

4.0 Passenger Rail

For most of the last century, east-west passenger rail service was available on routes through both northern and southern Montana. The Empire Builder continues to serve in the north, but no passenger rail service has been available in southern Montana since the late 1970s.

This section of the 2010 Montana State Rail Plan examines the history and current function of passenger rail in the State, discusses the reinstatement of passenger rail service among the southern Montana cities once served by the North Coast Hiawatha, and summarizes current Federal funding for passenger rail development.

4.1 MONTANA PASSENGER RAIL HISTORY

North Coast Hiawatha

At the beginning of the 20th century, the Northern Pacific Railroad operated passenger rail service between St. Paul, Minnesota and the Puget Sound region of Washington State; and inaugurated one of the first named passenger trains, the North Coast Limited.⁴⁸ The Northern Pacific line traversed Bismarck, North Dakota to the east and first entered Montana at Glendive; and passed through Billings, Livingston, Bozeman, Butte, and Missoula within the State; and continued to Sandpoint, Idaho and Spokane and Seattle, Washington.⁴⁹

When most passenger rail operations were turned over to the National Rail Passenger Corporation (Amtrak) in 1971, Amtrak retained this service, but reduced it to three trains per week on the route and renamed it the North Coast Hiawatha.⁵⁰ Service on the North Coast Hiawatha was discontinued in 1979, due to national route rationalization required by the United States Congress (“Congress”) in 1978.

Since that time, Montana residents have been discussing how to get service reinstated. The Fiscal Year (FY 2001) Federal transportation appropriation bill required a study of reinstating service through southern Montana, but the study

⁴⁸In 1911, existing service on the North Coast Limited was extended southeast to Chicago.

⁴⁹History of the North Coast Limited is found in Kuebler, William R., Jr., *The Vista-Dome North Coast Limited: The Story of the Northern Pacific Railway’s Famous Domeliner*, Oso Publishing, 2004.

⁵⁰This name referenced the Olympian Hiawatha, operated by the Chicago, Milwaukee St. Paul, and Pacific Railroad just to the north of the Northern Pacific line in Montana, serving Three Forks, Butte, and Missoula. The Chicago, Milwaukee, St. Paul, and Pacific Railroad went bankrupt in 1980.

was abandoned in FY 2002 amidst Amtrak's financial difficulties, which nearly resulted in its bankruptcy. In October 2008, Congress once again directed a study of the reinstatement of the entire North Coast Hiawatha route from Chicago to Seattle through southern Montana. The results of this study were presented to Congress in October 2009; they are discussed later in this section.

Empire Builder

In 1929, the Great Northern Railroad began the Empire Builder passenger train service named in honor of Great Northern founder James J. Hill, whose nickname was "The Empire Builder." This service operated from Chicago to Montana over the Chicago, Burlington, and Quincy railways. The Empire Builder operated through Montana with daily service. In Spokane, the train was split into two trains to serve Portland, Oregon and Seattle, operating over the Spokane, Portland, and Seattle Railway. After World War II, Great Northern operated streamlined new cars on the route and, in 1955, added new full coach dome cars for viewing the scenery.⁵¹

In 1970, the Great Northern, Chicago, Burlington, and Quincy and the Northern Pacific railroads merged to form the Burlington Northern Railroad. When Amtrak took over daily operations of most passenger routes across the country in 1971, it retained the Empire Builder, but eliminated the Spokane-Portland leg of the service. In 1977, frequencies were reduced to four times a week due to equipment shortages. In 1979, frequencies were further limited to three times a week, when long-distance trains were reduced for financial reasons (at that time, the North Coast Hiawatha was eliminated). In 1981, the Portland-Spokane service was reinstated and, in 1982, frequencies were increased to daily. In 1995, service was reduced to four times a week again, but restored to daily in 1999.

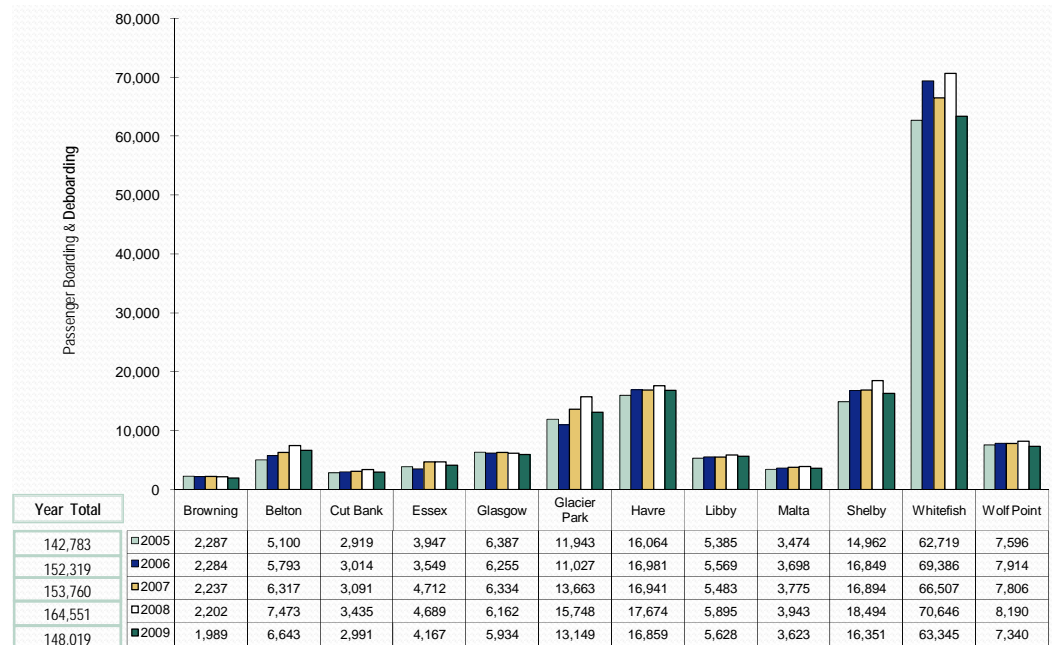
4.2 CURRENT PASSENGER RAIL SERVICE

Empire Builder Patronage

The Empire Builder was always a popular train during its pre-Amtrak days, and remains one of Amtrak's most popular long-distance trains. In 1983, after it resumed daily service, total ridership in Montana (measured by boardings and alightings at Amtrak stations in the State) was 110,783. By 1999, ridership increased over 30 percent to 163,412. Recent Amtrak ridership information shows that total ridership has ranged from 142,783 in 2005 to 164,551 in 2008, and 148,019 in 2009. Figure 4.1 shows the ridership at each Amtrak station in Montana.

⁵¹Historical information on the Empire Builder can be found on the following web sites (<http://www.american-rails.com>, the Great Northern Railroad Historical Society <http://www.gnrhs.org>) and Yenne, Bill, "Great Northern Empire Builder," MBI, 2005.

**Figure 4.1 Montana Station Ridership on the Empire Builder
2005 to 2009 Calendar Years**



Source: Amtrak.

