with the completion of a final environmental impact statement (FEIS), project management plans, fleet management plans and local funding sources must be committed to the project. It is during this phase that project sponsors must also address the Federal Railroad Administration (FRA) equipment safety standards. PE is complete with the issuance of a Record of Decision (ROD) or Finding of No Significant Impact (FONSI).

At this point a project sponsor may request approval from FTA to enter final design. The request must include information that demonstrates to FTA the technical and financial capacity of the local project sponsor to advance the project into final design. This approval is based on a review and evaluation of costs, benefits, and impacts under the project evaluation criteria. This phase also includes right-of-way acquisition, utility relocation, preparation of final construction plans, detailed specifications, construction cost estimates, and bid documents. A Full Funding Grant Agreement (FFGA) means an instrument that defines the scope of a project, the Federal financial contribution, and other terms and conditions. A FFGA is awarded by FTA once the above phases of a new starts project have been approved and a New Starts application evaluated.

The decision to select commuter rail as the LPA for the Red Rock Corridor would represent a confirmation of previous decisions since Mn/DOT's *System Plan* and the

Metropolitan Council's *Transit 2020 Master Plan* (February 2000) have selected commuter rail as the preferred transit mode operating within the Corridor. In fact, the Metropolitan Council targets the Red Rock Corridor to be the second commuter rail corridor in operation after the Northstar Corridor. The plans indicate implementation by 2010. Nevertheless, there are procedures and steps to follow to receive federal funds; in particular, completing and AA/PE document.

4.3 Definition of Baseline Alternative

FTA has eliminated separate No Build and Transit System Management (TSM) Alternatives in the new December 2000 regulations. Instead, FTA will require that single "baseline alternative" be used to evaluate projects. This baseline alternative is described as "transit improvements lower in cost than the proposed new start, which result in a better ratio of measures of transit mobility compared to cost than the no build alternative." The purpose of the baseline is to isolate costs and benefits of the proposed major transit investment.

With FTA's approval the baseline can be defined three separate ways. First, where the adopted fiscally constrained regional transportation plan includes within the corridor all cost-effective transit improvements short of the rail investment, the baseline will incorporate these investments. Second, where additional cost-effective transit improvements can be made beyond those provided in the adopted plan, the baseline will incorporate those cost-effective investments. Third, where the proposed new starts is part of a multi-modal alternative that includes major highway components, the baseline will be the preferred multi-modal alternative without the new start and other transit improvements.

Planning factors external to the new starts project and its supporting bus service must be the same for both the baseline and new start project alternatives. The defined transit and highway networks for the analysis must be the same outside the corridor for which the new start project is proposed. Policies affecting travel demand and travel costs, such as land use, transit fares and parking costs, must be applied consistently to both the baseline and new start project.

The Baseline Alternative for the Corridor is defined as the existing roadway system with Trunk Highway 61 (TH 61) as the main highway element combined with local and express bus transit service. This alternative encompasses roadway and bus system improvements along the corridor as specified in the appropriate agency transportation improvement plan and long-range transportation plan for which funding has been committed. The baseline alternative may also include low cost improvements to the baseline transportation network such as infrastructure enhancements that benefit transit operations along with improvements in transit service coverage, span and connectivity. The baseline should represent the best that can be done without implementation of the Build Alternative.

4.4 Definition of a Build Alternative

In general, a "Build Alternative" refers to one or more alternate major investment strategies in fixed guideway and/or public transit technology that are compared to a Baseline Alternative.

The Build Alternative for the Red Rock Corridor project would establish passenger commuter rail service on the existing Burlington Northern Santa Fe (BNSF) and Canadian Pacific (CP) railroad tracks between downtown Minneapolis and Hastings. Establishment of commuter rail service will require rail capacity and signaling improvements along the existing railroad. As proposed, five passenger stations would be located between Hastings and downtown St. Paul, and another five stations would be located from downtown Minneapolis to downtown St. Paul. The stations would be constructed adjacent to the tracks and each station would include bus waiting areas and passenger boarding facilities. The alternative includes a feeder bus system that would establish new bus routes and reorient existing bus service to feed the commuter rail stations. Many of the stations would include parking within the immediate station area.

4.5 Intelligent Transportation System (ITS) Applications

There is considerable activity across the country and within the Twin Cities region regarding development and implementation of ITS applications that potentially improve the effectiveness and efficiency of transit operations. Many ITS technologies can be used for almost any transit mode in operation. Potential ITS applications will be explored further in future phases of this project.

Station Area Planning 5.0

The effective design and location of stations will be a major factor in the eventual success of the proposed Red Rock Corridor commuter rail line. The commuter rail stations and supporting facilities provide the interface between the trains and the passengers who will use the service. Successful commuter rail stations need to exist compatibly within the framework of each city where they are proposed. The Technical Memorandum, Station Area Planning and Implementation Tools (January 2001) provides more information on the process.

5.1 Land Use Forum

There are a number of tools and a range of options to be pursued by the Red Rock Corridor Commission and local jurisdictions to implement commuter rail facilities and transit-oriented development around commuter rail stations. Issues such as land assembly for commuter rail facilities and transit-oriented development projects are essential prerequisites for the successful operation of a commuter rail system.

Local jurisdictions must plan for future land uses around stations. A central element of station area planning is a broad concept applied to transit projects called transit-oriented development (TOD). Commuter rail has the potential to boost land development near stations. The right combination of development and investment near stations can result in increased ridership along with vibrant neighborhoods and civic/town centers. The allocation of growth around commuter rail stations is a way to capitalize on public investments in rail transit and help produce a number of local and regional benefits. In addition, the reality of the Federal Transit Administration funding for new commuter rail projects means that communities have a better chance of receiving federal dollars if they can demonstrate TOD-related activities.

Local governments may facilitate TOD by amending long-range land use and Comprehensive Plans, regulatory ordinances and similar policy documents. The most important land use and planning tools are:

- Comprehensive plan amendments
- Station Neighborhood development plans
- Land use plans
- Zoning regulations

- Subdivision regulations
- Density bonuses
- Reduced parking requirements
- Streamlined permitting

This information was shared with over 50 community representatives from throughout the corridor in May 2000, at the Land Use Forum held at the St. Paul Park City Hall.

5.2 Station Area Planning Workshops

Station Area Workshops were conducted in the Corridor to provide each community with an opportunity to discuss the issues relating to the proposed stations and to identify opportunities to maximize the benefits of transit service in the Red Rock Corridor. Four Station Area Planning Workshops were held at the following dates and locations:

Hastings	Cottage Grove	St. Paul	Newport
June 28, 2000	September 14, 2000	September 21, 2000	September 26, 2000
6:00 - 8:00 PM	7:00 - 9:00 PM	4:00 - 7:00 PM	6:30 - 8:30 PM
Hastings City Hall	River Oaks Golf Course	Metropolitan Council	Newport City Hall

Five general stations and ten alternate locations were initially proposed along the Red Rock Corridor:

Downtown St. Paul
- Saint Paul Union Depot (SPUD)
- Kellogg Mall
- Science Museum

Southeast St. Paul
- Lower Afton Road/State Highway 61

Newport
- Historic Town Village
- Midtown
- Glen Road

Cottage Grove
- 80th Street
- Langdon Village

Hastings
- CP Depot

The station area-planning program depicted in the Process Flowchart (Figure 5.2.1) shows the steps that can be used to guide the development of commuter rail station area planning. As the diagram shows, there are several elements of the next phases that are both integrated and iterative with the Station Area Planning process. Next phases of the project will refine and further evaluate the physical and technical needs of the commuter rail system relative to the proposed station sites. Additional capacity modeling and infrastructure needs evaluation will clarify how best to accommodate commuter rail and related facilities such as park-and-ride lots within an area.

The characteristics of each station location vary widely from a major metropolitan urban area at the northern terminus (Downtown St. Paul) to a small city on the fringe of the Twin Cities at the southern end (Hastings). Similarly, the appropriate characteristics of each station varied widely as well. Tables 5.2.1 and 5.2.2 provide a summary of station area planning workshops and the major next steps.

Figure 5.2.1: Process Flowchart

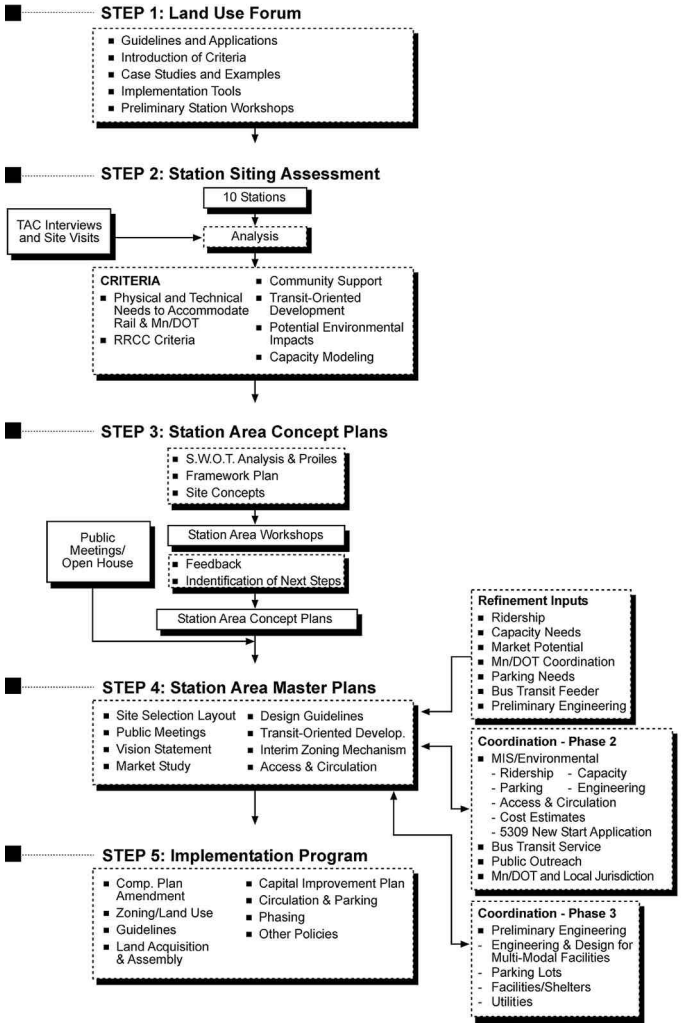


Table 5.2.1: Summary of Station Area Planning Process

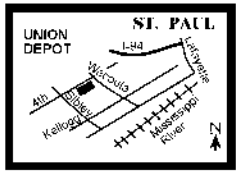
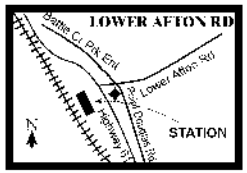
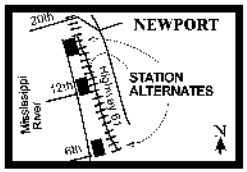
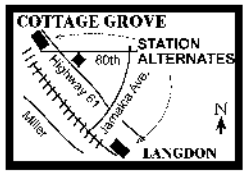
					
