



2035 Statewide Transportation Plan

Passenger Rail TECHNICAL REPORT

March 2008



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INTRODUCTION

Passenger rail service moves people on rails or fixed guideways, including heavy rail, light rail, monorail, scenic or historic trolleys or trains, or on other fixed guideway conveyances. For purposes of this report, there are three general types of passenger rail services:

1. Interstate passenger rail (Amtrak)
2. Tourist, scenic, and recreational passenger rail
3. Regional/interregional/commuter passenger rail

STATE OF THE SYSTEM

Colorado's passenger rail systems are in varying stages of development. Colorado, for example, benefits from two different interstate passenger rail lines traversing the state. Because of the dynamic history of trains in the state, combined with high tourist interest and beautiful geography, Colorado has had a significant number of tourist and scenic railroads. Regional and commuter passenger rail, on the other hand, has been developing more recently. Each type of passenger rail is described below.

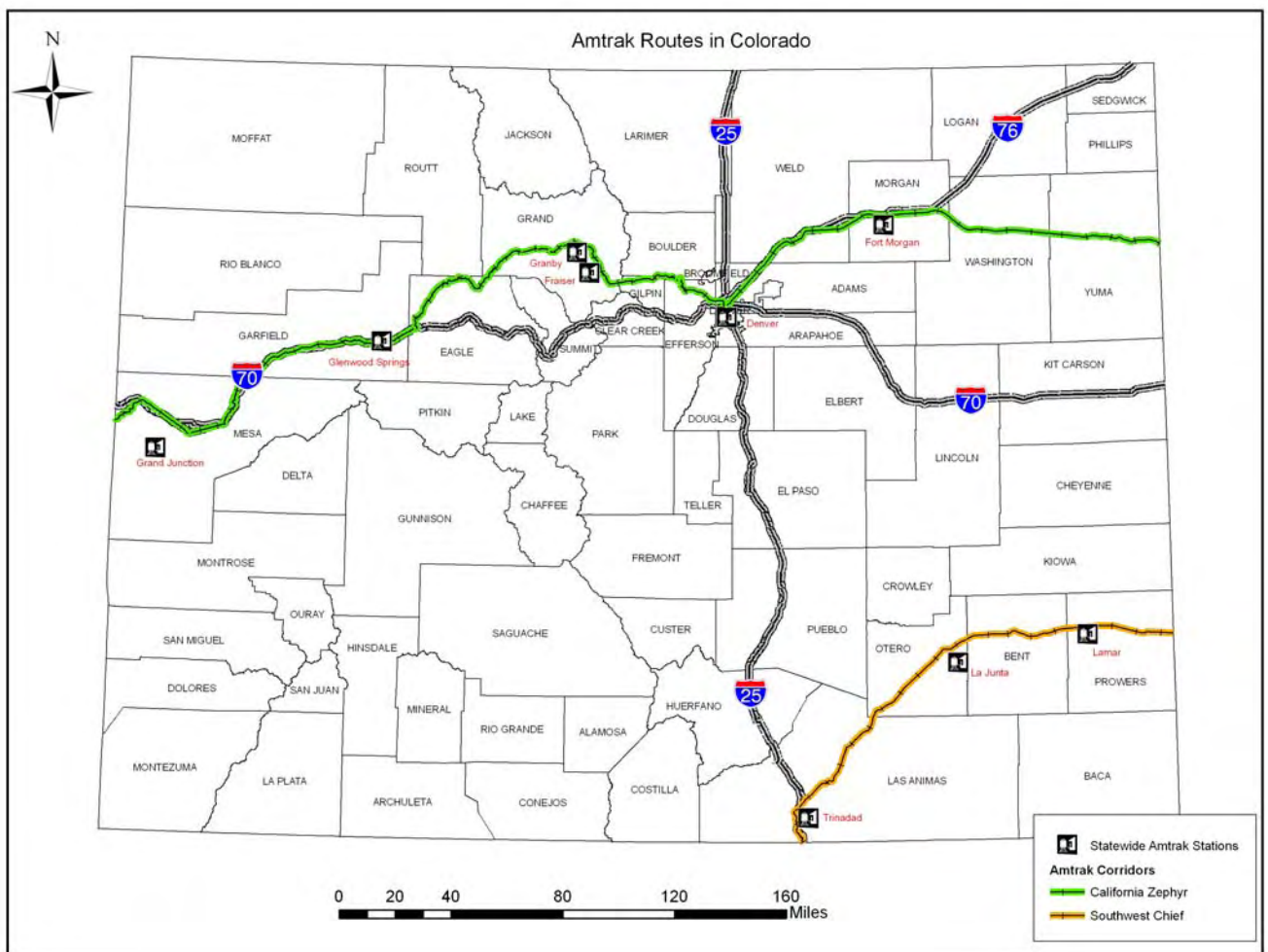
Interstate Passenger Rail (AMTRAK)

