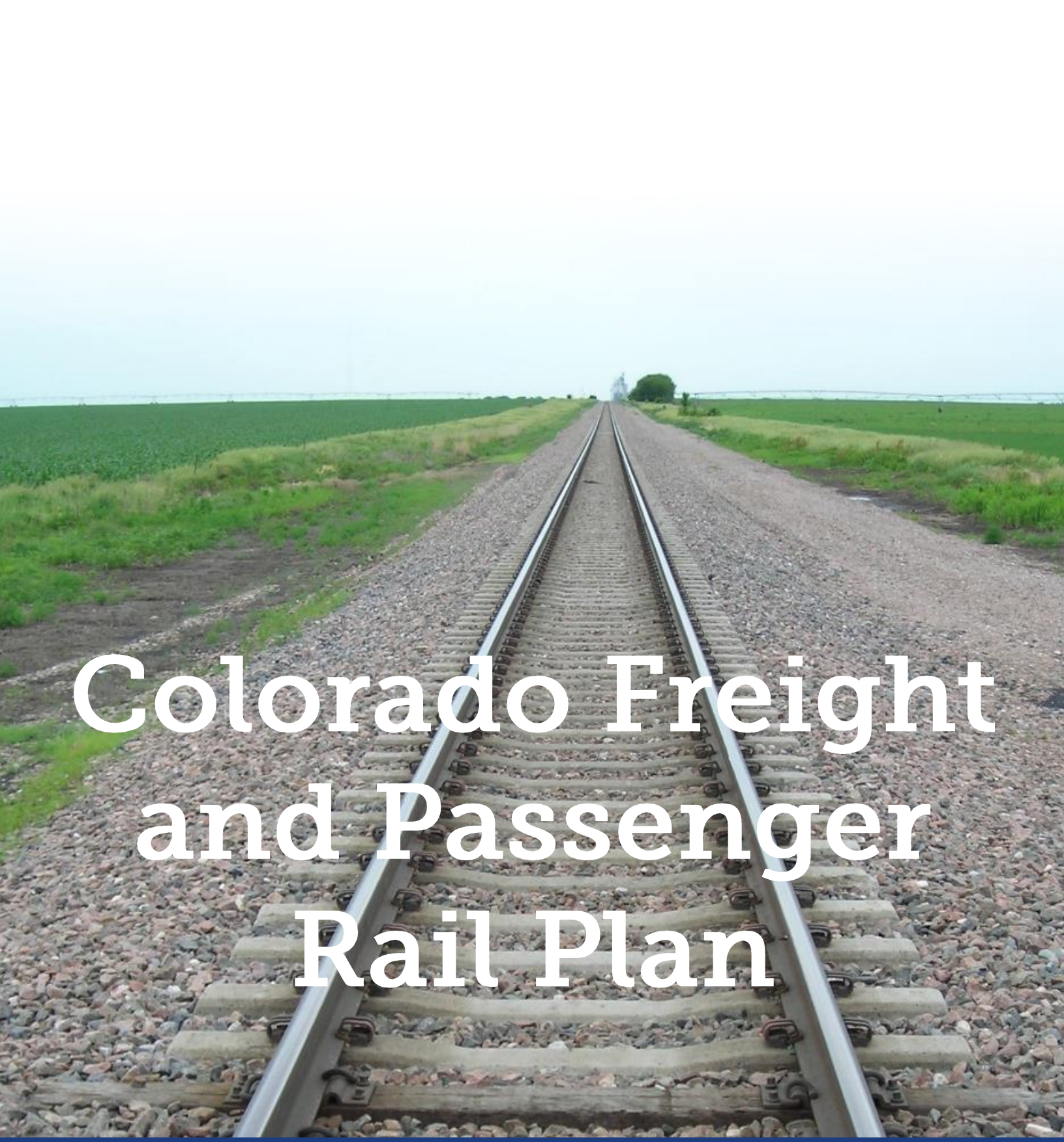

Colorado Freight and Passenger Rail Plan

COLORADO
Department of Transportation

2018

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Commonly Used Terms

SFPRP - *The State Freight and Passenger Rail Plan, or Rail Plan, is the overarching strategic document that charts the future of rail in Colorado and provides guidance on key issues and opportunities, priority recommendations, and implementation steps to advance rail across the state.*