Concept Plans	• SPUD • Kellogg Mall • Science Museum	• Lower Afton Road/ State Hwy 61	• Historic Town Village • Midtown • Glen Road	• 80th Street • Langdon Village	• Canadian Pacific Depot
Major Findings	• Seamless transportation connection is important. • SPUD has the greatest multi-modal hub and TOD potential. • SPUD Option 1-B offers most flexibility regardless of Depot restoration.	• Addition spaces are needed at existing park-and-ride lot. • Vertical circulation and pedestrian crossing infra-structure would be required. • Serves southeast and suburban travel markets.	• Further evaluation of CP/BNSF cross-over track connection to station area. • Coordination with TH 61 improvements is essential. • City and stakeholders favor Historic Town Village site.	• City favors Langdon Village site that is also well-located to serve growth from south Cottage Grove. • 80th Street site footprint is "tight".	• Timing and phasing of adjacent property acquiistion/development. • Strong city leadership and stakeholder involvement.
Status - Station Area Master Planning	Ongoing City/County coordination and planning for downtown transit with Central, Riverview, and Red Rock Corridor projects.	Nothing to report at this time.	City has hired consultant to formulate a plan for the Historic Town Village. Applied for Livable Communities Grant.	• City received Livable Communities Grant for Langdon Village area. • Comprehensive Plan identified Langdon site.	• City applied for Livable Communities Grant for CP Depot Master Plan (2001-2002).
Next Steps - Phase Two	• Ongoing coordination with Central Corridor, US Postal Service, and high speed rail initiative. • If applicable, further evaluation of CP and BNSF track connection. • Evaluate feasibility of a second downtown station. • Identify Master Plan scope elements to coordinate with Phase Two and FTA New Starts application.	• Assess station and parking feasibility based on projected ridership. • Identify Master Plan scope elements to coordinate with Phase Two and FTA New Starts application.	• Evaluation of BNSF/CP track usage tradeoffs relative to projected ridership, railroad capacity and infrastructre cost, and access and circulation improvements. • Further assessment of preferred site with the physical and technical needs of commuter rail service and ancillary uses. • Identify Master Plan scope elements to coordinate with Phase Two and FTA New Starts application.	• Further assessment of preferred site with the physical and technical needs of commuter rail service and ancillary uses (e.g. parking needs, traffic and circulation, and bus transit service). • Identify Master Plan scope elements to coordinate with Phase Two and FTA New Starts application.	• Evaluate parking needs and optimal location for a park-and-ride lot. • Investigate Depot restoration feasibility and cost. • Evaluate moving lead track with CP. • Identify Master Plan scope elements to coordinate with Phase Two and FTA New Starts application. • Coordination of Station Area Planning with Riverfront development planning.

Table 5.2.2: Summary of Workshop Outcomes by Station Area

Next Steps	Hastings	Cottage Grove	Newport	Saint Paul
Select Station Area	City has selected site at eastern end of downtown utilizing the historic depot. City continues discussion with Mn/DOT on potential Midwest High Speed Corridor station location.	City facilitates a station selection process. Alternate station sites are located at 80th Street and in the Langdon. City Comprehensive Plan legislates Langdon area as commuter rail site.	City continues discussions with Mn/DOT on upgraded TH 61 including location of park-n-ride/commuter rail facilities. Safety and engineering issues will need to be resolved for a feasible station. Platforms may require vertical circulation connections with stations located on the west-side of tracks.	SPUD emerged from the Workshop as the preferred site with a potential for a supplemental station located near the Science Museum. SPUD location needs to be coordinated with a potential BNSF/CP Central Corridor alignment; other regional transit studies; and Midwest High Speed Rail Corridor Initiative.
Finalize station area plan	City is applying for a Livable Communities grant that will be used to finalize downtown redevelopment actions including the commuter rail station area.	Develop station area Master Plan. (City rec'd Livable Community Grant for the Langdon area.) Investigate whether the site proposed in the Comprehensive Plan is consistent with the technical and physical needs for a station and ancillary users.	As of January 2001, City has hired a consultant for TOD Master Plan at Historic Town Station.	Saint Paul PED will initiate final SPUD station area plan with Lowertown Association in conjunction with Central Corridor Study.
Adopt Station Area Plan	City is prepared to adopt a revised Station Area Plan developed during the Workshop.	City Council adopts preferred station area plan and forwards Plan to RRCC for consideration.	City Council adopts preferred station area plan and forwards Plan to RRCC for consideration.	City Council adopts preferred station area plan and forwards Plan to RRCC for consideration.
Assemble land for station areas and supporting facilities.	City has acquired parcel immediately to the west and has initiated discussion with depot owners.	City would acquire property and set aside land for commuter rail facilities.	City and/or Mn/DOT assemble land for commuter rail facilities.	City to assemble land needed for station area development and commuter rail facilities.
Station Facility Design and Construction	RRCC initiates in phase 3 and 4	RRCC initiates in phase 3 and 4	RRCC initiates in phase 3 and 4	RRCC initiates in phase 3 and 4
Begin Commuter Rail Operations	To be determined	To be determined	To be determined	To be determined
Adjoining Redevelopment	Ongoing, City could issue RFP for station area block and enter into a developer agreement.	To be determined. Either redevelopment of shopping and retail center or selected sites within the Langdon area based on a Langdon Master Plan.	To be determined. Several options…either redevelopment and preservation of historic village; Midtown site; or Glen Road intersection area. Potential to capitalize on Mn/DOT upgrades to TH61.	SPUD area is currently experiencing redevelopment. City encourages and regulates through downtown plan

Commuter Rail Service Plan 6.0

6.1 Overview

The service concept for the Red Rock Corridor is based on the Minnesota Department of Transportation (Mn/DOT) Commuter Rail System Plan (February 2000). The *System Plan* document identifies the Red Rock Corridor as a high commuter rail priority. It is proposed to be the second corridor implemented (Hastings to downtown Minneapolis), which will connect with the Northstar Corridor (the first commuter rail corridor planned to be implemented in the Twin Cities).

The service concept is used as a basis for ridership demand forecasting, capital and operations costing, capacity modeling, and preliminary fleet sizing. It is proposed that ten daily trains supported by feeder bus services would serve the 30-mile rail corridor during the A.M./P.M. peak workday commute period. Commuter trains would share BNSF/CP trackage and contribute track and signal upgrades. Stops would be provided at Hastings, Cottage Grove, Newport, Lower Afton Road, downtown St. Paul, Rice Street, Snelling Avenue, University of Minnesota, northeast Minneapolis, and downtown Minneapolis. The Red Rock service will connect to Northstar Commuter Rail service and an extended Hiawatha LRT line at a joint intermodal station in downtown Minneapolis. A connection into downtown Minneapolis from St. Paul is assumed via the BNSF-South alignment segment. This is one alignment option; another option could operate passenger trains on the Canadian Pacific (CP) Railway. Ramsey County is leading the analysis, and through their work with the Central Corridor Coordinating Committee, that will ultimately determine the preferred rail alignment between the two downtowns.

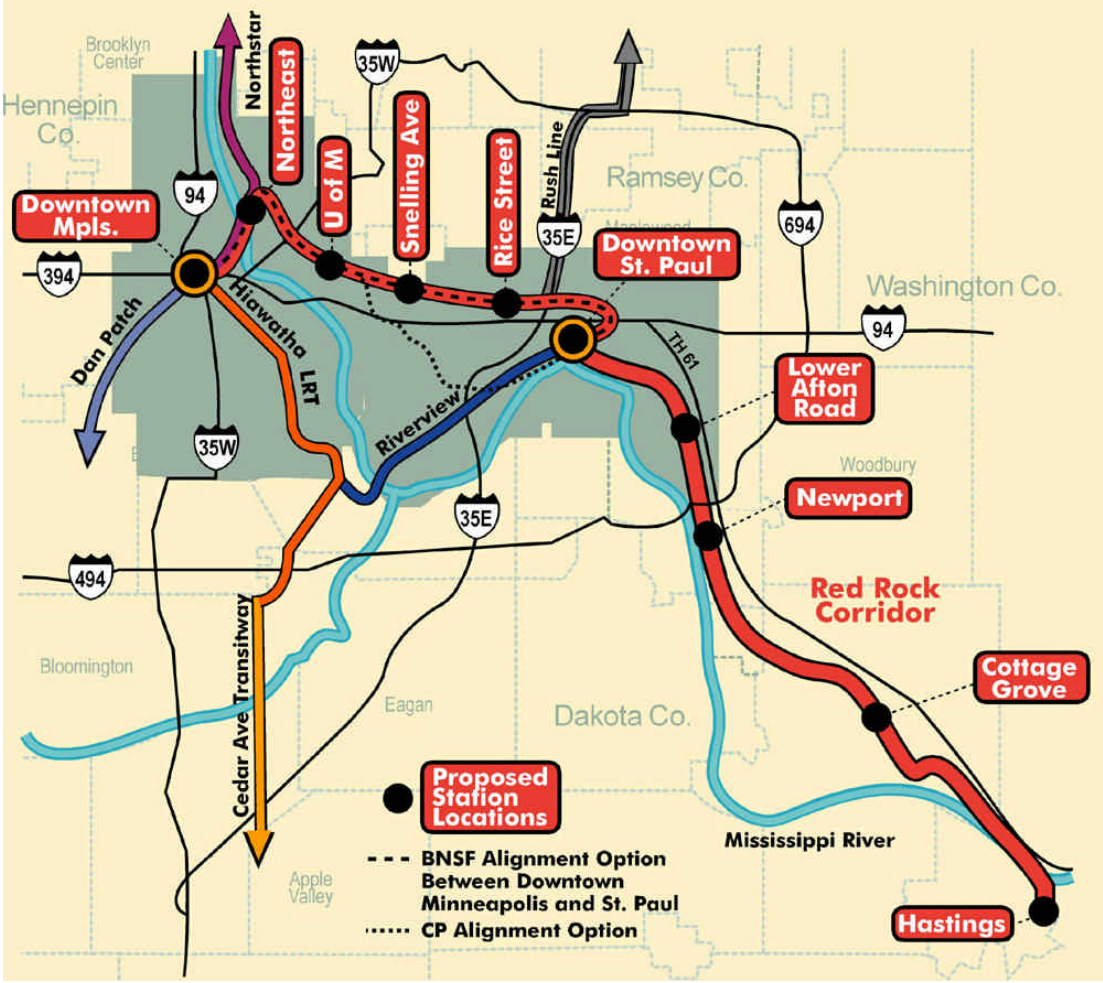
Figure 6.1.1on the following page is a map of the Red Rock Corridor Commuter Rail System and proposed locations for passenger stations.