Interstate passenger rail service (Amtrak) in Colorado is provided exclusively by the national Amtrak system. The State of Colorado does not contribute resources toward that service nor does it conduct any planning for that service. Two Amtrak routes traverse Colorado daily (see Figure 1). The *California Zephyr* travels through Fort Morgan, Denver, Fraser, Granby, Glenwood Springs, and Grand Junction on its way to San Francisco. This route has a relatively high Colorado ridership, with more than 183,600 annual departures/ arrivals for the entire route in Colorado in 2006. Amtrak is considering splitting this long-distance train into two smaller routes—Denver to Chicago and Denver to San Francisco. The Denver-to-Chicago service would focus more on the business traveler while the Denver-to-San Francisco service would focus on the recreational traveler. Because this train is seldom on time due to problems west of Denver, it may be difficult for rail travelers to make the connection from the Denver-to-Chicago train to the Denver-to-San Francisco train. This change would hopefully improve the on-time between Denver and Chicago. In the case of Denver to San Francisco, the delays have been caused by extensive track work in Utah and Nevada where a number of low speed restrictions exist. Amtrak and Union Pacific have recently agreed to lengthen the schedule by three hours, which should improve the on-time performance. This agreement will result in the *California Zephyr* being able to arrive within 90 minutes of the scheduled endpoint times.

The second Amtrak service through Colorado is the *Southwest Chief*, which traverses the southeastern corner of the state, with stops in La Junta and Trinidad on its way to Los Angeles. This route has a lower ridership, with a Colorado ridership of 13,000 annual departures/arrivals for the entire route in Colorado in 2006. This lower ridership is due to the limited access in Colorado. Amtrak has expressed concern about the future availability of the Burlington Northern

Santa Fe Railroad (BNSF) track in southeastern Colorado. BNSF is considering the sale of the line from La Junta to the New Mexico State Line as a result of the discontinuance of freight service. BNSF is not considering abandoning this line at this time. If this line is sold to a short line operator, the maintenance of the line may pose a problem for Amtrak. One possible solution would be to bring Amtrak service into Pueblo and then use the existing BNSF rail line to bring service back to Trinidad. This option would provide residents of Pueblo with direct access to the national passenger rail system. There is concern that BNSF might abandon the line being used for the *Chief*, and that even if that line is purchased by a short line railroad, it likely will not be maintained to handle speeds needed for an Amtrak train.

Figure 1 – AMTRAK Routes in Colorado



Amtrak funding continues to frequently be the focus of congressional and administrative discussion; however, support continues at a level which makes expansion and even continuation of Amtrak services difficult. Proponents believe that passenger rail has a place in the country's transportation system and that the federal government has a responsibility to support it. Others believe that the investment in passenger rail should not be a federal responsibility. In addition to developing cost-saving measures for Amtrak's national network of long-distance trains, congressional leaders and administration officials have been trying to encourage states to assume more responsibility for the operation of passenger trains.

Consequently, it might be more practical for future passenger rail lines to consider the purchase or lease of rights-of-way within existing railroad ROW to build new tracks rather than trying to operate commuter or regional trains on existing tracks. Even when it is possible to lease or purchase railroad ROW for construction of new tracks, it still will be necessary to develop sophisticated and complex working agreements with the railroads in order to safely operate within the railroad ROW. It also might sometimes be necessary to build significant flyover structures, given that railroads often must have access to customers on both sides of a track.

One potential positive outgrowth of the future development of regional or commuter passenger rail lines would be the companion development of better land-use patterns. That is, passenger rail lines tend to encourage high-density, mixed-use developments rather than inefficient, sprawling land uses that by their very nature cause more auto travel. However, it is important that communities develop land-use plans to accommodate passenger rail lines well in advance. To that end, CDOT has developed and made available a handbook, *Rail-Oriented Development: Strategies and Tools to Support Passenger Rail*, for use by local and regional governments and others interested in understanding the relationships between land use and rail transit systems. The study can be found at

<http://www.dot.state.co.us/publications/PDFFiles/RailExecutiveSummary.pdf>.