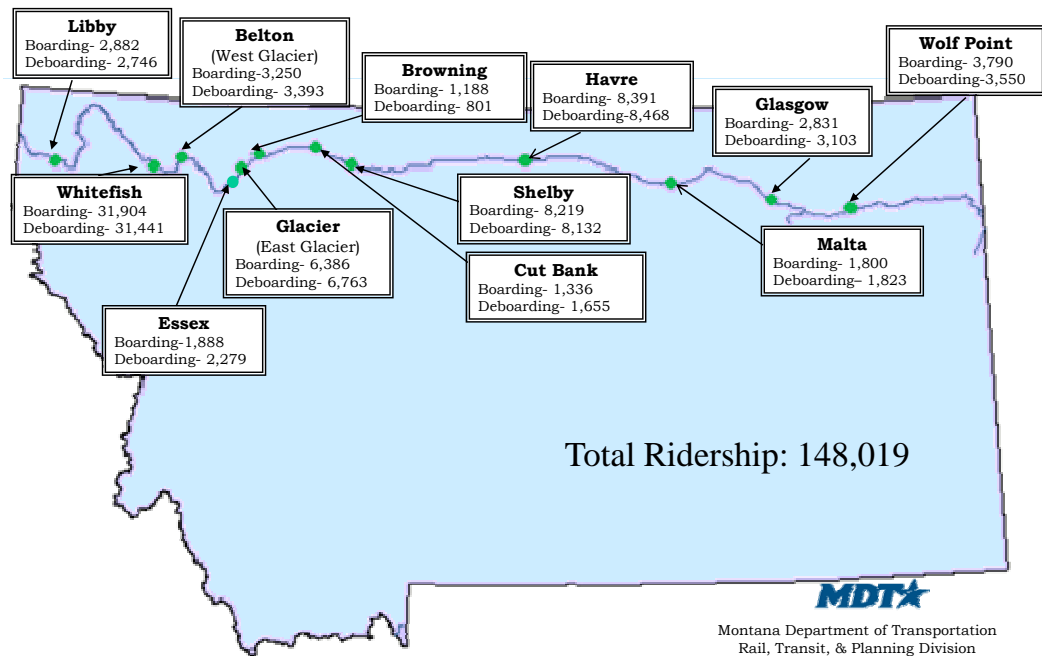
The busiest stations are associated with Glacier National Park (Whitefish, East Glacier Park) and Shelby (connecting to Great Falls and Helena via Interstate 15) and Havre. Figure 4.2 illustrates 2009 ridership (on and off the train) by station along a map of the route through Montana.

An analysis of the strength of the Empire Builder noted the significance of long-distance riders to the success of the line:

“Interestingly, Empire Builder passengers traveling more than 1,000 miles make up only 23 percent of the train’s ridership – but they generate 63 percent of the revenue. The 47 percent who travel less than 500 miles provide only 20 percent of the revenue. And sleeping car passengers, who pay premium fares, provide 43 percent of the Builder’s revenues, despite making up only 16 percent of its passenger list.”⁵²

⁵²These figures come from an article by Fritz Plous, *Amtrak’s Empire Builder: A “Multi-Tasking, Mobility Machine” that Baffles the “Experts,”* in the *Midwest Rail Report*, Vol. 12, No. 3, Midwest High-Speed Rail Association, August 2004.

Figure 4.2 Montana Amtrak Ridership Calendar Year 2009



Source: Amtrak.

Empire Builder Operating Statistics

In FY 2009, the Empire Builder had the highest ridership of all of Amtrak’s long-distance trains, 515,444, as well as the highest revenue, \$59.7 million. Nationally, this train was the second best performing long-distance train, as measured by the operating loss per passenger mile.⁵³ Overall, the FY 2009 operating revenues for all long-distance trains average about 54 percent of the total operating costs for all routes. The Empire Builder’s performance exceeded this average, as its FY 2009 revenues of \$59.7 million covered 65 percent of the route’s total operating costs.

During the most recent years for which data is available, the Empire Builder also had good on-time performance (OTP) on its BNSF-owned rail lines. The Empire Builder had an average OTP of 75.7 percent in FY 2009, after having the second highest OTP of 68.8 percent and 73.4 percent in FY 2008 and FY 2007, respectively.

⁵³Operating loss per passenger mile is calculated as the difference between operating expense and operating revenue divided by the number of passenger miles. Operating expenses include direct expenses directly attributable to train operations (crews, fuel, equipment maintenance, ticketing, route stations) and indirect expenses shared by all Amtrak routes (shared stations, training and supervision, police and safety, insurance, marketing, yard operations). Revenues include ticket revenue and sleeper car revenues.

In comparison, average long-distance train OTP was 75.2 percent in FY 2009, 54.2 percent in FY 2008, and 41.6 percent in FY 2007.⁵⁴

Economic Benefits of the Empire Builder

During Amtrak's financial difficulties from 2001 to 2003, Montana officials sought to demonstrate the value of the Empire Builder service to the State to stave off possible reduction or loss of service, as was being contemplated by Congress. A 2003 study conducted for the Montana Department of Transportation (MDT), Montana Department of Commerce, and the Montana Department of Agriculture found the following benefits to the State from the Empire Builder service:⁵⁵

- The Empire Builder is perceived as an essential transportation service. Many rural Montana residents depend on it for medical appointments, sending children to college and traveling to larger cities along the route for shopping.
- Direct spending in the State by nonresident Amtrak passengers and by Amtrak is estimated at \$5.3 million to \$5.7 million annually.
- This direct spending creates \$0.51 million in personal income for Montana residents, and results in an addition of \$135,000 annually to state and local tax revenues.
- Rail travel using the Empire Builder in Montana avoids the higher personal and societal costs borne through travel by other modes, creating another \$7.6 million in annual benefits (auto costs avoided, lower accidents, reduced highway maintenance).

The study also addressed the relative isolation of Montana's communities along the Empire Builder route. Unlike cities in southern Montana, which are connected by Interstates 90, 94 and 15, the cities along the Empire Builder route are only connected by a two-lane highway (U.S. Highway 2). Three Montana cities along the Empire Builder route are among the 105 locations nationwide supported by the Federal Essential Air Service program, which provides financial support for commercial air service to smaller airports. However, these services are usually more expensive than the train service (for example, a one-way airline ticket from Havre to Spokane, Washington, was quoted at \$460, while a comparable one-way train ticket was \$89 with approximately the same travel time).⁵⁶ The cities along the Empire Builder route with Essential Air Service have much higher Amtrak ridership than annual airline boardings, as shown in Table 4.1.

⁵⁴Amtrak, *September 2009 Monthly Performance Report*, page E-7.

⁵⁵*Analysis of the Economic Benefits of the Amtrak Empire Builder to Montana*, R.L. Banks and Associates, July 2003, pages 1-2.

⁵⁶Three legs of the one-way flight: Havre to Billings, Billings to Denver, and Denver to Spokane, prices and travel times listed on <http://www.travelocity.com>. Amtrak fares listed on <http://www.amtrak.com>.

Table 4.1 Aviation and Rail Passengers in Montana Cities with Essential Air Service and Amtrak Service
2009

City Airport/Station	Amtrak Boardings/Alightings	Airline Boardings/Deplanings
Glasgow	5,934	1,148
Havre	16,859	729
Wolf Point	7,340	900

Sources: Amtrak ridership figures, MDT 2009 Airport Boardings Report, <http://www.mdt.mt.gov/publications/docs/datastats/boardings-2009.pdf>.

4.3 POSSIBLE EXPANSION OF PASSENGER RAIL SERVICE IN MONTANA

Passenger rail advocates, Montana legislators, and MDT officials have been discussing the possibilities of resuming passenger rail service to southern Montana, which includes many of the State's largest population centers and was once served by the North Coast Hiawatha. As part of this effort, MDT asked Amtrak to develop more detailed information on the prospective costs of reinstating service along segments of the southern route in Montana.

As part of the overall discussion, it is important to consider the circumstances under which Amtrak is likely to consider resumption of former passenger rail services or initiation of new services. Generally, Amtrak is authorized and willing to provide intrastate passenger rail service if a state government is able to provide capital costs for infrastructure and equipment, and to pay the difference between operating expenses and revenues on an annual basis. Many states support these kinds of services, and some state-supported routes are among Amtrak's more financially successful services.