The Red Rock Corridor Project includes two multi-modal connections between the commuter rail terminus in downtown Minneapolis and the Hiawatha LRT Project, and at the Saint Paul Union Depot "hub" with a potential convergence of bus rapid transit, LRT, and commuter rail service.

Service design is based on a policy consensus based on the Mn/DOT *System Plan* for the initial years of operation of commuter trains. The main aspects of the service design consensus are:

- Service will be provided by modern diesel-electric locomotives propelling double-decked passenger cars in push-pull operation.
- Double-deck cars of the "bi-level" type have been assumed. However, a final decision on the specific type of equipment will not be made until later in the rolling stock procurement process.

Figure 6.1.1: Red Rock Corridor Commuter Rail System Map



- An operating crew of two persons – an engineer and a conductor, will run trains. The details of an operating agreement have not yet begun.
- Americans with Disabilities Act (ADA)-compliant access to trains for persons with mobility impairments will be provided by means of small ramps deployed by conductors. Platforms will be designed with ramps and sufficient height. Platform edge will be furnished with the standard bright yellow truncated strip.

Bi-level passenger coach

Locomotive

Example of a station platform area

- The Red Rock passenger rail concept features 30-minute headways during both the A.M. and P.M. two-hour peak periods. It also includes one reverse-commute trip in each two- hour peak period.

The operating schedule or passenger service plan for the Red Rock Commuter Rail system would provide weekday peak hour operation of ten daily trips between Hastings and downtown Minneapolis (four in each direction plus one reverse-commute trip in each direction). The Central Corridor project will incorporate the Red Rock service plan into its operations plan between downtown St. Paul and downtown Minneapolis. The integration of service plans from the Northstar and Central Corridor projects may change some of the parameters presented herewith.

The following is a summary of the main service parameters for the two segments of the corridor:

	Southeast Segment	**West Segment**
Corridor Length:	• 19 miles	• 11 miles
Service pattern:	• Hastings to downtown St. Paul	• Downtown St. Paul to downtown Minneapolis
Stations:	• Hastings	• Saint Paul Union Depot
	• Cottage Grove	• Rice Street
	• Newport	• Snelling Avenue
	• Lower Afton Road	• Univ. of Minnesota
	• Northeast Minneapolis	• Downtown Minneapolis
Park & Ride Lots	• Proposed for suburban station locations. No station facility parking planned for downtown St. Paul. No station facility parking is planned for downtown Minneapolis or northeast Minneapolis stations as per the Northstar Corridor Plan. Analysis was not completed for stations between northeast Minneapolis and downtown St. Paul.	

Service Frequency:
- 10 trains per day.
- 250 weekdays per year.
- A.M. Peak Period: Four trains inbound, and one train outbound (reverse) commute.
- P.M. Peak Period: Four trains outbound, and one train inbound (reverse) commute.

Days of Operation:
- Monday through Friday during A.M./P.M. "peak hour" commuter times.
- The potential for weekend and special event service to be examined at the next phase of project.

Car Capacity:
- 150 seats per passenger car and cab car

Headways:
- 30 minutes for peak hour travel

Travel Time:
- 27 minutes - Hastings to or from St Paul
- Ten-minute layover at St. Paul Union Depot
- 26 minutes – St. Paul to Minneapolis

Average Speed:
- 44 mph

Dwell time:
- Forty-five second dwell times at intermediate stations

6.2 Initial Train Schedule Timetable

Based on the service parameters outlined above, a timetable schedule shown in Table 6.2.1 was prepared for commuter rail service between Hastings and downtown Minneapolis. The next phase of the Red Rock Commuter Rail project will formulate an integrated train schedule between Hastings and downtown Minneapolis that is coordinated with the Central and Northstar commuter rail projects and other multi-modal transit services (e.g., Hiawatha LRT; feeder bus routes).

No weekend, holiday, or special event service was anticipated at this preliminary phase of project development. The next phase of the project will examine the feasibility of off-peak, weekend, and holiday passenger train service.

As presented in the timetable, the Red Rock Commuter Rail service day begins in Hastings with a 6:00 A.M. departure that arrives at the Saint Paul Union Depot at 6:27 A.M, and after a ten-minute layover, arrives in downtown Minneapolis at 7:02 A.M. The first train set consists of a locomotive, two bi-level passenger coaches, and one cab car. After arriving in downtown Minneapolis, the RR1 becomes RR10 for a reverse-commute morning service to Hastings.

Table 6.2.1: Preliminary Commuter Train Schedule

	Morning / Westbound Schedules				PM RC from RR2	AM RC from RR1	Evening / Eastbound Schedules			
STATION	RR1 Leave	RR3 Leave	RR5 Leave	RR7 Leave	RR9 Leave	RR10 Arrive	RR2 Arrive	RR4 Arrive	RR6 Arrive	RR8 Arrive
Hastings	6:00	6:30	7:00	7:30	16:37	8:14	16:27	16:57	17:27	17:57
Cottage Grove	6:10	6:40	7:10	7:40	16:47	8:05	16:18	16:48	17:18	17:48
Newport	6:16	6:46	7:16	7:46	16:53	7:59	16:12	16:42	17:12	17:42
Lower Afton Road	6:20	6:50	7:20	7:50	16:57	7:55	16:08	16:38	17:08	17:38
St. Paul Station	6:27	6:57	7:27	7:57	17:04	7:47	16:00	16:30	17:00	17:30
St. Paul Station	6:37	7:07	7:37	8:07	17:14	7:37	15:50	16:20	16:50	17:20
Rice	6:42	7:12	7:42	8:12	17:19	7:33	15:46	16:16	16:46	17:16
Snelling	6:49	7:19	7:49	8:19	17:26	7:26	15:39	16:09	16:39	17:09
U of M	6:56	7:26	7:56	8:26	17:33	7:19	15:32	16:02	16:32	17:02
Northeast Mpls	6:59	7:29	7:59	8:29	17:36	7:16	15:29	15:59	16:29	16:59
Minneapolis	7:02	7:32	8:02	8:32	17:39	7:12	15:25	15:55	16:25	16:55
	Arrive	Arrive	Arrive	Arrive	Arrive	Leave	Leave	Leave	Leave	Leave

6.3 Demand Forecast

As part of the phase one Technical Studies for the Red Rock Corridor Rail Project, commuter rail ridership was forecast for service operating between downtown Minneapolis and an end-of-line station in Hastings. The Technical Memorandum on *Ridership Forecast* (April 2001) estimated approximately 5,900 daily weekday passengers in year 2020. No forecast was prepared for earlier years. Summarized in the table on the next page is the ridership forecast for each of the 10 stations.

Characteristics of the commuter rail ridership (home-based work trips only) include:

- Daily ridership along the Red Rock Corridor is estimated at 5,885 riders including an estimated 4,200 new ridership per weekday in year 2020. About 3,560 (60%) of total ridership are attributable to the segment of the Red Rock Corridor with an origin or destination at Hastings, Cottage Grove, Newport or Lower Afton Road.
- Transfer trips to/from Northstar Commuter Rail service represent about 15% of total daily ridership.
- Among passengers boarding commuter rail trains between Hastings and Lower Afton Road, Saint Paul Union Depot is the most popular destination station.

Table 6.3.1: Year 2020 Daily Commuter Rail Ridership

	Total Standard and Reverse Commute Including Northstar Transfers	
Stations	Boardings	Alightings
Hastings	162	162
Cottage Grove	737	737
Newport	573	573
Lower Afton	309	309
SPUD	2078	2078
Rice	109	109
Snelling	287	287
U of M	116	116
Northeast Mpls.	597	597
Mpls. CBD	917	917
Total	5885	5885

6.4 Rolling Stock

Based on the service plan and ridership forecast described above, and consideration of projected passenger loads, it is anticipated that the Red Rock Corridor commuter rail service fleet should consist of the following:

Locomotive with Head End Power Unit Engine (includes one spare)	5
Bi-Level Coach Cab Cars (includes two spares)	6
Bi-Level Coach Cars	12
Total Fleet	23

It is assumed that all trainsets will have identical consists: a locomotive, three trailers and a cab car, so that the rotation of equipment will not be affected by the makeup of any particular trainset.

This fleet will make it possible to operate four-car trains on the schedule described above in Table 6.2.1. The two spare coaches will be cab cars in order to permit normal push-pull operation to continue, even under worst case conditions of car unavailability.

Spare equipment will be located at the maintenance facility for protection of the service, and routine maintenance. The in-service trainsets will layover at either the maintenance facility (location to be determined) or the layover facility proposed in Hastings.

6.5 Maintenance and Layover Facilities

A facility for storage of the fleet, fueling and servicing, and routine maintenance and running repair of locomotives and cars, will be located at a site to be determined. The site should be conveniently located near the Corridor.

The Northstar Commuter Rail operations are proposing a 25-acre maintenance facility about a half-mile east of the Elk River Station. The Northstar facility is being proposed for a 5 locomotive and 18-coach fleet, about the same size as Red Rock. However, Red Rock has limited possibilities for sharing the Northstar shop. Given the limitations of repair operations and the long travel distances involved, it is recom-mended that the Red Rock Corridor service (or in association with other commuter rail operations) have their own maintenance shop, similar to Northstar's proposed facility. Ideally, the shop could be located adjacent to the corridor, instead of being located 30 miles away.

More intensive fleet maintenance activities will be performed externally though contractual agreements, with the region's freight railroads, with manufacturers of vehicles or components, or with companies providing railroad support services in the Twin Cities area.