Congress is currently considering providing new funds, currently in Amtrak's reauthorization bill, to restart the Pioneer service which would operate from Denver to Portland with a stop in Greeley.

Short- and medium-distance intercity routes are considered somewhat successful, particularly the Northeast Corridor route from Washington, DC to Boston. Some states have financially partnered with Amtrak for the creation of some intercity routes, particularly in the Midwest and West Coast. Colorado has no such viable intercity routes identified. However, Colorado has expressed an interest in obtaining designation of the 11th High-Speed Rail Corridor as part of an initiative established under TEA-21 legislation, but the letter of intent was submitted after the deadline had passed. This letter was submitted as a placeholder should the application process be reopened. (See discussion below, under Goals, Objectives, and Strategies.) In fact, the State of Colorado is providing \$1.3 million dollars to the Rocky Mountain Rail Authority (RMRA) to study the feasibility of high-speed passenger rail service along the entire length of I-25 and along the I-70 corridor from Denver to Grand Junction. Ultimately, this study is expected to be expanded to analyze high-speed passenger rail service from Casper, Wyoming to Albuquerque, New Mexico. Additionally, CDOT is studying the various governance structure options available to govern multi-jurisdictional and multi-state passenger rail service if such service was established.

Amtrak has been making improvements in its financial system, but there is still the risk that some long-distance routes may be eliminated. In Colorado, it is more likely that of the two Amtrak routes, the *Chief* is at higher risk for facing elimination or reduced service as a result of its lower ridership.

Regional Passenger Rail

There is currently only one regional passenger rail service in Colorado—the Regional Transportation District’s (RTD) light rail service. RTD opened the first five-mile light rail line in Colorado in 1994. The success and demand for this passenger rail service prompted RTD to expand its light rail service in 2000 with the opening of the Southwest light rail line, which extended into the southwest suburbs. The projected ridership for this line was 8,400 per day, but in its first year the ridership was far higher at 13,300 per day. By 2006 the average weekday ridership grew to 35,700. The ridership has been so high that many peak-hour trains are standing room only and many park-and-ride lots are filled to capacity early in the morning. Some of the stations have had to add parking spaces.

The Southwest line proved to be such a success for RTD that construction of another light rail line extension along the Southeast corridor was recently competed as part of the T-REX project. Service on this line began in November 2006. Currently, ridership on this line is 32,000 per day. This line is projected to have daily ridership of 38,100 by 2020.

The total light rail system is handling approximately 61,000 riders on a daily basis. This is about 7,000 riders more than RTD expected. In response to this increased demand, RTD purchased an additional 34 rail cars, which should be in service by 2009.

Additionally, RTD has received voter approval through the FasTracks ballot initiative of a tax plan that will create other new and extended light rail and commuter rail corridors within the Denver region, including new rail lines to Boulder/Longmont, the northern suburbs, Denver International Airport, the I-225 corridor, and the western suburbs, with extensions of the Southwest and Southeast light rail lines. The West rail line is expected to begin construction in 2008. The final details for this line are currently being worked out.

Due to escalating construction costs, RTD is revisiting all aspects of each proposed rail corridor, including technology, alignment, stations, and track capacity. RTD remains confident that it will be able to deliver rail service in each of these corridors within the original budget and on schedule. RTD is also considering public-private partnerships for some or all of the lines.

There are some significant track capacity constraints along the Front Range that affect the operation of rail freight service. The most significant of these constraints is the fact that there is only a single track between Monument and Colorado Springs. Trains are held up on either side of the single track section when a train is using this portion of the rail line. The number of trains having to wait to use the single track section can be as high as three. As a result of these track capacity problems, a feasibility study is being conducted jointly by the Colorado Department of Transportation and the two Class 1 railroads, concerning the relocation of rail freight service to the east of the Front Range corridor.

The first phase of a study to relocate rail freight service outside of the Front Range corridor has recently been completed. This study is referred to as The Public Benefit and Cost Study. It was

completed a little over two years ago. The mid-range scenario estimated the benefit-to-cost ratio to be 2:1. When the indirect benefits of the relocation are considered, the benefit-to-cost ratio jumps to 4:1. If freight rail service is relocated to eastern Colorado, it opens up the possibility of establishing passenger rail service from Fort Collins/Greeley south to Colorado Springs and Pueblo. The next phase of this project is currently underway. This phase will attempt to refine the cost and develop a cost-sharing plan for how this relocation might be paid for.