Amtrak's legacy routes from its 1971 creation, generally referred to as long-distance trains, are supported by Federal appropriations for Amtrak operating expenses. Despite efforts during Amtrak's history to seek state contributions to cover the financial shortfalls of these legacy routes, states have not been required to financially sustain these trains. Periodically, Congress has sought to reduce Federal subsidies by setting goals of operating self-sufficiency or by directing Amtrak to revise or eliminate routes, resulting in cuts to long-distance train services. In 2008, Amtrak was granted authority to improve the financial performance of its long-distance trains,⁵⁷ and to begin new services or expand existing

⁵⁷Section 210 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) adds requirements that Amtrak adopt "Performance Improvement Plans" to improve the financial performance of long-distance trains, beginning with the lower third-worst performing trains.

services.⁵⁸ However, Amtrak is unlikely to add new long-distance services, which would increase its overall operating losses, regardless of whether those new services might have stronger financial performance than other long-distance trains.

Amtrak Study for Montana

Amtrak's 2010 study for Montana analyzes two route segments: the corridor between Billings and Missoula (considered in greater depth, and referred to in this text as the Tier 1 analysis); and a longer corridor that includes the Billings-Missoula segment extending from Williston, North Dakota to Sandpoint, Idaho (referred to as the Tier 2 analysis).⁵⁹

Subsequent to MDT's request for the Montana study, Amtrak was directed by Congress to study the resumption of the Chicago to Seattle North Coast Hiawatha service. That analysis is also considered in this report.

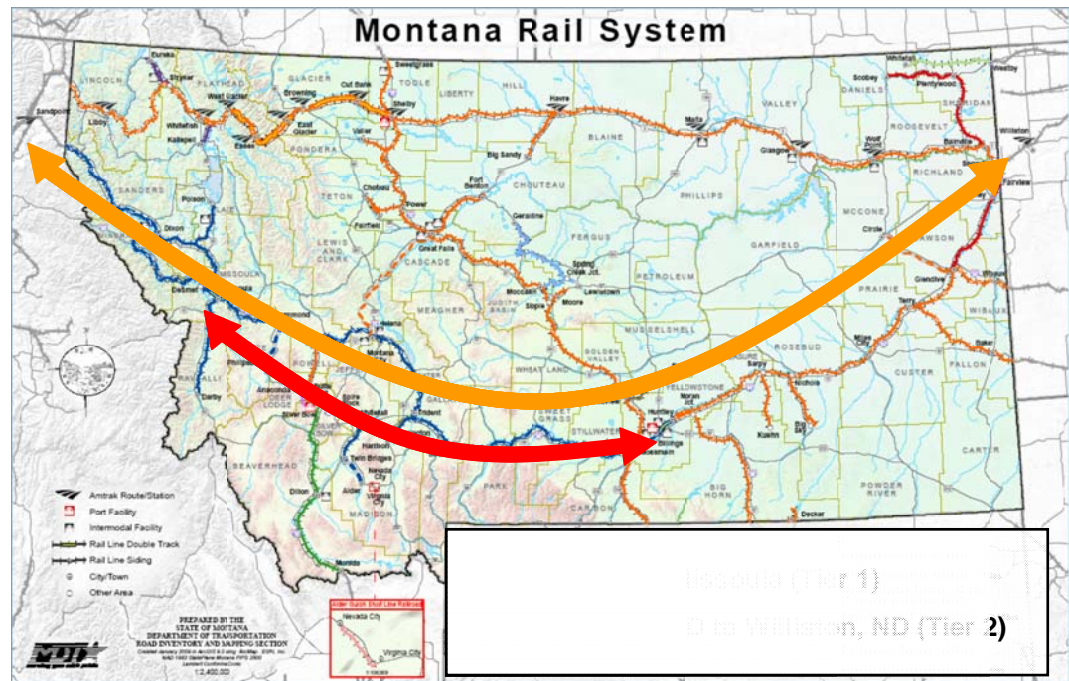
The two-tiered study of new passenger rail service in Montana provided by Amtrak addresses:

1. Capital and operating costs, ridership, and revenue for intercity passenger rail service from Billings to Missoula along routes operated by the Montana Rail Link (MRL), via Bozeman, Livingston, and Helena (Tier 1) (see Figure 4.3).
2. Route assessment and implementation of intercity passenger rail service from Williston, North Dakota to Sandpoint, Idaho over routes operated by the Yellowstone Valley Railroad, BNSF, and MRL (Tier 2).

⁵⁸Section 208 of PRIIA requires Amtrak to adopt a methodology for making such route decisions, a methodology devised by a third-party contractor to the Federal Railroad Administration (FRA).

⁵⁹Amtrak Montana Report, 2010: Feasibility and Route Assessment.

Figure 4.3 Amtrak Analysis
Two Tiers



Billings to Missoula (Tier 1)

Amtrak’s Tier 1 analysis for developing passenger rail service between Billings and Missoula follows a somewhat similar analysis that was done for the 2000 State Rail Plan Update. The analysis includes a schedule scenario (based on previous North Coast Hiawatha service), identifies estimated capital and operating costs, and presents a discussion on possible revenues.

Infrastructure Capital Needs

Amtrak studied the underlying condition of the existing rail lines on the Montana Rail Link (MRL) railroad from Billings to Missoula. The majority of this route is composed of continuous welded rail maintained to high standards. Other details of the route are as follows:

- **Billings to Spurling (18 miles).** More than one-half of this double-tracked route is controlled by Automatic Block Signaling (ABS) or Track Warrant Control (TWC), while the remainder is controlled by Centralized Traffic Control (CTC).⁶⁰ The MRL’s largest rail yard, the Laurel Yard, is located in

⁶⁰These different kinds of signal systems are described in Section 3.2. The FRA rules require block signal systems for passenger rail service between 59 and 79 mph, and more sophisticated systems for higher speed services. Installing signal systems can be an expensive capital cost of implementing passenger rail service on nonsignaled railroads.

this subdivision. It is controlled by yard rules and lacks a signaled main line through the yard. Therefore, passenger trains would be delayed by switching operations and slow operating speeds.

- **Spurling to Helena** (221 miles) – This single-track railroad (with 8,600-foot sidings approximately every 9.5 miles) is completely controlled by CTC. The route poses a number of operating challenges as a result of the terrain: 258 curves, some of them up to 10 degrees, 9 miles along the Missouri River, a 1.9 percent grade up and down the Bozeman Pass, and a 1 percent grade between Townsend and Winston. The curves and grades affect the maximum operating speed for any passenger train.
- **Helena to Missoula** (119 miles) – This single-track railroad, with 9,900-foot sidings approximately every 9.5 miles, is also completely controlled by CTC. This route has an even steeper mountain grade of 2.2 percent to the Continental Divide with slow speeds up and down the grade, 152 curves, and 4 major tunnels, all which affect operating speeds.

Because the overall condition of the track is good and the route is controlled by CTC (reducing signal improvement costs), infrastructure costs are estimated to be \$28.25 million (including a 30 percent contingency), about \$80,000 per train route mile.