The end-of-the line Layover Facility proposed for a location in Hastings will have the capacity to store trains over night for initial morning dispatch. The facility will also provide storage for off-peak periods during the day. The yard will be equipped with train electrical hotel receptacles, compressed air systems, and water for coach cleaning. A small building will provide space for offices, welfare facilities, and a storage area for inspection and cleaning equipment along with train consumables.

6.6 Capacity Improvements

The Red Rock Corridor service will be operated over the mainline tracks of the BNSF and CP Railway, both major freight facilities that also accommodates daily long-distance Amtrak service. The track is Class 4 with primarily continuously welded rail. The line is primarily double-track. Commuter rail would share the existing tracks with 20 to 60 freight trains a day. To support passenger rail service without unduly burdening the railroads ability to operate its freight service, capacity improvements will be implemented as part of the overall Red Rock Corridor Rail Project. The capacity analysis and improvements for the southeast segment presented herewith are documented in a Technical Memorandum on Railroad Capacity Modeling and Proposed Infrastructure Improvements (October 2000). The extent and scope of those improvements will be decided at a later phase of the project, but the following are typical track and signal improvements:

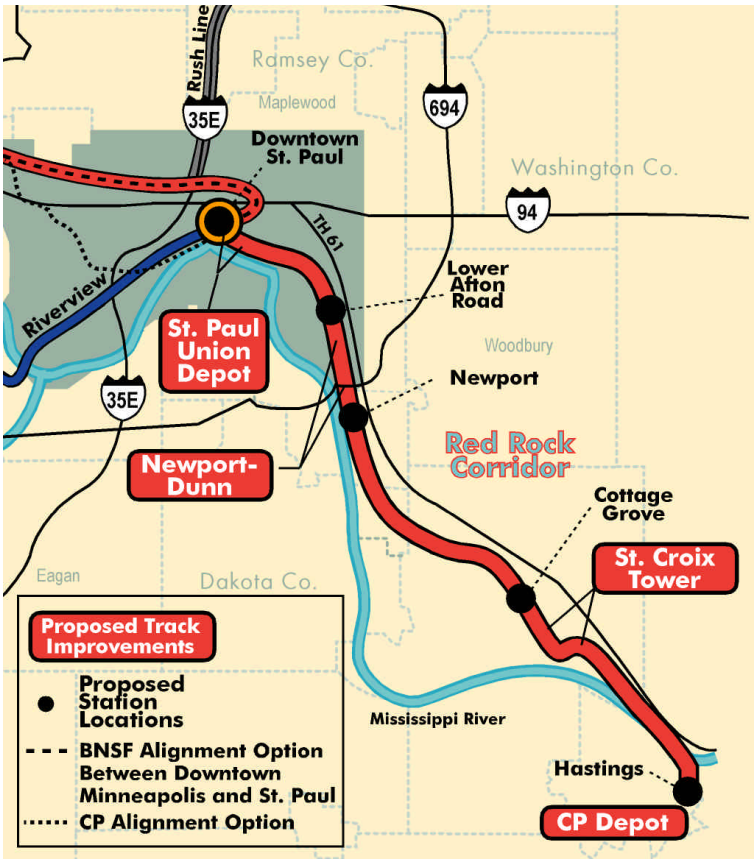
- Double tracking where single tracks now exist;
- Increasing track capacity at select locations;
- Additional crossovers;

- Sidings at select locations; and
- Signal system improvements.

Shown is Figure 6.6.1 that identifies the approximate location of the four track and signal improvements along the southeast segment near Hastings, St. Croix Tower, Newport-Dunn, and St. Paul Union Depot. Additional capacity improvements may be needed for a commuter rail alignment between downtown St. Paul and downtown Minneapolis. These proposed improvements will be detailed in the Technical Studies completed for the Central Corridor Commuter Rail Technical Feasibility Study that is directed by the Ramsey County Regional Railroad Authority. At the time of the publication of the Final Report for the Red Rock Corridor Commuter Rail Feasibility Study, current information from the Ramsey County project was not available for estimating capacity improvements between the two downtowns. Instead, the MnDOT Phase II Commuter Rail Feasibility Study (January 1999) analysis of "Route T" (the BNSF-South route between the two downtowns) was used.

Capacity improvements do not include cost estimates of right-of-way acquisition, utility modifications, and environmental mitigations, if any. In addition, due to the difficulty in forecasting freight operations, no capacity improvements could be reasonably identified at Hoffman junction located east of the St. Paul yard. All of these issues will need to be addressed in the next phase of the project.

Figure 6.6.1: Red Rock Corridor Commuter Rail System Proposed Track Improvements - Southeast Segment



7.1 Capital Costs

The total estimated cost for the Red Rock Corridor commuter rail service is $261.6 million (in 2001 dollars) and $421.8 million (in 2010 dollars) as shown in Table 7.1.1. These costs are a preliminary estimate and are subject to refinement as additional information is gathered. They do not include any costs that may be necessary for possible infrastructure improvements around stations or any other costs not specifically noted. A Technical Memorandum entitled *Estimate of Engineering and Capital Costs* (July 2001) documents the analysis and cost assumptions. In addition, the costs include potential elements that could be jointly used by other transit systems, thereby overstating the magnitude of costs attributable exclusively to the Red Rock Corridor project. Cost elements that are candidates for joint/shared use includes: Saint Paul Union Depot, Maintenance & Operations Facility, and portion of a commuter rail vehicle fleet.

Table 7.1.1: Red Rock Corridor Commuter Rail System Preliminary Capital Cost Summary Estimate

Cost Element	Total Project Cost	
	2001 Dollars	2010 Dollars
Stations, Vehicles, Maintenance & Operations and Layover Facility, Storage Track, Rail Capacity Improvements, and BNSF-South alignment.	$261,630,000	$421,850,00

Source: Parsons Transportation Group; MnDOT Phase II Report (January 1999)

Note: Costs estimated assuming 3.5% inflation from 2001-2003; 6% inflation from 2003-2010; Cost contingencies of 30%, and engineering and design costs of 25%.

The cost elements are shown in Table 7.1.2 and summarized as follows:

- The total estimated cost for commuter rail service is $421.8 million (in 2010 dollars).
- The estimated costs for proposed capacity improvements are $24 million (in 2010 dollars) from Hastings to downtown St. Paul. These are preliminary and will be finalized under Phase III Preliminary Engineering and, in part, with railroad negotiations.
- The estimated costs for capacity improvements and stations are $119 million (in 2010 dollars) from downtown St. Paul to downtown Minneapolis. These costs assume a BNSF-South alignment for commuter rail service. The costs are based on MnDOT Phase II Final Summary Report (January 1999) estimate of "route T" capital costs between the two downtowns. It should be noted that this estimate is

preliminary and under evaluation by Ramsey County Regional Railroad Authority with the Central Corridor Coordinating Committee. A Final Report on the preferred commuter rail alignment between downtown Minneapolis and downtown St. Paul is scheduled for publication in October 2001. Lastly, station costs for downtown St. Paul are estimated separately and not included; nor are station costs for the downtown Minneapolis station included since these costs are assumed by the Northstar Corridor/Hiawatha light rail transit projects.

- Total costs of a fleet of locomotives and cars for a commuter rail service from Hastings to downtown Minneapolis are estimated at $134.1 million (in 2010 dollars). A preliminary "fleet sizing" calculation was prepared based on ridership forecasts with assumptions of load allocation, passenger growth, spare equipment, and a passenger car seating capacity of 150 seats per bi-level passenger vehicle. This is consistent with the Northstar Corridor's assumption on car capacity.
- Costs for stations and associated infrastructure are estimated at $81.1 million (in 2010 dollars). These costs will be refined when detailed station siting and station area planning occur in later phases of the project.
- Cost for storage track is $1.1 million (in 2010 dollars).
- Cost for a layover facility proposed at the end-of-the-line location in Hastings is $10.8 million (in 2010 dollars). And, costs for a maintenance and operation facility are estimated at $51.6 million. This facility would function best if located within the Corridor.

Table 7.1.2: Red Rock Corridor Commuter Rail System Preliminary Capital Cost Elements

Cost Element	Project Cost	
	2001 Dollars	2010 Dollars
Stations	$50,320,000	$81,140,000
Vehicles	$83,160,000	$134,090,000
Maintenance/Operations Facility	$32,000,000	$51,600,000
Layover Facility	$6,700,000	$10,800,000
Storage Track	$660,000	$1,060,000
Capacity Improvements - Trackwork and Signals	$14,900,000	$24,020,000
Capacity Improvements & Stations - BNSF-South (1)	$73,890,000	$119,140,000
TOTAL	$261,630,000	$421,850,000

Note: (1) Assumes BNSF-South alignment between two downtowns. Based on MnDOT Phase II Final Summary Report (January 1999) for "Route T". Costs estimated assuming 3.5% inflation from 2001-2003; 6% inflation from 2003-2010; cost contingencies of 30% and engineering and design costs of 25%.

7.2 Operating and Maintenance Costs

Operating and maintenance (O&M) costs were based on preliminary service characteristics from Hastings to downtown Minneapolis.

In light of low bus ridership access to commuter stations, the O & M costs associated with feeder bus-service operations were not calculated. In addition, the proposed bus service enhancements were a route-reassignment and not an addition of new transit route service. The exception is for the City of Hastings proposed peak-hour circulator bus service to the commuter rail station. In this case operating expenses were calculated for this new bus route service.

Commuter rail service (and associated feeder bus) from Hastings to downtown Minneapolis was estimated at $7.9 million annually in 2010 dollars. Table 7.2.1 displays assumptions of system characteristics and cost factors that were used to calculate annual O & M costs.

TABLE 7.2.1: Red Rock Commuter Rail System - Annual Expenses

System Characteristics	Units	
Corridor Route-Miles	30	
Weekday Train Miles	300	
Weekday Car Miles	1,200	
Weekday Trips	10	
Annual Train-Miles	75,000	
Annual Car-Miles	300,000	
Adjustment Factors	**Year 2003**	**Year 2010**
Annualization Factor (weekdays per yr)	250	250
Inflation Rate (2003-2010) for commuter rail	3.5%	127.2%
Inflation Rate (2000-2010) for feeder bus	3.5%	141.1%
O & M Cost Factors		
Cost per Train-Mile	$41.20	$52.42
Cost per Car-Mile	$10.50	$13.36
O & M Calculations		
Annual Cost (train-miles)	$3,090,000	$3,931,500
Annual Cost (car-miles)	$3,150,000	$4,008,000
Subtotal	$6,240,000	$7,939,500
Feeder Bus		
Hastings (vehicle-miles)	8	8
Hastings O & M cost (vehicle-miles)	$2.56	$3.61
Annual Cost (vehicle-miles)	$5,120	$7,220
Subtotal	$5,120	$7,220
TOTAL COST	$6,250,000	$7,950,000

Note: Numbers are rounded to the nearest ten-thousand.
Costs derived from Northstar MIS, O & M Cost Report, December 1999;
City of Hastings for feeder bus system statistics.