There are currently no other regional, interregional, or commuter passenger rail services in Colorado. However, there is a renewed interest in passenger rail service in several of Colorado's Front Range and mountain communities. This interest is based on the perception that the amount of land and financing available for an expanded highway system is very constrained and the belief that it is more efficient to move passengers on already existing rail corridors, as well as a belief that passenger rail can provide a viable alternative to travelers. If rail freight service is relocated to the east of the Front Range corridor, it could free up capacity for commuter rail service from Fort Collins/Greeley, Colorado Springs, and Pueblo to the Denver metropolitan area.

The City of Colorado Springs is operating bus service between Fountain and Denver. The service is called the Front Range Express (FREX). The service opened on October 11, 2004 and has stops in Fountain, Colorado Springs, Monument, Castle Rock, and Denver. FREX was recently awarded 19 new buses to operate this service through Senate Bill 1. The ridership from this service could establish a base for future intercity passenger rail service.

Tourist and Recreational Passenger Rail

There are nine tourist and recreational passenger rail services in the state. All are privately operated. Eight are privately owned, while one—the Cumbres and Toltec Scenic Railroad—is jointly owned by the states of Colorado and New Mexico. These railroads are operated for scenic, historical, and recreational purposes, not for commuter or mobility purposes. Because of their ownership and primary usage, CDOT normally does not include these railroads in its regular planning activities to any significant extent.

REVENUE

Like most other components of the transportation system, passenger rail cannot operate without a subsidy. Operating revenues will not be adequate to pay for all capital and operating costs. Some longer distance commuter and regional rail services have been successful at generating a higher fare recovery ratio than traditional bus services, in part because travelers on these services are willing to pay a higher portion of operating costs as a result of the many benefits they receive from passenger rail service when compared to bus service. On the other hand, the cost of building and maintaining a rail system is much higher than the cost of deploying traditional bus services. In any case, a public subsidy is usually needed.

One of the greatest challenges to the establishment of passenger rail services is the identification of a reliable funding source for that subsidy. The establishment of a passenger rail service within existing rail rights-of-way (ROW) can be more cost-effective than the building of a comparable new highway. The typical cost of constructing one mile of new, signalized rail track within an existing ROW is about \$3 million, while the cost of one mile of a new two-lane highway within an existing ROW is about \$3 million to \$4.5 million. On the other hand, the ongoing cost of maintaining and operating the rail service would be higher than it would be for the highway facility, minus the cost of private-auto operating costs.

The task of funding interregional passenger rail facilities is made more difficult by the fact that there is no readily defined source of funding. The Federal Transit Administration does have a funding program—referred to as New Starts—for the planning and construction of new fixed guideway systems. However, the funds are available nationwide and the competition is very strong. Performance standards must be met in order to be eligible for funding, and the standards tend to favor larger urbanized areas which have higher population densities. Since there has not been an application for using New Starts funds for interregional passenger rail service, it is unclear if New Starts funds are even eligible for interregional passenger rail service.

State legislation has stipulated that at least 10 percent of 1997 Senate Bill 1 transportation funds be set aside for transit purposes. However, the amount of funding expected to be available from this set-aside likely would not be sufficient to make it a major source of funding for any passenger rail system. While highways can be built based on anticipated higher toll revenue streams, the generation of rail passenger revenue streams is much less predictable and reliable. Consequently, a reliable, stable source of funding would need to be identified for interregional passenger rail to be implemented.

One potential funding mechanism worthy of additional consideration is development of funding partnerships with the private sector and local governments. In many cities that have added passenger rail lines, there is often a high level of developer interest in building high-density residential, retail, and commercial developments surrounding rail stations. Given the benefits that the developers receive from such projects, as well as the local governments that benefit from the property taxes on such projects, it is not uncommon for transit agencies to seek funding partnerships with those developers and local governments in initially building the passenger rail system. These partnerships provide the opportunity for a win-win situation for all three parties.

GOALS, OBJECTIVES, AND STRATEGIES

Certain significant rail corridors represent an irreplaceable state transportation resource and it is critical to preserve them if they are at risk of being abandoned. That is because once they are lost, the cost of recreating equivalent corridors in the future will be prohibitive.