Other Capital or Up-Front Costs

- **Rolling Stock** – Amtrak estimated use of a four car consist, with a new locomotive and a nonpowered control car (a cab car with coach seating and an engineers' compartment) for push-pull operations, one coach, and a diner/lounge car. Given the lack of available rail cars in Amtrak's inventory, the 2010 Amtrak Report assumes that all the rolling stock would need to be purchased; namely, four sets for the two daily routes each way, and one spare set for maintenance purposes and to allow cycling on the four trainsets. The total capital cost for these locomotives and cars is estimated at \$95 million.
- **Positive Train Control** – The Rail Safety Act of 2008 requires positive train control (PTC) technology on main line tracks (carrying more than 5 million gross tons) over which poison-by-inhalation or toxic-by-inhalation hazardous materials are carried, or which carry passenger trains. Positive train control refers to technology that is capable of preventing train-to-train collisions, over-speed derailments, and casualties or injuries to roadway workers (e.g., maintenance-of-way workers, bridge workers, and signal maintainers), operating within their limits of authority, as a result of unauthorized incursion by a train. The FRA has yet to adopt final regulations for implementation of PTC, but the technology is likely to be required on all rail lines with passenger rail traffic, regardless of freight volumes. The Tier 1 analysis estimates the cost of PTC implementation at \$33 million.

- **Mobilization Costs** – Amtrak would need to hire employees to operate the new service, including new locomotive engineers that need extensive certification and training in operations. Amtrak estimates these hiring and training costs to be \$2.8 million.

These total capital and up-front costs are summarized in Table 4.2; station costs are not addressed in the Tier 1 analysis and will be discussed separately in the next sections.

Table 4.2 Capital and Up-Front Costs for Tier 1 Route

Cost Element	Cost (\$)
Infrastructure improvements	28,250,000
Rolling Stock	95,000,000
Positive Train Control	33,000,000
Mobilization	2,800,000
Total	159,050,000

Source: Amtrak Montana Report, 2010: Feasibility and Route Assessment.

Tier 1 Route Stations

The study team examined the condition of possible stations for passenger service along the Tier 1 route. Below are station descriptions for locations in Billings, Livingston, Bozeman, Helena, and Missoula.

Billings

Figure 4.4 includes a variety of photos of the station building in Billings, Montana, which is located on Montana Avenue, between North 24th Street and North 23rd Street. The station building is located near downtown in a commercial area; and is currently renovated for commercial use, office space, restaurants, or bars. The building itself is in very good condition and has on- and off-street parking. It is used for city functions and fundraisers, and could accommodate a return of passenger rail functions.

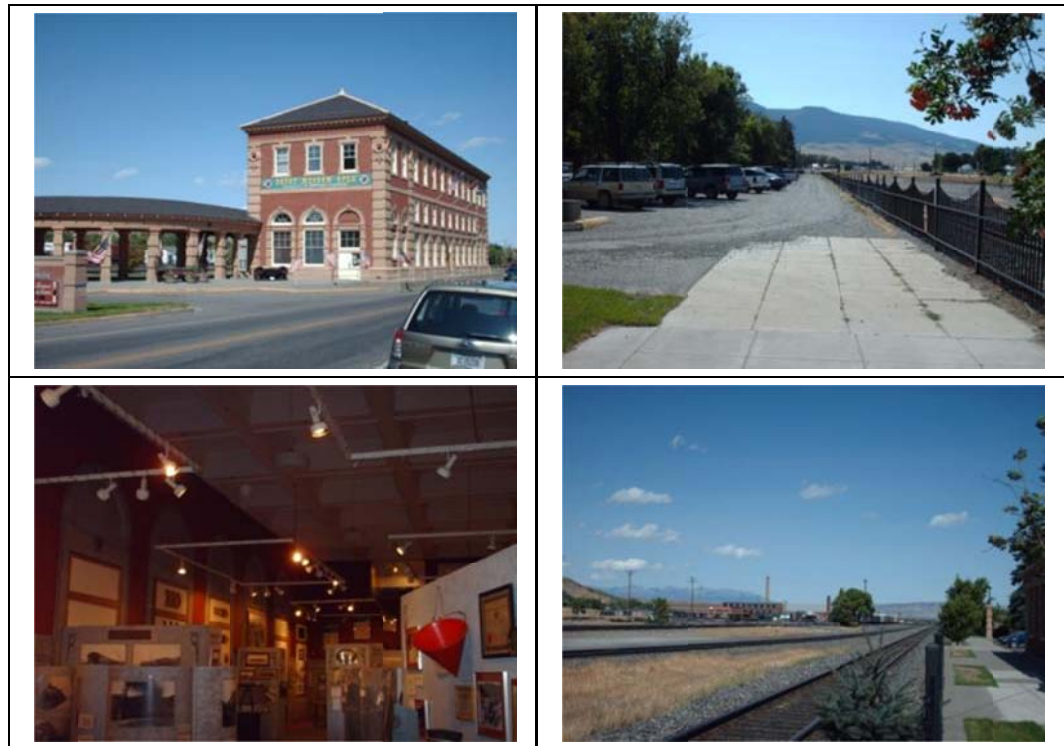
Figure 4.4 Station Photos
Billings, Montana



Livingston

Figure 4.5 shows photos of the station in Livingston, Montana, located on West Park Street, between North 3rd Street and North 2nd Street. The station, located in the downtown commercial area of Livingston, has been extensively remodeled and used as a museum, office space, and a conference/meeting space. The building is in excellent condition and has on street parking on the east and west sides of the building. The City holds local functions in the building, and a museum operates there in the summer. This building could be modified for passenger rail operations.

Figure 4.5 Station Photos
Livingston, Montana



Bozeman

Figure 4.6 shows photos of the station in Bozeman, Montana, located on Front Street, near the intersection of Front Street with East Tamarack Street and North Ida Avenue. The building is owned by Montana Rail Link Railroad and located in a mixed use, light industrial and residential area in Bozeman northeast of downtown near Interstate 90. The building is currently vacant and in very poor condition, and would most likely need to be demolished and rebuilt to support new passenger rail service.

Figure 4.6 Station Photos
Bozeman, Montana



Helena

Figure 4.7 shows photos of the station in Helena, Montana, located in the central area of Helena, at the confluence of Railroad Avenue, Helena Avenue, and North Sanders Street. The building currently is used as administrative offices for Montana Rail Link for office space and for crew changes. The building is located alongside park space and commercial uses, and is in good condition. It has off-street parking on the east side of the building, and on-street parking to the south. The building is located alongside yard and switching operations, and may require track modifications for passenger service.

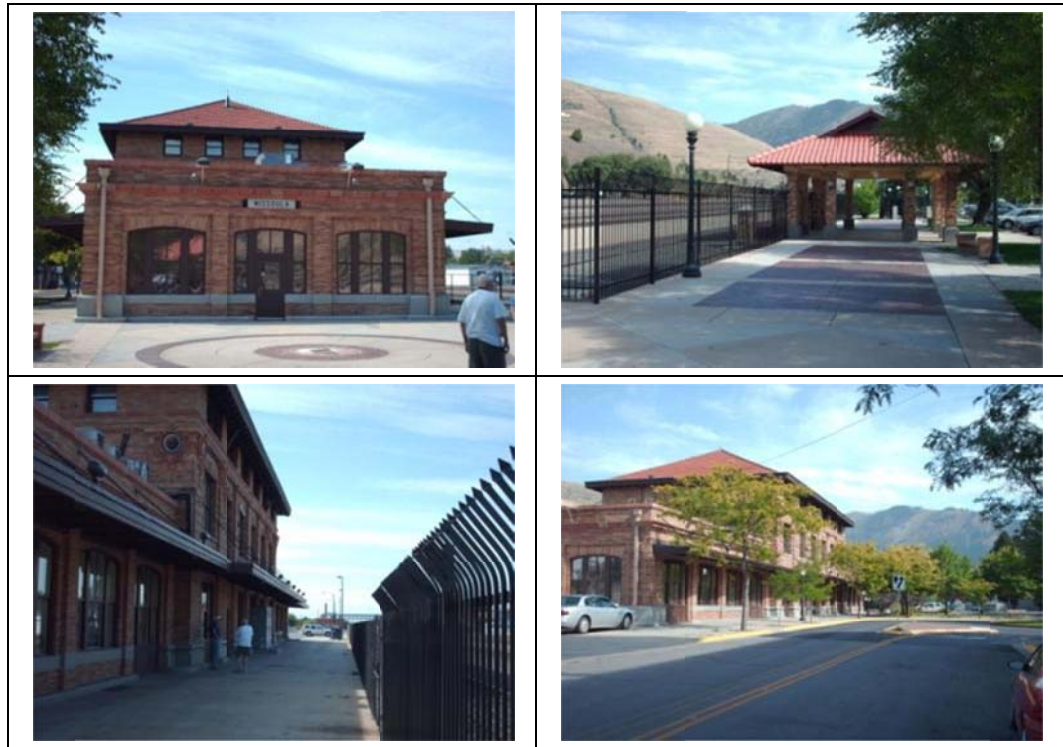
Figure 4.7 Station Photos
Helena, Montana