7.3 Comparison to Other Commuter Rail Systems

A comparison of the Red Rock Corridor Commuter Rail system was performed by evaluating similar commuter rail systems throughout North America. The comparable commuter rail systems are located in metropolitan areas with similar demographics and growth patterns as well as systems that are similar in length and operating schedule. All the systems use modern, bi-level passenger coaches with diesel locomotives in a push-pull operation.

Red Rock's preliminary cost and ridership estimates depict that the system could operate at or above the levels of comparable commuter rail systems. Red Rock's capital cost per mile is approximately $9 million in year 2001 dollars. It is important to note that many of the capital costs could be jointly shared by other transit system in the Twin Cities region, thereby reducing the costs attributable solely to the Red Rock Corridor project. In addition, contingency costs are high for Red Rock. At future phases of project implementation, it is anticipated that contingencies will decrease as equipment and infrastructure decisions are made and specific locations for improvements are identified and analyzed. The annual Operations & Maintenance (O & M) costs for Red Rock commuter rail service are below the cost of comparable systems.

Table 7.3.1: Comparison of Commuter Rail Systems

Commuter Rail System Name	Population of Service Area	Total Length (Number of Stations)	One-Way Fare (Fare Box Recovery)	First Year of Operations	Daily Ridership First Year (Current Daily Ridership)	O & M Cost	O & M Cost
Trinity Railway Express (TRE) - Dallas	1.9 Million	10 Miles (3 Stations)	$1.00 (2%)	1996	450 (2,100)	$90 Million (initial	$6 Million (initial
Coaster - San Diego	0.7 Million	41 Miles (8 Stations)	$3.25 (17%)	1995	2,000 (4,100)	$230 Million (initial)	$12 Million (annual)
Vancouver West Coast Express	1.8 Million	40 Miles (8 Stations)	$7.00 (35%)	1995	5,000 (7,600)	$200 Million (initial)	$8 Million (annual)
Seattle Sounder	1.5 Million	39 Miles (7 Stations)	$3.00 (Zone)	2000	2,500 (2,500)	$ 9.8 Million (annual)	$ 9.8 Million (annual)

Table 7.3.2: Comparison of Commuter Rail Systems

Commuter Rail System Name	Capital Cost (Year 2001)	O & M Cost (Year 2001)	Capital Cost per Mile
Trinity Railway Express (TRE) - Dallas	$107 Million	$7 Million	$11 Million
Coaster - San Diego	$282 Million	$15 Million	$7 Million
Vancouver West Coast Express	$245 Million	$10 Million	$6 Million
Seattle Sounder	$186 Million	$10 Million	$5 Million

Note: Costs inflated assuming 3.5% inflation rate to year 2001 dollars.

8.1 Overview of Regulatory Process

Consideration of environmental issues is continuous throughout the FTA New Starts Planning and Project Development Process. This feasibility study provides a preliminary assessment of environmental constraints and opportunities that will be developed further in subsequent stages of the FTA process. FTA requires that the next steps, including Alternatives Analysis and Preliminary Engineering (1), include the environmental studies required by the National Environmental Policy Act (NEPA). FTA will determine, in consultation with local and state officials, the type of environmental documentation that is appropriate for the development of commuter rail in the Red Rock Corridor.

In addition to the NEPA process, Minnesota Statutes (Minnesota Environmental Policy Act (MEPA), Chapter 116D) also require environmental review. State rules promulgated pursuant to this law provide for a cooperative Federal-State process in which there is joint responsibility for environmental review. It is the expressed intent of these provisions that one document be developed that is in compliance with all applicable laws. Responsible Governmental Units under the Minnesota statutes are free to use the Federal documentation as the State documentation as long as the requirements of Chapter 116D.04 are met.

A number of other Federal and State statutes are integrated into the environ-mental review process. These statutes include Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act, the conformity provisions of the Clean Air Act, and the Minnesota Wetlands Conservation Act. Compliance with these laws also begins during the NEPA process.

FTA and FHWA are streamlining the environmental review process in response to TEA-21. Some of the specific provisions of streamlining that would facilitate the development process in the Red Rock Corridor are:

- Early and on-going consultation with appropriate State and Federal agencies likely to be involved in the proposed action as permitting agencies
- Documentation of consultation

(1) The planning process known as a Major Investment Study (MIS) is no longer the next step in project development. TEA-21 required the MIS to be eliminated and merged with project-level NEPA analysis. Regulations to implement this legislative mandate have been proposed by the FTA and the FHA (Notice of Proposed Rulemaking dated May 25, 2000). These new regulations also state that NEPA-level environmental analyses will not be required in plans, but that transportation agencies should effectively use the information developed in planning for later EA/EIS studies. At the present the proposed rules are in the comment period; however, the requirements of TEA-21 are legally in effect. The statutory change requiring MIS integration supercedes the existing planning regulations to the contrary.

- Identification throughout the process of points of interagency disagreement
- Activation of dispute resolution procedures, where needed
- Coordination of Federal and State environmental reviews and approvals

8.2 Potential Environmental Constraints and Opportunities

Preliminary evaluation of the study area resulted in the identification of several potential impact categories that merit further attention during future environmental review. A matrix of environmental elements relative to possible actions is provided in Table 8.2.1. Additional information can be found in the Technical Memorandum: *Environmental Analysis, Red Rock Corridor Commuter Rail Feasibility Study,* November 2000.

Wetlands

Wetlands are abundant throughout the broader Red Rock Corridor and were identified from NWI maps as possibly affected by the following commuter rail elements:

- Mainline tracks, crossovers and sidings: Newport, St. Paul Park, Denmark Township, Hastings, Langdon Village
- Station site: Cottage Grove 80th Street site

Wetland impacts are subject to the provisions of Section 404 of the Clean Water Act, the Minnesota Wetland Conservation Act (WCA) and Executive Order 11990. The environmental review will include delineation of existing wetlands; determination of functions and values; identification, analysis and sequencing of impacts; and development of conceptual mitigation and replacement plans where appropriate. Permits, if needed, would be obtained under Section 404 and WCA rules and regulations during the final design stage of the project.

Floodplains

Future environmental review must address Executive Order 11988, which requires a floodplain assessment. Some flooding of the BNSF tracks occurred in the Spring floods of 2001 in the Pigs Eye Lake area. This event significantly impacted freight service for a period of several weeks. Future environmental review will address the issues identified in the executive order:

- Potential for interruption of a transportation facility
- Potential impacts on natural and beneficial floodplain values
- Potential risks of increased flooding, and
- Potential for incompatible floodplain development

Table 8.2.1: Summary of Environmental Evaluation

Provision of	Addition Reconstruction of Mainline Track	Provision of Sidings & Crossovers	New Structures	Signals/ Grade Separations	Propulsion System	Station Development & Location	Provision of Park & Ride Facilities	Development of Feeder Bus System	Provision of Maintenance/ Layover Facilities
Land Acquisition & Displacements	○	○	○	◒ or ○	◒	○	○	◒	○
Land Use	○	◒	◒	○	◒	●	● or ○	●	● or ○
Historic Properties, Section 106	○	○	◒	○	◒	○	○	○	◒ or ○
Contaminated Properties	○	○	◒	○	◒	○	○	◒	○
Air Quality	○	○	○	● or ○	○	● or ○	● or ○	● or ○	◒
Noise & Vibration	○	◒	◒	● or ○	● or ○	○	○	○	○
Water Quality	○	○	◒	○	◒	○	◒	○	◒
Wetlands	○	○	○	○	◒	◒ or ○	◒ or ○	○	◒ or ○
Floodplains	○	○	○	◒	◒	◒ or ○	◒ or ○	○	◒ or ○
Ecologically-Sensitive Areas	○	○	○	◒	◒	◒ or ○	◒ or ○	○	◒ or ○
Endangered Species	○	○	○	◒	◒	◒ or ○	◒ or ○	○	◒ or ○
Parklands, Section 4(f)	○	○	○	◒ or ○	◒	◒ or ○	◒ or ○	○	◒ or ○
Community Cohesion	○	○	○	○	◒	◒ or ○	◒ or ○	●	◒ or ○
Environmental Justice	◒ or ○	◒ or ○	◒	◒ or ○	◒	◒ or ○	◒ or ○	●	○

● Potential Positive Impact
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○ Potential Adverse Impact

Threatened and Endangered Species

Rare plant communities having some state-listed threatened and endangered species were identified in the project corridor from Natural Heritage Information System records maintained by the Natural Heritage and Non-game Wildlife Programs of the Minnesota Department of Natural Resources).

In addition, U.S. Fish and Wildlife Service lists portions of Dakota and Washington Counties as being within the range of the Prairie bush clover *(Lespedeza leptostachya)*. The Bald eagle *(Haliaeetus leucocephalus)* is a listed species having breeding and wintering habitat in the project area. Future environmental review will determine compliance with the Endangered Species Act.

Cultural Resources (Section 106 Properties)

Twenty-four (24) historic districts or properties were identified from records maintained by Minnesota Historical Society and local preservation societies. Some are significant because they are on, or thought to be potentially eligible for, the National Register of Historic Places (Section 106 properties). Others are locally

important as determined by Heritage Preservation Commissions or similar local authorities. An unknown number of historic and, possibly prehistoric, archaeological sites are likely in the corridor and will require Phase 1 investigations and consultation with the State Historic Preservation Officer and other parties during the preparation of draft environmental documents.

It is unknown at this time whether or not any land within the corridor is owned by Native Americans. Written records indicate that Native Americans do have a close association with the Red Rock Corridor and its historic settlements. Therefore, tribal interest in future environmental review is expected.