In response to concerns over the impacts of rail abandonment in Colorado, in June 2000 the Colorado Transportation Commission approved a Rail Corridor Preservation Policy. Among some of the reasons why rail corridors were cited as being important to Colorado:

- Preserving rail corridors for future use may save money, since the cost to preserve a corridor for future transportation purposes is often far less than having to purchase an equivalent corridor in the future.
- Rail transportation may be needed in certain corridors to supplement the highway system and to provide adequate mobility and travel capacity.
- Rail transportation can be a cost-effective and environmentally-preferable mode of transportation in certain situations.

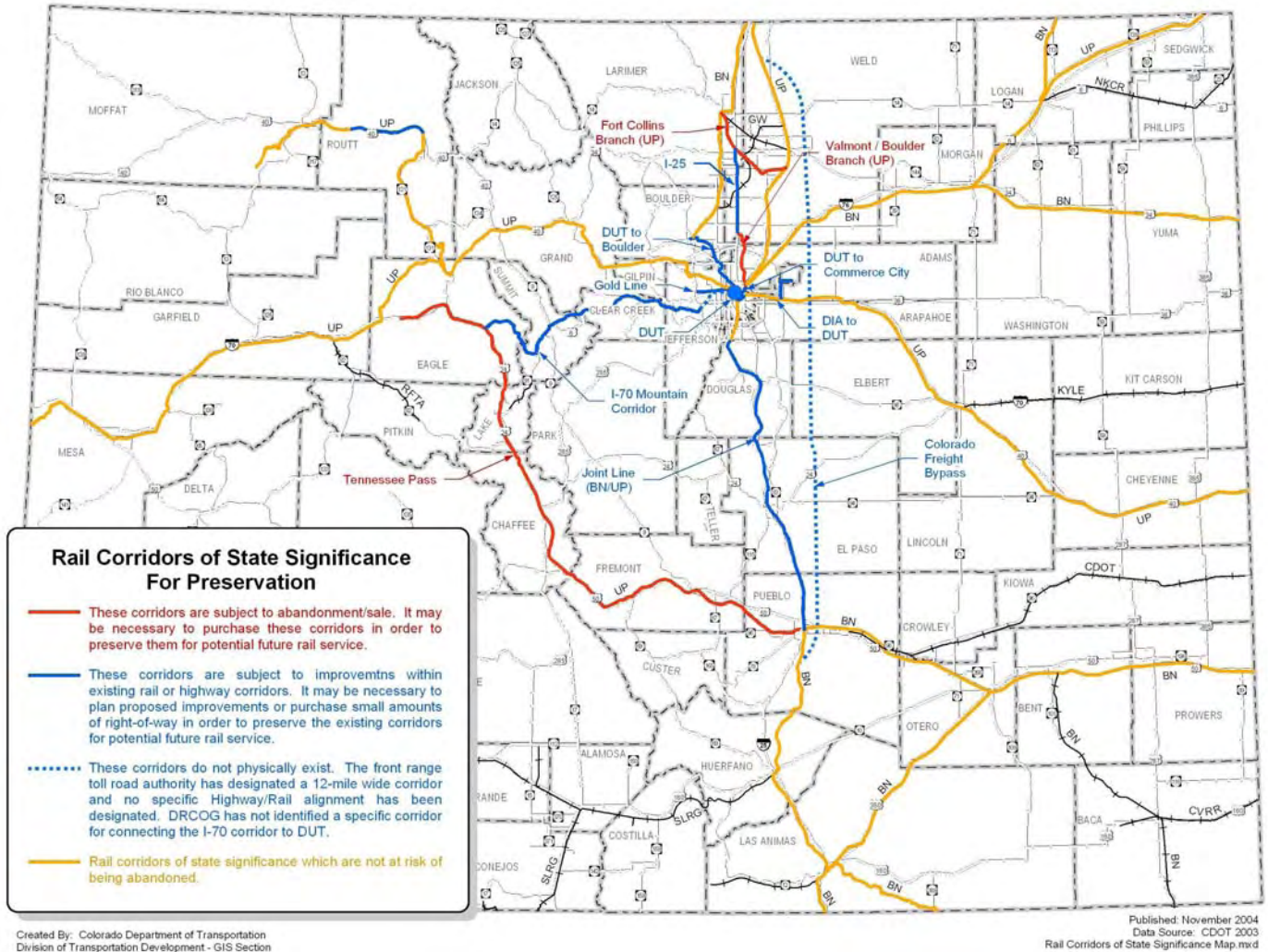
In order to ensure that future passenger rail opportunities are not precluded, it is important for existing rail corridors to be preserved. With the many freight railroad mergers that have taken place over the past decade, there have been a number of rail lines or segments that have been abandoned because they are duplicative or unnecessary.