Missoula

Figure 4.8 shows photos of the station in Missoula, Montana, located at the northern end of North Higgins, at a connection of West Railroad Street and West Adler. The building, located directly north of the downtown area, is surrounded by commercial and residential uses. The building is used as commercial space and offices, and is in very good condition. It has a large off-street parking lot to the west. The building is located alongside yard and switching operations for MRL. It is also listed on the National Register of Historic Places, and thus would require extra care and cost to renovate for passenger rail use.

Figure 4.8 Station Photos
Missoula, Montana



Station Improvement Estimates

The Federal North Coast Hiawatha study included cost estimates for stations along this route (Table 4.3)

Table 4.3 Tier 1 Station Improvement Cost Estimates

Stations	Condition	NCH Cost Estimate
Billings	Excellent	\$925,000
Livingston	Excellent	\$1,326,000
Bozeman	Very Poor	\$1,600,000
Helena	Good	\$1,100,000
Missoula	Good	\$1,326,000
Total, Tier 1		\$6,200,000

Source: Exhibit 4, Amtrak NCH Study, October 2009.

These estimates of capital cost are preliminary. Further study may show any of these costs to be higher or lower than can be estimated at this level of analysis.

Ridership, Revenues, and Operating Costs

Amtrak used its standard methodology to generate a train operating schedule for the Tier 1 route, yielding a travel time of 8 hours and 15 minutes westbound, and 8 hours and 3 minutes eastbound (Table 4.4).

Table 4.4 Amtrak Schedule Assumption for a Billings-Missoula Route

Read Down				Mile	City	Mile		Read Up		
7:00 AM	2:00 PM	↓	Dp	0	Billings	358	Ar	↑	3:03 PM	10:03 PM
9:17 AM	4:17 PM	↓		116	Livingston	242			12:48 PM	7:48 PM
10:10 AM	5:01 PM	↓		141	Bozeman	217			12:04 PM	7:04 PM
12:10 PM	7:10 PM	↓		239	Helena	119			10:07 AM	5:07 PM
3:15 PM	10:15 PM	↓	Ar	358	Missoula	0	Dp		7:00 AM	2:00 PM

Source: Amtrak Montana Report, 2010: Feasibility and Route Assessment.

Amtrak then estimated ridership based on this schedule and the following factors:

- Population and demographics of geographic area to be served;
- Proposed level of daily service (frequencies);
- Competing modes of transportation; and
- Potential connectivity of proposed service.

The Tier 1 analysis estimates annual ridership of 15,300 and annual revenues of \$381,000, which is relatively small. The figures reflect the availability of faster travel time over the highway system, the twice-daily schedule of this train, and the challenges of reaching widely dispersed locations from the depots.

Amtrak estimates annual operating expenses of \$12.6 million for the Tier 1 route, including direct and indirect costs. This yields an operating cost of \$24.13 per train mile (lower than typical Amtrak long-distance route operating costs of \$60.00 per train mile). This difference may be due to the particular scenario of an operation completed within a single day, which would minimize crew scheduling complications of longer distance train service, and also would require less staffing for conductor and food services.

The small revenues mean that Montana would be expected to make up the difference in operating costs of approximately \$12.2 million per year, or 97 percent of operating costs. Over 20 years, this operating subsidy would total \$244 million. As noted earlier, farebox revenues from long-distance trains cover, on average, more than one-half of their operating costs.

Financial Implications

New Federal intercity passenger rail programs are discussed in Section 4.4, and include programs that provide up to 80 percent Federal share of capital costs for

new passenger rail service. These grant programs are discretionary and highly competitive among all nationwide applicants. Grant award decisions are made in part on the total public impact of proposed new service, which is driven by estimated public use of the new service. If MDT were to be awarded Federal funds to pay for 80 percent of capital costs of Tier 1 service, the State would need to provide a match of \$31.8 million. Federal passenger rail programs, like most Federal transportation programs, do not provide ongoing operating funding. That means that an additional \$12.2 million would have to be provided in the MDT annual budget for operating subsidies.⁶¹

Table 4.5 Summary Information for Tier 1 Route

Element	Amount
One Time Capital Costs	\$159,050,000
Estimated Annual Ridership	15,300
Estimated Annual Passenger Revenue	\$400,000
Estimated Annual Operating Costs	\$12,600,000
Estimated Annual Operating Subsidy	\$12,200,000

Source: Amtrak Montana Report, 2010: Feasibility and Route Assessment.

Williston, North Dakota to Sandpoint, Idaho (Tier 2)

Infrastructure Assessment

Amtrak assessed capital improvements that would be necessary between Williston, North Dakota, and Sandpoint, Idaho to meet both the requirements of passenger service and the operating needs of the host railroads (Tier 2). This assessment was accomplished by a limited sample of route inspections and through information from the host railroads.

The Tier 2 analysis informs the potential to bring Amtrak service to southern Montana by examining potential connections with existing stops on the Empire Builder route in Williston, North Dakota, and Sandpoint, Idaho. This is not a route scenario in the usual sense of the term, since breaking off from the Empire Builder and rejoining that service would be problematic. Splitting and reconnecting a train means that an ordinary delay on either route in either direction sets back multiple service schedules, which can negatively impact the entire route. Branching services are relatively common in Amtrak routes – for example, Amtrak’s Empire Builder has service branches in Spokane to both Seattle and Portland. However, in discussions with MDT, Amtrak officials noted their desire to avoid looping connections.

⁶¹New Federal high-speed and intercity passenger rail (HSIPR) funding programs also expect capital funding applicants to provide proof of available operating funds for the first 20 years of project operations.