Cultural resource evaluation, alternatives analysis and mitigation are particularly important at potential station sites in St. Paul (St. Paul Union Depot), Hastings (Canadian Pacific Depot) and Newport (Newport Train Tower). All of these sites are considered to be key opportunity sites as well as constraints on project implementation. The properties are either on the National Register or proposed for listing, and therefore, the project must comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA 1992).

Section 4(f) Lands and Sensitive Areas

In addition to cultural resource properties, parks and other public lands designated for recreational use may qualify to receive protection under 49 U.S.C. 303 and 23 U.S.C. 138 (Section 4 (f) properties). No specific sites have been identified to date that would be subject to the provisions of this law.

The Red Rock Corridor lies within an area proposed for several protective land use classifications and a designated critical river corridor. These resources are described in greater detail in the Technical Memorandum on *Environmental Analysis* (November 2000). These resources will require further investigation during future environmental review:

- Bluff Line Corridor, a "greenway corridor" proposed by the Ramsey-Washington Metro Watershed District.
- Mississippi River Corridor. The project is within the State of Minnesota Mississippi River Critical Area Corridor (MRCAC) and the Federal Mississippi National River and Recreation Area (MNRRA).
- Green Corridor Project was initiated by 1,000 Friends of Minnesota and the Land Stewardship Project in 1996.

Hazardous Materials and Contaminated Properties

The project corridor contains existing railroad infrastructure that may be leased, not purchased, and therefore, the development of commuter rail may require only minor amounts of additional land. Land acquisition would be limited to those locations where room is needed for facilities such as stations, park and ride lots, and maintenance/layover facilities.

A full Phase 1 audit of station and maintenance facility sites should be performed to determine if historic contamination is probable at these or other locations where project development might require the acquisition of additional property. This is particularly necessary at the downtown St. Paul location, which may have been contaminated many years ago by historic industrial uses in the area.

If a Phase I audit indicates strong potential for contamination, a Phase II audit involving subsurface testing of sites to determine the extent of contamination) may be warranted.

Air Quality

Air quality in the Twin Cities Metropolitan Area would generally be positively influenced by commuter rail service that attracts new transit riders or, in other words, takes passengers out of private vehicles. This transit capture reduces the Vehicle Miles Traveled (VMT) and the resultant burden of pollutants, such as ozone pre-cursor chemicals and greenhouse gases, attributable to mobile sources. On the other hand, Carbon Monoxide (CO) is a pollutant that can develop localized hot spots in situations where intersection traffic volumes increase, or signal cycles change, resulting in less capacity. Such an impact might occur, for example, at points of access to new stations or park and ride lots. In these cases, the added vehicle delay can cause an increase in CO concentrations. The U.S. Environmental Protection Agency recently reclassified the Twin Cities as being an attainment (maintenance) area for CO.

Future environmental review will be required to fully analyze any positive and negative air quality consequences of commuter rail development.

Noise

A number of sensitive receptors were identified within the Red Rock Corridor during the conduct of this feasibility study. These receptors included residential structures and institutional buildings such as schools and libraries. Consequently, future environmental review will analyze the effect of any changes in traffic volumes, bus operations or rail freight operations on noise and vibration levels. If adverse effects are found due to construction, diesel engine operation, wheel squeal, braking or mandatory warning sounds, mitigative measures will be developed and further analysis performed. In all cases, future noise levels will be compared to existing levels, applicable Federal Transit Administration impact criteria, and State of Minnesota noise standards.

Environmental Justice

Executive Order 12898 requires that federal actions, including transit development and funding, identify, address and avoid disproportionately high and adverse human health and environmental effects on minority and low-income populations. Census data will be reviewed during the environmental phase to identify such populations according to specific criteria adopted by the transportation agencies. Public involvement and outreach targeted to minority and low-income areas and/or populations will assist in the identification process. Environmental review will then indicate the impacts in the three broad categories of procedural equity, geographic equity and social equity. Impacts that fall disproportionately on the identified minority and low-income populations will be mitigated.

Land Use and Station Area Impacts

Commuter rail may have some benefit with respect to development, where cities encourage and promote such development. Commuter rail also has the potential for land use conflicts in the siting of stations, parking lots, and maintenance and layover facilities. The environmental constraints are noise, lighting impacts, and integration of modern commuter rail facilities into culturally and historically significant environments, both on-site and off-site. Therefore, there are two types of land use issues raised by this project. The first is the potential for the project to influence, either positively or negatively, future land use. The second is the direct effect of station and facility siting on existing land use in the area.

To a degree, commuter rail facilities could also generate demand for housing near station sites. Available housing within walking distance of stations is highly desirable for persons who would be served by commuter rail transit. If demand was great enough, it is possible that transit could drive the development of pockets of high-density residential development near stations to serve people wishing to walk or bike to rail transit. Transit availability can also induce less-dense residential development further from stations to serve those persons willing to drive or use a bus to access train stations.

Construction of rail stations and other rail facilities can require acquisition of property and potential relocation of residents or tenants as well as businesses and their employees. Although some possible station sites are already in public ownership, it will be necessary to add land for parking either through acquisition or through joint development.

The environmental review will analyze impact categories and arrive at conclusions on: (1) the extent to which transit development will support local and regional land use plans and policies by improving accessibility; and (2) the extent to which mitigation will offset, minimize, or eliminate adverse impacts.

Induced or Indirect Impacts

Rail systems in other parts of the country indicate that a commuter rail station will induce development only to the extent that: (1) vacant land is readily available, and (2) zoning and planned land use will accommodate the added development. Without proactive legislative actions to encourage development, a commuter rail station can have little or no indirect impacts, and contribute little to cumulative land use impacts. Environmental review will evaluate land availability and applicable zoning and land use plans to assess this contribution.

Cumulative Effects

The Council of Environmental Quality defines cumulative effects as the impact on the environment resulting from the incremental effect of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Assessing the indirect impacts and cumulative effects (ICEA) of commuter rail in the Red Rock Corridor is important to effectively managing the potential consequences of human activities on the environment. For example, one important principle is that cumulative effects analysis should be conducted within the context of each resource's threshold. This resource threshold denotes the level of stress potentially imposed upon the resource beyond which the current condition of the resource may degrade. The magnitude and extent of the effect on a resource depends on whether the cumulative effects exceed the capacity of the resource to sustain itself and remain productive. Future environmental review will identify the resources, the temporal and spatial limits to be addressed, the trends of resource loss or degradation, and the potential actions that may impact the resource, the direct, indirect and cumulative effects, and the potential for mitigation of any adverse consequences of the actions.

Economic Impacts

The station areas could experience benefits in the form of increased potential and actual retail customer patronage, and increased access and mobility. Impacts on the social character or economies of station areas are not antici-pated to be significant; possible temporary construction impacts and potential operation impacts included within the anticipated environmental review are:

- Decreased customer patronage to local businesses due to perceived and actual interrupted access during construction;
- Increased patronage of existing businesses during commuter rail operation, and development of local service/retail establishments to serve commuters who pass through the area en route to the station; and
- Increase property value and opportunities for business development due to increased access.

8.1 Overview of Regulatory Process

Consideration of environmental issues is continuous throughout the FTA New Starts Planning and Project Development Process. This feasibility study provides a preliminary assessment of environmental constraints and opportunities that will be developed further in subsequent stages of the FTA process. FTA requires that the next steps, including Alternatives Analysis and Preliminary Engineering (1), include the environmental studies required by the National Environmental Policy Act (NEPA). FTA will determine, in consultation with local and state officials, the type of environmental documentation that is appropriate for the development of commuter rail in the Red Rock Corridor.

In addition to the NEPA process, Minnesota Statutes (Minnesota Environmental Policy Act (MEPA), Chapter 116D) also require environmental review. State rules promulgated pursuant to this law provide for a cooperative Federal-State process in which there is joint responsibility for environmental review. It is the expressed intent of these provisions that one document be developed that is in compliance with all applicable laws. Responsible Governmental Units under the Minnesota statutes are free to use the Federal documentation as the State documentation as long as the requirements of Chapter 116D.04 are met.

A number of other Federal and State statutes are integrated into the environ-mental review process. These statutes include Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act, the conformity provisions of the Clean Air Act, and the Minnesota Wetlands Conservation Act. Compliance with these laws also begins during the NEPA process.

FTA and FHWA are streamlining the environmental review process in response to TEA-21. Some of the specific provisions of streamlining that would facilitate the development process in the Red Rock Corridor are:

- Early and on-going consultation with appropriate State and Federal agencies likely to be involved in the proposed action as permitting agencies
- Documentation of consultation

(1) The planning process known as a Major Investment Study (MIS) is no longer the next step in project development. TEA-21 required the MIS to be eliminated and merged with project-level NEPA analysis. Regulations to implement this legislative mandate have been proposed by the FTA and the FHA (Notice of Proposed Rulemaking dated May 25, 2000). These new regulations also state that NEPA-level environmental analyses will not be required in plans, but that transportation agencies should effectively use the information developed in planning for later EA/EIS studies. At the present the proposed rules are in the comment period; however, the requirements of TEA-21 are legally in effect. The statutory change requiring MIS integration supercedes the existing planning regulations to the contrary.

- Identification throughout the process of points of interagency disagreement
- Activation of dispute resolution procedures, where needed
- Coordination of Federal and State environmental reviews and approvals

8.2 Potential Environmental Constraints and Opportunities

Preliminary evaluation of the study area resulted in the identification of several potential impact categories that merit further attention during future environmental review. A matrix of environmental elements relative to possible actions is provided in Table 8.2.1. Additional information can be found in the Technical Memorandum: *Environmental Analysis, Red Rock Corridor Commuter Rail Feasibility Study,* November 2000.

Wetlands

Wetlands are abundant throughout the broader Red Rock Corridor and were identified from NWI maps as possibly affected by the following commuter rail elements:

- Mainline tracks, crossovers and sidings: Newport, St. Paul Park, Denmark Township, Hastings, Langdon Village
- Station site: Cottage Grove 80th Street site

Wetland impacts are subject to the provisions of Section 404 of the Clean Water Act, the Minnesota Wetland Conservation Act (WCA) and Executive Order 11990. The environmental review will include delineation of existing wetlands; determination of functions and values; identification, analysis and sequencing of impacts; and development of conceptual mitigation and replacement plans where appropriate. Permits, if needed, would be obtained under Section 404 and WCA rules and regulations during the final design stage of the project.