The Colorado Transportation Commission's Rail Corridor Preservation Policy identifies the types of rail activities in which CDOT can engage and the criteria for identifying State Significant Rail Corridors where these activities can occur. The Policy recognizes that preservation can include not only purchasing existing rail lines and rights-of-way, but also purchasing rights-of-way for new rail lines. Figure 2 indicates the locations of the statewide significant rail corridors.

There are many advantages to building passenger rail within an existing railroad corridor. However, it is sometimes assumed that passenger rail can easily and more cheaply be placed on the existing freight railroad tracks within that corridor. There are many reasons it may be impractical to do so. Most important is the safety factor—the mixing of slow, heavy freight trains with faster, lighter, and more frequent passenger rail cars can be difficult to manage efficiently and safely. Some of problems or challenges can be overcome through better track and signaling systems. There are some examples around the country where passenger trains and freight service coexist. The adding of a second track with frequent crossovers can improve the performance of both passenger and freight service.

Railroads are in business to move products to market as quickly and reliably as possible. That cannot easily be accomplished if those trains are frequently delayed or stopped by passenger rail cars. While it is true that Amtrak's long-distance trains share tracks with freight railroads, it must be noted that most of those Amtrak routes run infrequently. It is much more problematic to mix frequent commuter and inter-regional trains with freight trains. Any development of passenger rail service will require addressing the combined freight and passenger rail capacity issues together.

Figure 2 – Rail Corridors of State Significance



Consequently, it might be more practical for future passenger rail lines to consider the purchase or lease of rights-of-way within existing railroad ROW to build new tracks rather than trying to operate commuter or regional trains on existing tracks. Even when it is possible to lease or purchase railroad ROW for construction of new tracks, it still will be necessary to develop sophisticated and complex working agreements with the railroads in order to safely operate within the railroad ROW. It also might sometimes be necessary to build significant flyover structures, given that railroads often must have access to customers on both sides of a track.

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others interested in understanding the relationships between land use and rail transit systems. The study can be found at

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It could be particularly difficult to establish a tax base for interregional passenger rail lines. It can be very difficult to obtain voluntary local government contributions for such expensive services. At a minimum, complex long-term intergovernmental agreements would be needed to establish interregional passenger rail lines. It might be more practical to establish, through legislation or voter initiative, an overlay district that could assess fees or taxes within the affected areas and provide representation throughout the district.

There has been a particularly high level of interest in establishing a passenger rail service along the Front Range, anywhere from Fort Collins and Greeley to as far south as Pueblo. The 2001 North Front Range Transportation Alternatives Feasibility Study calls for the development of an interregional rail line from Fort Collins along the Interstate 25 corridor, though it offers no detailed planning or financing plans. The Rocky Mountain Rail Authority is conducting a study of the I-25 and I-70 corridors for passenger rail service. The information from this study could serve as the supporting material for an application to the Federal Railroad Administration for designation as the eleventh high-speed rail corridor, and to identify financing options.

Interest at the legislative and community level is focused on how best to establish a funding and sponsorship structure in the future. Currently, no organization is charged with the leadership of an effort to develop a passenger rail line along the Front Range.

One constraint to the development of a Front Range passenger rail line is the congestion that exists along this rail corridor. There are many coal trains that traverse the corridor. The two Class I railroads in Colorado—the BNSF and Union Pacific railroads—share tracks from Denver to Colorado Springs; at one point that shared line is reduced to a single track, and traffic is slowed by having to climb the Palmer Divide. The railroads are simply in no position to offer any of their tracks or right-of-way for passenger rail under these existing congested conditions.

Federal TEA-21 transportation legislation established enabling legislation for the designation of high-speed rail (HSR) corridors, though no funding was authorized for them. Legislation has been proposed in Congress to fund these designated corridors. The proposed legislation would offer funding for high-speed passenger rail corridors, which could be used for rail safety improvements, including elimination or improvements to highway-railroad grade crossings; the upgrade of existing rail lines to high-speed rail; construction of new high-speed rail lines; purchase of new high-speed equipment; or other capital investments. In essence this could benefit freight lines in exchange for use of ROW for passenger services.