This route traverses the Tier 1 route between Billings and Missoula. The other segments from the east are Williston, North Dakota to Snowden on the BNSF, Snowden to Glendive on the Yellowstone Valley Railroad, and Glendive to Jones Junction just east of Billings. The Tier 1 analysis covers the middle part between Billings and Missoula. The segment from Missoula to Sandpoint, Idaho is operated by Montana Rail Link. The following summarizes conditions on segments of Tier 2 not included in Tier 1:

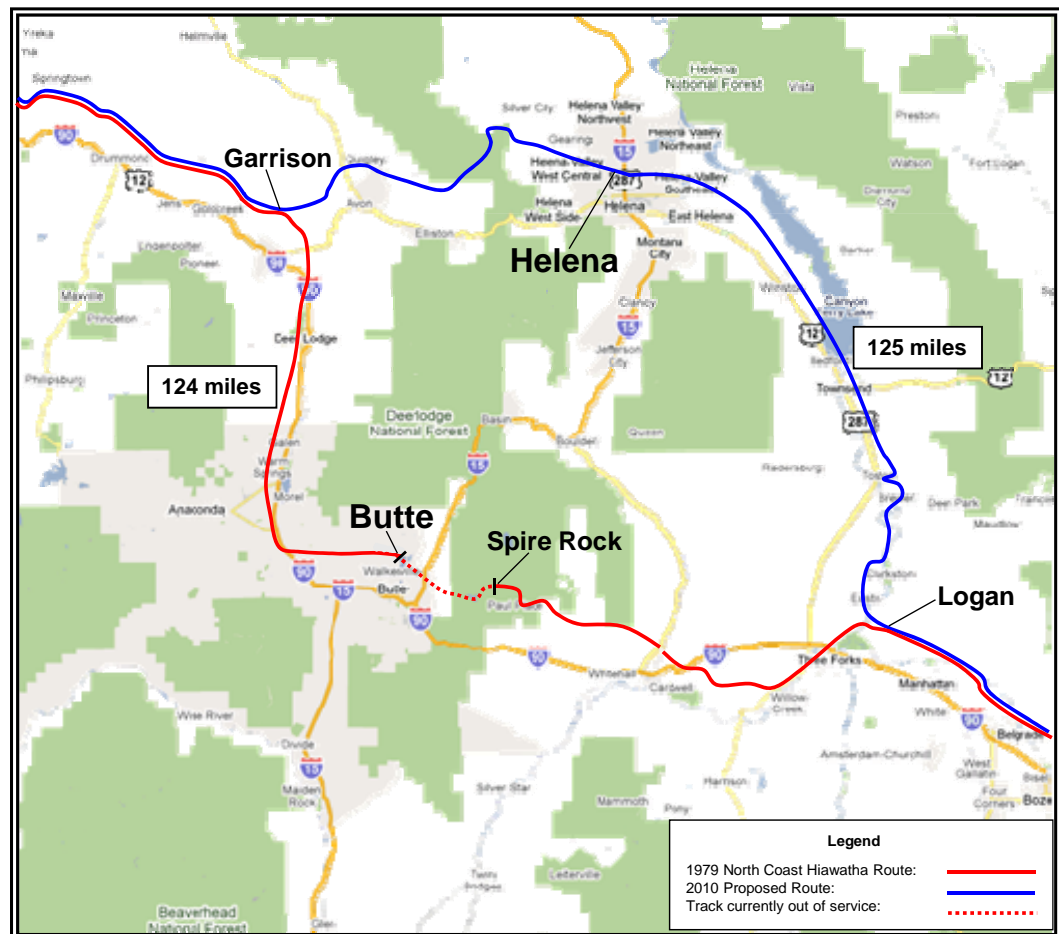
- **Williston to Snowden** (26.1 miles, BNSF) – This segment is also used by the Empire Builder, and is CTC controlled, continuous welded rail. The route is single track, with one 15,000-foot siding.
- **Snowden to Glendive** (72.6 miles, YSVR) – The entire route is single-track, unswitched (62 miles has TWC) and without designated sidings. A total of 22 miles of jointed rail between Snowden and Sidney would need to be replaced, and track condition in that segment merits extensive track maintenance before passenger service could be initiated. Track from Sidney to Glendive is continuous welded rail in much better condition. The entire route would need block signals, which would also affect gated grade crossing circuitry (i.e., rural roads crossing the track would need upgraded controls so passenger trains could safely pass by).
- **Glendive to Jones Junction** (212.7 miles, BNSF) – With the exception of 31 miles with CTC, the majority of this route is TWC/ABS. The line is single-track, continuous welded rail, with 14 sidings averaging 7,400 feet in length every 14.4 miles. The segment will require signal improvements prior to passenger rail service, and may require additional sidings and capacity given the freight traffic.
- **Missoula to Sandpoint** (206.6 miles, MRL) – With the exclusion of 3 miles of multiple track line west of Missoula, this line is single track with continuous welded rail. The segment from Paradise to Sandpoint has 11 sidings averaging 11,177 feet, every 10.8 miles. The route has 310 curves, with some measuring up to 10 degrees in sharpness. With moderate coal train traffic, this line may require additional sidings to accommodate passenger rail traffic.

The Tier 2 analysis did not include capital cost estimates similar to those in Tier 1. The MRL segments of the line (Missoula to Sandpoint) are in excellent condition and would likely require only modest capital investments. However, the eastern segments from Glendive to Snowden will require more extensive infrastructure improvements: track and signal upgrades and maintenance, expanded sidings, and grade crossing protection upgrades. Capital cost estimates for these segments would be highly speculative without more detailed engineering analysis, and therefore this section does not include those capital cost estimates.

Possibilities for Butte Routing

As citizens and officials in Montana have discussed reinstated passenger rail service, some recall the former passenger service along the Olympic Hiawatha on the Milwaukee Road that came through Butte to Missoula (Logan-Butte-Deer Lodge-Garrison), rather than the MRL route from Billings to Missoula (Logan-Helena-Garrison) through Helena. The alternative routes are shown in Figure 4.9.

Figure 4.9 Potential Southern Montana Passenger Rail Route via Helena and Butte



Reestablishing service through Butte would require substantial reconstruction of the rail lines, since part of the route is completely out of service,⁶² and the other operating segments have lighter weight rails, steep grades and speed limitations of 25 to 40 mph. Upgrading the track from Class 2 to Class 4 standards (to allow for 60 mph service) would require substantial costs, as would installing train control systems required for passenger rail service (these segments are nonsignalized). Capital costs for this 121-mile segment could easily exceed the entire Tier 1 analysis infrastructure costs.

To develop a detailed operating cost estimate for the entire Tier 2 route, a more complete analysis of possible passenger schedules would be required. Analysis of this route was conducted as a track feasibility study. Thus, no cost estimates, station inspections, or operations plan were developed for this route. The Tier 2 analysis also did not include estimates of ridership.

Reinstatement of North Coast Hiawatha Service

In 2008, Congress directed Amtrak to examine the possibility of reinstating passenger rail service on the North Coast Hiawatha route:⁶³