Floodplains

Future environmental review must address Executive Order 11988, which requires a floodplain assessment. Some flooding of the BNSF tracks occurred in the Spring floods of 2001 in the Pigs Eye Lake area. This event significantly impacted freight service for a period of several weeks. Future environmental review will address the issues identified in the executive order:

- Potential for interruption of a transportation facility
- Potential impacts on natural and beneficial floodplain values
- Potential risks of increased flooding, and
- Potential for incompatible floodplain development

Table 8.2.1: Summary of Environmental Evaluation

Provision of	Addition Reconstruction of Mainline Track	Provision of Sidings & Crossovers	New Structures	Signals/ Grade Separations	Propulsion System	Station Development & Location	Provision of Park & Ride Facilities	Development of Feeder Bus System	Provision of Maintenance/ Layover Facilities
Land Acquisition & Displacements	○	○	○	◒ or ○	◒	○	○	◒	○
Land Use	○	◒	◒	○	◒	●	● or ○	●	● or ○
Historic Properties, Section 106	○	○	◒	○	◒	○	○	○	◒ or ○
Contaminated Properties	○	○	◒	○	◒	○	○	◒	○
Air Quality	○	○	○	● or ○	○	● or ○	● or ○	● or ○	◒
Noise & Vibration	○	◒	◒	● or ○	● or ○	○	○	○	○
Water Quality	○	○	◒	○	◒	○	◒	○	◒
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Environmental Justice	◒ or ○	◒ or ○	◒	◒ or ○	◒	◒ or ○	◒ or ○	●	○

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Cumulative Effects

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Economic Impacts

The station areas could experience benefits in the form of increased potential and actual retail customer patronage, and increased access and mobility. Impacts on the social character or economies of station areas are not antici-pated to be significant; possible temporary construction impacts and potential operation impacts included within the anticipated environmental review are:

- Decreased customer patronage to local businesses due to perceived and actual interrupted access during construction;
- Increased patronage of existing businesses during commuter rail operation, and development of local service/retail establishments to serve commuters who pass through the area en route to the station; and
- Increase property value and opportunities for business development due to increased access.

Recommendations and Next Steps 9.0

The Red Rock Corridor Commission (RRCC) was established in 1998 by agreement among the county regional rail authorities, cities and towns along the Corridor. The RRCC was created to provide leadership and direction to a process that would systematically address the transportation needs of the Red Rock Corridor. The first step of the process was to undertake a Phase One Commuter Rail Feasibility Study that would evaluate the constraints and opportunities of operating commuter rail service in the Red Rock Corridor. This study, which began in January 2000, included the full analysis for the southeast segment, including the TH 61 transportation corridor, from Hastings to downtown St. Paul. The study also partially analyzed the west segment of the corridor running from downtown St. Paul to downtown Minneapolis.

Presented in the following sections is a recommendation regarding the feasibility of the commuter rail operation followed by a discussion of next steps to pursue in project implementation. Information and analyses that supports this discussion can be found in a series of Technical Memoranda completed for the Feasibility Study.

9.1 Feasibility Recommendation

Based on the results and findings of the Phase One Commuter Rail Feasibility Study, it is recommended that the Red Rock Corridor Commuter Rail Project be advanced to Phase II of implementation. This recommendation is consistent with the previous Mn/DOT recommendation of feasibility for Commuter Rail in the Red Rock Corridor contained in the *Commuter Rail System Plan* (February 2000) for the Twin Cities' region that identifies the Red Rock Corridor as a high commuter rail priority. In addition, it also supports the Metropolitan Council's Transit 2020 Master Plan (February 2000) and *Transportation Policy Plan* (December 2000) that targets the Red Rock Corridor to be the second commuter rail corridor in operation after the Northstar Corridor.

In order to assess the feasibility of the project, a "check list" of feasibility criteria was established. The analysis results from the study were then evaluated against this list of criteria leading to a positive feasibility recommendation. The definition of feasibility and the analysis results that were used to make this recommendation are presented in the following section.

9.2 Discussion of Feasibility

The goals and objectives established by the RRCC guided the study and highlighted the fact that the ability to properly engineer and construct the needed improvements is not the only factor in determining commuter rail feasibility. Determining feasibility weighs several factors such as affordability, availability of funding sources, environmental impacts, land use and development potential, ability to operate passenger rail service within an active freight corridor, and community acceptance.

- Ridership: Does the operation appear to generate a reasonable level of potential ridership when compared with other similar commuter rail operations?

  Yes. Regular commuter rail service from Hastings to downtown Minneapolis is expected to attract almost 5,900 passenger trips including approximately 4,200 new ridership per weekday in year 2020 . This figure is comparable to other commuter rail operations, ranging from 500 to 8,000 daily passengers. Almost 50 percent of the Red Rock Corridor passengers are expected to travel between the downtown St. Paul Station and stations southeast of St. Paul. Over 13 percent of the passengers are expected to travel between the downtown Minneapolis station and the stations between Minneapolis and St. Paul.

- Capital Cost: Can physical improvements be made at reasonable cost compared to other alternatives and compared to similar systems at other locations?

  Yes. The total cost for the Red Rock Corridor project was estimated at $421.8 million (in 2010 dollars). At $14 million per mile (in 2010 dollars), these costs are comparable to other commuter rail systems in North America. The costs reflect rail facility improvements that would realistically be needed in order to combine the commuter rail operation with anticipated future freight rail operation in the corridor. The cost estimates for stations, vehicles, maintenance and storage facilities, and proposed capacity improvements are comparable to those experienced in similar commuter rail projects. On the other hand, the Red Rock Corridor has some unique costs, including station costs in downtown St. Paul combined with improvements in the already congested St. Paul/Minneapolis rail corridor.

  In addition to capital costs for the Red Rock Corridor itself, the estimated capital costs for the project include facility and infrastructure costs that represent the Red Rock Corridor's share of capital costs for the regional commuter rail system. Examples of potentially shared facility costs include: St. Paul Union Depot, maintenance facility, and a portion of a regional fleet of commuter rail vehicles.

  What the above capital cost items also suggest is that there is a potential for reduced capital costs as the project moves forward and cost estimates become refined or shared/joint use of facilities are entertained.

Although the cost per mile for the Red Rock Corridor maybe higher than costs for similar commuter rail projects in other locations, the investment is still justified in relation to other alternatives for the corridor. Additional right-of-way and land are not available to further expand the capacity of TH 61 beyond the improvements to be under way in year 2002. Right-of-way is also not available for construction and operation of other modes such as light rail transit (LRT). Given the infeasibility of other alternatives, the cost of commuter rail is an appropriate major transportation investment for the Red Rock Corridor.

- Operating & Maintenance Costs: Are annual O&M costs reasonable compared to other similar commuter rail operations?

  Yes. The operating and maintenance costs were estimated at $7.9 million (in 2010 dollars). The costs are reasonable and comparable to those of other commuter rail systems.

- Operating Capacity: Can enough railroad capacity be provided in order to efficiently operate both freight and commuter rail operations?

  Yes. The Technical Memorandum on Railroad Capacity Modeling and Proposed Infrastructure Improvements reported "the results indicate that the overall freight operating performance is slightly improved with the inclusion of the simulated track improvements for the proposed commuter rail operation that it is feasible to implement commuter traffic on this corridor while maintaining required levels of freight capacity. It is therefore concluded that from a feasibility study perspective, this project should be continued." (page 15).

- Construction Requirements: Can physical improvements such as track and signals and stations facilities be made without too much difficulty that will provide adequate operational capacity?

  Yes. No fatal flaws were identified at this phase of the project.

- Environmental: Are there any environmental issues based on existing data that preclude the project?

  None were identified based on available data, but further study is needed to confirm this in subsequent phases of the project.

- Community Acceptance: Is there a general acceptance of the project in communities and neighborhoods along the Corridor?

  Yes. Elected officials' leadership, public sector staff and community and stakeholder support for commuter rail operation is high. An extensive public involvement program was carried out during Phase One. This consisted of a land use forum, two open houses, four community-based station area planning workshops, newsletters, press releases, and a internet web site with over 1200 "hits."

- Station Plans and Siting Requirements: Can stations be designed, constructed and operated that are compatible with local community policies, requirements and preferences?

  Yes. The proposed physical characteristics of stations meet the twelve planning criteria for the corridor established by the Commission in April 2000. The design and location of stations will be a major factor in the success of commuter rail. Cities along the corridor have drafted policies on commuter rail in transportation and land use elements of their Comprehensive Plan. Several cities are formulating Station Area Master Plans. Four workshops were held from June to September 2000 that provided each community with an opportunity to discuss issues about the proposed station and to identify opportunities to maximize benefits of transit service along the Red Rock Corridor.

- Financial analysis: Does it appear that adequate private and public financial resources can be generated to cover both capital and O&M costs?

  Yes. Capital and O &M cost levels are reasonable and fundable. A Technical Memorandum on Financial Analysis identified several federal and local funding arrangements that could be applied for by the Commission and used to finance the capital cost component of a "new start" commuter rail system. These funding resources could be used individually or in combination. During Phase II of project implementation an application would be submitted for federal funding consideration. Furthermore, the Regional Railroad Authorities that comprise the Red Rock Corridor Commission have sufficient tax capacity and market value of taxable property to contribute public funds.

- Fatal flaws: Is there a fatal flaw with any of the above listed criteria?

  No. The magnitude and extent of any of the above technical issues are such that they do not preclude advancement to the next phase of project development.

- Goals of the Red Rock Corridor Project. The specific goals established by the RRCC during Phase One of the project are:

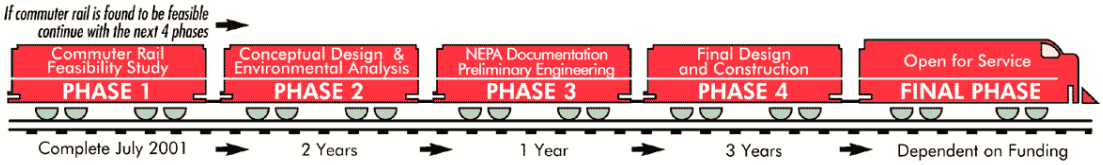
  - Improve mobility and access for personal travel and goods movement.
  - Coordinate transportation investments to provide for a seamless, integrated regional and multi-modal transportation network.
  - Encourage the implementation of transit supportive development.
  - Promote positive environmental impacts.
  - Support a stable and reliable capital and operating funding source for transportation investments.
  - Improve safety conditions for vehicular traffic and pedestrians.

- Does the project's process and results of the technical studies support the above goals of the project?