The passage of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in August 2005 did not provide any additional funding for high-speed rail development and continues the current authorized level of funding—\$70 million annually for corridor development and \$30 million for high-speed rail technology improvements. Only 11 designated high-speed rail corridors would be eligible for such funds. To date, only 10 such corridors have requested and received designation. The US Department of Transportation closed its application process for corridor designations in 2002.

NEEDS

The primary areas of interest in passenger rail are in the Denver metropolitan area, along the Front Range from Fort Collins and Greeley south to Pueblo, along the I-70 mountain corridor, and within local mountain corridors, such as the Roaring Fork Valley. The extent to which passenger rail service has been planned varies greatly among these corridors. For example:

- RTD has taken steps to identify specific corridors for passenger rail and, with passage of the Fastracks tax package, has established a major funding source for constructing rail lines.
- RTD, CDOT, the Denver Regional Council of Governments, and the City and County of Denver worked together in a partnership to develop a master plan for the redevelopment of Denver Union Station into a major intermodal transportation hub. A key modal function of Union Station will be its role as a hub for light rail, commuter rail, and long-distance rail lines.
- Within the Roaring Fork Valley, a rail corridor exists and is owned by the local transit authority, but adequate funding for construction has not been identified, so plans have focused on rail development further into the future.
- Within the I-70 mountain corridor, there has been difficulty identifying enough funding as well as an appropriate technology for a fixed guideway service. The Rocky Mountain Rail Authority study will examine a full range of technologies and alignments as well as alternative ways to pay for the system. The Colorado Department of Transportation recognizes that the ultimate solution along the I-70 mountain corridor will need to include alternative modes.
- As mentioned earlier, there is a long-term proposal for the development of an interregional rail line from Fort Collins along the I-25 corridor. However, some are suggesting that since RTD plans to develop passenger rail along the BNSF railroad from Denver to Longmont, that line could potentially be extended to Fort Collins using the existing BNSF rail line at less expense than a new line along the I-25 corridor. Others suggest it may make more sense to reserve the I-25 corridor for high-speed rail service. Local rail lines could be used to provide access to the high-speed I-25 corridor for Loveland, Greeley, and Fort Collins. The North I-25 EIS has not made a decision as to the preferred alternative. Two packages are being analyzed along with the No Action Alternative. One of the two packages includes a commuter rail component. The preferred alignment for commuter rail service from Fort Collins to Denver is along the existing Burlington Northern Santa Fe rail line to Longmont and then east along SH 119 to I-25 and then south along I-25 to the North Metro rail line end of station.
- Eagle County has considered the establishment of commuter rail service between Gypsum/Eagle County Regional Airport and Vail. Some preliminary studies have been completed.

While there is significant interest in passenger rail lines, only the Denver Regional Transportation Plan includes passenger rail corridor projects in its preferred plan, and the Intermountain plan includes rail/fixed guideway projects in its preferred plan.

CONCLUSION

The operation of interstate passenger rail service in Colorado will continue to be in question as Congress wrestles with the future direction of Amtrak. If Amtrak continues to operate its long-distance routes, it is likely that the *California Zephyr* route will continue to operate. There are some questions about the future of the *Chief* route.

In the Denver metro area, RTD is moving ahead with the planning of a significant number of passenger rail improvements.

There is interest in the future construction of a Front Range intercity passenger rail line. The feasibility of putting such a line in place is greatly increased if Colorado's two Class I railroads shift much of their through freight traffic out to the east of the Front Range. However, the funding and governance of a passenger line will present a major challenge.

As highways and air lines become more congested and fuel costs escalate, passenger trains in Colorado and nationally will increasingly be examined as a means to facilitate the movement of people.

Interregional passenger rail service not only offers a viable alternative for travelers as the highway system continues to become more and more congested, but it also can serve as a way to achieve smarter growth. Rail stations are a magnet for higher-density residential and commercial developments. One only needs to look at what has taken place along the Southwest LRT line at the Englewood station to see this firsthand. Proposals are being brought forth for the Southeast LRT corridor for higher-density developments as well. Passenger rail service can be a catalyst for better and more sustainable growth.