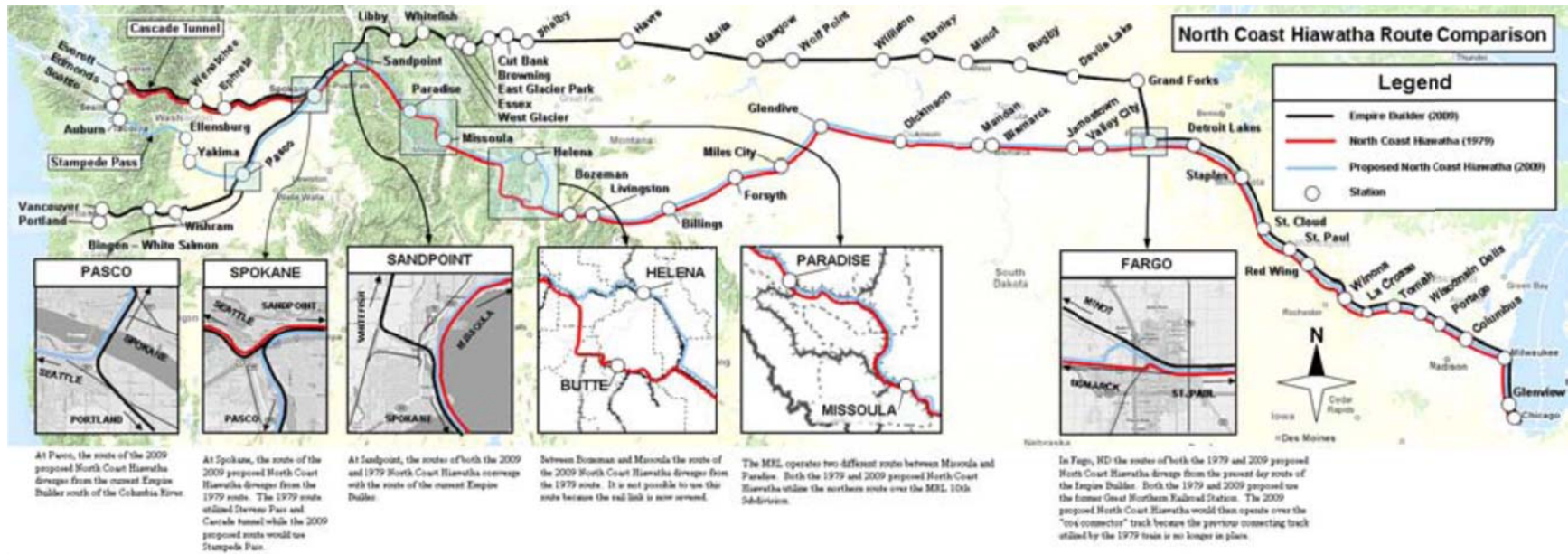
“The North Coast Hiawatha Route between Chicago and Seattle through southern Montana, which was operated by Amtrak until 1979, to determine whether to reinstate passenger rail service along the route or along segments of the route, provided that such service will not negatively impact existing Amtrak routes.”

Amtrak published the resulting study findings in October 2009. The report examined the route generally followed by the former North Coast Hiawatha (NCH) route with a few exceptions, shown on Figure 4.10.

⁶²The Spire Rock to Butte segment has been out of service for more than 20 years, has significant problems with track and subgrade, has steep gradients of 2.2 percent, bridges that would need replacement and tunnels needing rehabilitation.

⁶³PRIIA Section 224 North Coast Hiawatha Passenger Rail Study (“NCH Study”), found on <http://www.amtrak.com/servlet/ContentServer/Page/1241245669222/1237608345018>, under PRIIA submissions and reports, October 16, 2009.

Figure 4.10 North Coast Hiawatha Study Route



The NCH Study provided the following infrastructure capital cost estimates for the entire route, as estimated by the various host railroads (Table 4.6).

Table 4.6 North Coast Hiawatha Capital Costs by Segment

Route Segment	Route Miles	Estimated Capital Cost	Cost per Route Mile
Chicago to St. Paul	417	\$44,000,000	\$106,000
St. Paul to Fargo	241	\$24,000,000	\$100,000
Fargo to Jones Junction (Montana)	615	\$307,300,000	\$500,000
Jones Junction to Helena	254	\$23,100,000	\$91,000
Helena to Sandpoint	309	\$6,100,000	\$20,000
Sandpoint to Spokane	68	\$24,000,000	\$353,000
Spokane to Pasco	145	\$96,000,000	\$662,000
Pasco to Seattle	241	\$95,300,000	\$395,000
Total, North Coast Hiawatha	2,290	\$619,800,000	\$271,000

Source: Amtrak NCH study, Cambridge Systematics, Inc.

The higher costs for the BNSF route from Fargo to Jones Junction are due to high costs of siding extensions required for passenger trains, as well as the frequency by which freight trains overtake each other in both directions along this section, which has heavy traffic in coal shipping. The total costs of capital, equipment, and other start-up costs are listed in Table 4.7.

Table 4.7 Capital and Up-Front Costs for North Coast Hiawatha

Cost Element	Cost (\$)
Infrastructure improvements	619,800,000
Stations	17,600,000
Rolling Stock	330,000,000
Positive Train Control	60,000,000
Mobilization	15,800,000
Total	1,043,200,000

Source: Amtrak NCH Study, October 2009.

Amtrak estimated that the reinstated NCH service would attract 359,800 total riders, compared to the FY 2009 Empire Builder ridership of 515,444. The total revenue estimate for the NCH was estimated at \$43 million, which included an \$8 million revenue impact from Empire Builder passengers diverted to the new route, an amount that represents a 13 percent revenue diversion from the Empire Builder in FY 2009.

Amtrak estimated that the NCH annual operating cost would be \$74.1 million, resulting in a \$31.1 million operating loss. The NCH revenues would cover 58 percent of operating costs, which suggests that the NCH would perform better financially than most Amtrak long-distance trains. Table 4.8 lists FY 2009 farebox recovery percentages for the NCH and other long-distance trains.

Table 4.8 Farebox Recovery Ratios for NCH and Long-Distance Trains
FY 2009 Operating Results (Sorted by Percentage)

Long-Distance Route	Percentage
Auto Train	90.1%
Empire Builder	65.3%
Palmetto	59.2%
City of New Orleans	58.5%
North Coast Hiawatha (proposed)	58.0%
Silver Meteor	52.8%
Southwest Chief	51.9%
Capitol Limited	51.9%
Coast Starlight	51.4%
California Zephyr	50.3%
Texas Eagle	49.8%
Crescent	47.7%
Lake Shore Limited	44.6%
Silver Star	44.1%
Cardinal	34.7%
Sunset Limited	26.6%

Source: Cambridge Systematics calculations, source data from Amtrak Monthly Performance Report, page C-1, September 2009.

Note: Percentage is derived by dividing total revenues by total operating costs.

Amtrak concludes its NCH Study by noting that even though the NCH service might operate at a higher farebox recovery ratio than other long-distance trains, the capital costs for reinstating the service are substantial. The report provides a cautionary summary:

“While PRIIA recognizes the importance of Amtrak’s existing long-distance routes, it does not provide capital or operating funding for expansion of long-distance service beyond current levels. Therefore, additional Federal and/or state funding would be required for any service expansion.”⁶⁴

⁶⁴Amtrak NCH Study, page 41, October 2009.

Amtrak has legislative authorization to expand long-distance services, as described at the beginning of Section 4.3. Yet without specific authorization for capital expenses of expanding long-distance services, or without expectation for legislative appropriations for capital costs or increased operating costs not covered by revenues, Amtrak must look to the Federal government and the states along the proposed NCH route to provide capital and operating funding for the NCH route.

Comparing the Tier 1 Analysis and NCH Study Results

Since either approach would require Federal and state funding for capital and operating costs, a comparison of the costs and implementation challenges of the Tier 1 analysis and NCH Study approaches could help inform future steps for passenger rail in Montana. It might be possible to isolate the proportions of NCH costs attributable to Montana to compare capital and operating costs to Tier 1 results. Such estimates must be viewed cautiously, however, since actual costs will reflect on-the-ground and operational conditions that are difficult to generalize. For instance, Amtrak’s studies for Montana identify a significant bottleneck at Laurel; elsewhere there may be a problematic bridge or road crossing. These costs, and others, cannot be reliably estimated on a per-mile basis.

Montana citizens and elected officials can consider some of the following aspects of the NCH and Tier 1 service in Table 4.9 in making future decisions about passenger rail implementation.