  Yes. Findings of the study are compatible with the goals established by the RRCC.

9.3 Future Implementation Phases

Completion of the Commuter Rail Feasibility Study constitutes the end of Phase I for the project. The remaining implementation phases with a proposed timeline are illustrated as follows:



Presented below is a discussion of each remaining phase with particular attention to issues and technical analysis that need to be addressed in Phase II.

Phase II – Conceptual Design and Environmental Analysis, and the Preparation of New Starts Report and Application to FTA

The next phase of the Red Rock Corridor Project will involve an additional series of technical studies and procedural applications. The activities of the Phase II Technical Study are designed to result in a submittal to the Federal Transit Administration (FTA) requesting the authorization to begin Preliminary Engineering and preparation of appropriate environmental documentation. Steps to be taken during this phase include the following.

Coordination Steps

- Resolve Integration with Central and Other Corridors. A "seamless" multi-modal transportation system needs to be achieved. The issue of integration with the Central Corridor project that is managed by the Ramsey County Regional Railroad Authority is large and important. Key decision points concern the selection of a preferred transit technology (LRT/BRT and/or Commuter Rail) and commuter rail route alignment (either BNSF-south or CP Rail-west), functionality of the SPUD (e.g., "dwell time" penalty; use and rehabilitation of the depot and concourse), railroad capacity with increases in freight and commuter rail operations, and any joint use arrangements of commuter rail vehicles and facilities (maintenance and operations facility). This should be resolved as early as possible.

- Coordination of Cumulative Passenger Rail Service. In addition to commuter rail operations, other passenger rail services such as Amtrak service to SPUD, and high-speed passenger service, are being proposed along the corridor. The timing and implications for commuter and freight operation needs to be coordinated.

- Early Coordination with the Federal Transit Administration. Early and on-going consultation with FTA and other federal agencies involved in the development and approval of commuter rail.
- Early Coordination with the Railroads. The railroads' input regarding train schedules, train volumes, operations and track improvements is essential to enable commuter rail to operate at levels that are acceptable to the freight railroads.
- Coordinate Intergovernmental and Legislative Actions. Continue to coordinate issues with Mn/DOT and State Legislature.
- Develop a Comprehensive Approach for a Public Participation Program. The purpose of this program is to support decision-making efforts and encourage an open, collaborative approach regarding a balanced transportation system along the corridor. A monthly meeting schedule of the RRCC should be maintained to review and approve technical analysis and set policy. RRCC members will be responsible for bringing information to and receiving input from their respective constituencies. To support the RRCC the following groups should be maintained to provide technical review and comment: a Project Management Team and the Technical Advisory Committee (TAC). Ongoing opportunities for public information and input should be continued through open houses and public meetings, demonstration projects, newsletters, a web page, press releases, and many public outreach presentations.

Refinement of Technical Studies

- System Integration: Define characteristics of multi-modal service integration and verify that they can be accomplished at reasonable cost. Part of this integration includes corridor-wide transit service between Hastings and downtown Minneapolis. Another example is service through Northeast Minneapolis station and "seamless connectivity" at a downtown St. Paul station. This is important to undertake during Phase II.
- Operations: The feasibility of a reverse commute needs to be verified with a quantification of any track and signal improvements needed for that operation. To insure on-time performance of commuter rail service, a smooth train dispatching transition is critical between BNSF and CP train control. In addition, proposed capacity improvements at the Hoffman junction (located southeast of the St. Paul yard near Pig's Eye Lake) needs to be modeled and quantified.
- Future Freight Train Movements: The number and frequency of freight train operations and volume along with railroad improvements need to be forecast further into the future and analyzed for commuter rail operations. The data needs to be scrutinized and accepted by both the railroads and the Commission.

- Refine Capital and O&M Costs. Cost refinements will be made at each Phase of project implementation. During Phase II project cost estimates will be refined as better definitions for track upgrades, station locations, and service schedules become available. Costs estimates need to be prepared for right-of-way acquisition, utility modifications, and environmental mitigation, if any, although these elements will be further refined at the Phase III (Preliminary Engineering).

- Refine Ridership Forecasts. Ridership forecast refinements include incorporation of results from the year 2000 travel behavior inventory and the latest Metropolitan Council socioeconomic data. Ridership forecasts should be prepared for years 2020, 2010, and anticipated first day of operation. Special event, off-peak weekday, and weekend ridership potential should also be estimated. Sensitivity analysis could be prepared based on changes to passenger service schedule (e.g, headways and weekend service addition) and station locations.

- Conduct Conceptual Engineering. Issues of right-of-way, track and signal improvements, station siting and commuter rail facility location are a few of the items to address with engineering. Conceptual engineering support will define the physical and operational aspects of the project sufficiently to assess environmental and transportation systems effects.

- Right of Way Acquisition: Define ROW acquisition requirements and establish timing for early action to minimize cost.

- Siting of Station Location and Design: Issues and concerns expressed in work to date need to be addressed and resolved. Particular attention and effort will be needed for the question of whether the downtown St. Paul station will be located at the SPUD or elsewhere, and for the City of Newport station location, which has yet to be determined. However, all of the proposed station locations have unique challenges and issues regarding station facility siting and community development. The next phase of work will need to solidify station locations by preparing Station Area Master Plans. It is expected that diminishing degrees of physical and engineering refinement of station infrastructure, facilities, and access will continue into Phases III and IV.

- Siting of Commuter Rail Facilities: The location, function and size of three types of facilities need to be solidified during Phase II: an end-of-the-line layover facility, a layover facility in downtown Minneapolis, and a maintenance and operations facility at a location to be determined. The latter two facilities dovetail with broader issue of system coordination. The potential joint use arrangement for a maintenance and operations facility also needs to be considered. Detailed examination of the capacity, operational and design configuration of these facilities will be undertaken within Phase III - Preliminary Engineering.

Track river flooding: The extent and frequency of the Mississippi river flooding railroad track as occurred in April 2001 are unknown. Assessment of the potential for flooding and associated issues would need to be studied in Phase II and elaborated as part of the preliminary engineering process of Phase III.

Procedural Applications

- Conduct A Transportation Alternatives Analysis. Based on new FTA guidelines, Phase II should include the development a set of alternatives and evaluation criteria consistent with Red Rock Corridor Commission's goals and objectives for the corridor. The full-range of alternatives can be evaluated per NEPA requirements and screened based upon sound evaluation criteria and responses.
  - Develop a "baseline" alternative consistent with recent FTA guidance (49 CFR Part 611, December 2000). The baseline alternative provides the base condition of lower cost improvement from which environmental impacts can be compared with the preferred alternative. The baseline alternative is best described as transit improvements that are lower in cost than the proposed new start (e.g, commuter rail), which result in a better ratio of measures of transit mobility compared to cost than the no-build alternative. That is, the "best you can do" without the new start investment. The purpose of the baseline comparison is to isolate the incremental costs and benefits of the proposed major transit investment. At a minimum, the baseline alternative will include all reasonable cost-effective transit improvements short of investment in the new start project.
  - Adopt a Locally Preferred Transportation Investment Strategy included in a fiscally constrained plan. Advance selected alternatives for consideration in the environmental documentation.
- Prepare A New Starts Report (49 CFR Part 611, December 2000).
  - Determine what information is needed to prepare report.
  - Identify actions or analysis that can be taken to improve eventual FTA rating of New Starts application.
  - Carry out planning and analysis necessary to prepare New Starts Report (NSR).
  - Prepare a Project Management Plan to guide the project through the preliminary engineering process. The Project Management Plan will identify funding requirements, and explain the funding capability and financial capacity to carry out the preliminary engineering.
  - Identify funding requirements and sources as required in NSR guidelines.
  - Submit to FTA and request authorization to proceed with preliminary engineering and environmental work (EA or EIS).

- Monitor Legislation for Federal Transportation Spending Reauthorization. Transportation Equity Act for the 21st Century (TEA 21) is scheduled to begin a new phase of funding transportation investments on October 1, 2003. The national campaign for federal funding to extend TEA-21 has already begun. TEA-21 funding is very competitive, and the Red Rock Commuter Rail Project should make every effort to meet an estimated March 2003 date for legislative appropriation. By that date, the Red Rock Project should have detailed cost information for a commuter rail system and financial commitment plan.

Phase III – Preliminary Engineering, Environmental Documentation, and Advanced Corridor Plan

- Conduct Preliminary Engineering. Issues of right-of-way, track and signal improvements, station siting and commuter rail facility location are a few of the items to address with engineering. Preliminary engineering will define the physical and operational aspects of the project sufficiently to assess federal environmental requirements and transportation systems effects.
- Prepare Environmental Documentation. A NEPA Environmental Impact Statement or an Environmental Assessment with supplemental environmental investigation of critical elements will be required in conjunction with the Alternatives Analysis. FTA will determine, in consultation with local and state officials, the type of environmental documentation that is appropriate for the development of commuter rail in the Corridor.
  - Undertake Scoping Process and meetings to guide the analysis.
  - Prepare a Scoping Summary Report.
  - Determine whether EIS or EA is warranted.
  - Prepare draft Environmental Documentation.
  - Review and Comment period on environmental document with public meetings.
  - Issue final environmental documentation
  - Obtain Record of Decision (ROD)
- Prepare an Advanced Corridor Plan. State statutes (MS 174.86) require the submission of the physical design component of the Advanced Corridor Plan to the governing body of all cities, counties and towns along the corridor, and conduct a public hearing on the Plan. The physical design component is defined as the location and termini of the proposed commuter rail, maintenance facility location, safety improvements, station location and design, related park and ride, parking, and other transportation facilities. As part of the Advanced Corridor Planning process, cities and towns must approve, approve with condition or disapprove with amendments, the location and design of the

station proposed to be located in their city or town. The Advanced Corridor Plan will then be submitted to the Metropolitan Council and Area Planning Organization to determine if the Plan is consistent with the approved Development Guide.

Phase IV – Final Design and Construction

- Commence with final design.
- Negotiate with FTA and obtain full funding grant agreement (FFGA)
- Complete final design and preparation of bid packages.
- Advertise project for bidding.
- Award contracts for construction and rolling stock.
- Procure vehicles – locomotives, cab cars and passenger cars.
- Complete construction and vehicle acquisition.
- Carry out preliminary testing.

Final Phase – Startup and Open for Service

- Carry out testing and system startup.
- Commence revenue operation.