Table 4.9 Comparison of Tier 1 and NCH Passenger Rail Proposed Services

	Positive	Negative
NCH	<ul style="list-style-type: none"> • Potentially lower annual operating cost requirement for Montana • Higher patronage more attractive for public capital and operating funding 	<ul style="list-style-type: none"> • Higher total capital cost for entire route • Matching capital grants and pledging operating subsidies more difficult for multiple states • New long-distance service may be less attractive than high speed rail projects for Federal funding • Reduces Empire Builder revenues
Tier 1	<ul style="list-style-type: none"> • Potentially lower overall capital cost • Montana not dependent on actions of other states • State-supported service easier for Amtrak to initiate • State-based regional railroad may be better negotiating partner for new passenger rail service 	<ul style="list-style-type: none"> • Potentially higher annual operating cost requirement for Montana • Much smaller ridership estimates • Less attractive for Federal capital and operating funding under current programs

4.4 PASSENGER RAIL FUNDING OPTIONS

Federal Funding Programs

When MDT launched development of this plan, the only Federal program for passenger rail development was the FY 2008 FRA Capital Assistance to States – Intercity Passenger Rail Service Program for 50 percent Federal/50 percent state funding of passenger rail improvements. Since then new passenger rail programs have been authorized (October 2008), and new appropriations were made in the following year. Additional appropriations for passenger rail are expected in FY 2011 and beyond. Table 4.10 describes the various new Federal funding programs for passenger rail.

While some of these programs, such as the ARRA economic stimulus funds, were “one shot” funding programs that currently have no assurance of continuing Federal financial support, the number and variety of recent Federal investments in passenger rail represents a striking shift from previous years.

In the American Recovery and Reinvestment Act of 2009 (ARRA) grant applications guidance issued in June 2009, the FRA stated that it was seeking applications for four funding tracks:

- **Track 1, Projects** – These funds would be directed to projects that are environmentally cleared and construction ready, and for detailed engineering and environmental planning for individual projects.
- **Track 2, Service Development Programs** – These funds would be committed to a series of projects over time pursuant to a Service Development Program, an agreement between states and the Federal government that would establish a list of projects, financial plans, and implementation steps to carry out the projects.
- **Track 3, Planning** – These 50/50 matched funds would be used to prepare corridor-level Service Development Programs, or for general state rail planning. These grant awards will come from previous appropriations and from future appropriations under PRIIA.
- **Track 4, Passenger Rail Improvements** – These funds would be used for another series of projects for passenger rail improvements, similar to the FY 2008 funded grants, with a 50/50 Federal/state cost share.

In the guidance document, the FRA further stated that it anticipated multiple project application/award cycles. Since the Administration has requested \$1 billion per year for high-speed rail and intercity passenger rail improvement grants, and since the Congress has appropriated \$2.5 billion for passenger rail grants in its FY 2010 appropriations cycle for the U.S. Department of Transportation (U.S. DOT), Montana can reasonably anticipate future grant cycles for passenger rail improvement and planning funding.

Table 4.10 Federal Funding Programs for Passenger Rail Improvements

Program	Dollar Amounts	Criteria	Status	Timing
ARRA Discretionary Multimodal (Transportation Investments Generating Economic Recovery or TIGER grants)	\$1.5 Billion Total; \$20-\$300 Million Grants	Geographic equity; urban/rural balance, benefit/cost analysis	Appropriated, Awarded	Criteria – May 2009 Applications – September 2009 Awards – February 2010
TIGER II	\$600 million in FY 2010 appropriations; \$140 million for rural areas	Geographic equity; urban/rural balance, benefit/cost analysis	Appropriated	Funding announced – May 2010 Applications – August 2010
ARRA High Speed Rail (HSR)	\$8 Billion for: Projects with NEPA clearance and engineering; corridor programs for plans, Environmental studies to inform corridor programs; no planning for corridors and state rail plans	Prerequisites: fits corridor plans and safety regulations; agreements with stakeholders; financial plans; project management plans, ARRA reports. Criteria: see IPR below	Appropriated; Awarded	Strategic Plan – April 16 Guidance – June 18 Applications – August/October 2009 Awards – January 2010
Intercity Passenger Rail Improvements (IPR)	\$90 Million to augment ARRA, fund corridor and state rail planning	Criteria for awards: meet prerequisites; public benefits timely achieved; timeliness or project delivery; management approach	Appropriated	Same schedule as ARRA programs above
PRIAA	\$1.9 Billion Intercity; \$1.5 Billion HSR; \$0.3 Billion Congestion	Links to state rail plans, performance metrics to be set by FRA	Authorized, \$2.5 appropriated in FY 2010 for projects/corridors, \$50 million for planning	FY 2010 funding: Planning applications – May 2010 Project funding – Fall 2010 Future grant cycles depending on appropriations
RRIF Loans	Up to \$35 Billion total for rail infrastructure capacity	Creditworthiness, safety, economic impacts, green benefits, rail system impacts	Authorized	Applications accepted, applicants pay fees
Surface Transportation Authorization	To be determined (TBD)	TBD	TBD	SAFETEA-LU Expired in 2009; Extended to 2010, future extensions expected

PRIIA requires that projects for which grant applications are sought must be part of a comprehensive state rail plan (ARRA funds do not have this requirement). PRIIA sets out some expectations for state rail plans, but requires the U.S. DOT to issue guidelines on what the plans must include. This State Rail Plan was launched before PRIIA was passed. However, given the breadth of this State Rail Plan relative to the plan elements listed in PRIIA, MDT would only need to complete a small number of tasks to bring its rail plan into compliance with Federal expectations, including:

- Stakeholder outreach to identify specific freight and passenger rail improvement projects to resolve bottlenecks, improve rail service, and offer new passenger rail service;
- Setting performance metrics and evaluating rail projects against those metrics (including public and private benefit determinations); and
- Building a funding and implementation plan for those projects.

State Funding Implications

The Tier 1 report and the North Coast Hiawatha Study provide information about the scale of funding commitments that would be necessary to return passenger rail service to southern Montana. Unlike most Federal transportation programs, which have a sliding scale for financial match based on a legislated formula, recent Federal rail programs are often competitive grants that anticipate states will contribute a share of total costs. Some states, mostly larger ones, have invested hundreds of millions of dollars in passenger rail improvements, and are prepared to further match new Federal funds. Moreover, in recent years the FRA has not provided any funding to offset the operating costs of added passenger rail services.

Montana may want to consider what can be achieved with state funding. If Montana wants Federal planning and project funding to expand passenger rail, it is likely that the State will at least need to find matching funds. The State will also need to consider ongoing expenses associated with new passenger rail service.

4.5 CONCLUSIONS

Montana's existing passenger rail service, the Empire Builder, provides a valuable and successful service to Montana. A significant share of that train's total boardings and deboardings are in the State. In terms of both ridership and public cost, the Empire Builder is one of the top performing long-distance passenger trains in the nation. As a long-distance, legacy route, the Empire Builder's continuing public cost is paid for by the Federal government.

Resumption of service through a southern Montana route would bring passenger rail to many of the State's largest and fastest growing population centers. Returning intercity passenger rail service to the route would, however, involve

substantial cost both to establish the service and to cover its annual operating expense. Montana is not assured of Federal help in meeting these costs.

Montana asked Amtrak to examine passenger rail resumption within the State to help inform public interest. The resulting study is further enhanced by an analysis for the Federal government of resumption of the Chicago-to-Seattle North Coast Hiawatha route. These studies give a rough idea of some of the challenges, and they represent the best available information at this level of analysis. Broadly, the studies suggest that long-distance services would perform better in terms of ridership and fare revenues than would services oriented to Montana alone.

If warranted, further planning should include more detailed specification of desired routes and services, capital planning, agreements with rail owner/operators, coordination between Montana and other states, establishment and maintenance agreements for each passenger depot, and clarification among all parties of initial and continuing costs.