Organizations

CDOT – *Colorado Department of Transportation, the state agency responsible for managing the state's multimodal transportation system.*

FRA – *Federal Railroad Administration, the agency responsible for overseeing freight and passenger railroads in the United States.*

DTR – CDOT's *Division of Transit and Rail, the division responsible for planning, oversight, and operation of transit and passenger rail activities within Colorado.*

Southwest Chief and Front Range Passenger Rail Commission - *Established in 2017, the convening organization responsible for facilitating passenger rail in key corridors of the state.*

Project Committees

JPAC – *Joint Project Advisory Committee, which included public and private partners and provided overall policy guidance for both the SFPRP and CFP.*

Rail Plan Working Group – *The core group of nearly 20 public and private advisors that directed and oversaw the development of the SFPRP.*

TRAC – *Transit and Rail Advisory Committee, which includes representatives from across the state to advise CDOT on multimodal transportation issues, including passenger rail.*

FAC – *Freight Advisory Council, which includes public and private stakeholders who advise CDOT on freight-related issues and needs.*

Rail Operators

Class I Railroads – *National long-distance private freight railroads, including BNSF Railway and Union Pacific Railroad.*

Class II or III Short Line Railroads - *Small or mid-size railroads operating exclusively within the state or in neighboring states.*

RTD – *Regional Transportation District, which operates light and commuter rail service in the greater Denver region.*

Amtrak – *National Railroad Passenger Corporation, the national provider of long-distance, intercity passenger rail service in the United States.*

Scenic Railroad - *Collectively, the state's eight scenic railroads providing tourist service on historic routes.*

Key Terms

Front Range – *The state's most populous region, generally extending from Fort Collins to Trinidad.*

Passenger Rail – *A broad term describing all rail services moving people in the state.*

Intercity Rail – *Long-distance passenger service generally greater than 50-mile route distances, including Amtrak routes, as well as future high-speed rail service.*

Commuter Rail – *Short-distance passenger service generally less than 50 miles, including RTD's service in the Denver region.*

Multimodal – *General term for all integrated passenger transportation modes, including transit, rail, car, air, pedestrian, and bicycle.*

Intermodal – *Describes the transfer of freight between modes, such as rail to truck, and describes intermodal container shipments commonly used in international shipping.*

INTRODUCTION AND OVERVIEW

Colorado moves by rail. Anything that is grown, mined, or made needs to be moved. Freight rail transports the wheat used to brew craft beer, the fertilizer nurturing Olathe sweet corn and Rocky Ford cantaloupes, the drywall and lumber used to build homes, and the energy to power our schools and office buildings, as well as anything that can be loaded in a truck—including the truck itself. Colorado's commuter and light rail systems move Colorado residents in increasing numbers to and from work, school, or the airport and provide travel options for everyday trips. Intercity passenger rail service on Amtrak makes Colorado a competitive place in which to do business and provides visitors access to major urban areas, small towns, and our global tourist destinations. Colorado's residents, visitors, and businesses rely on rail to move people and products into and around the state and to destinations around the globe. To keep Colorado's economy competitive and our communities attractive, we must continue to maintain our existing rail infrastructure, while preserving future capacity and improving mobility.

This is no small task. In 2016, more than 29.2 million passengers in Colorado rode intercity, light rail, or commuter rail trains, and 927,000 visitors enjoyed Colorado's eight scenic railroads. Colorado's passenger rail systems include intercity Amtrak service, consisting of two routes operating through Colorado, Regional Transportation District (RTD) light rail and commuter rail lines operating throughout the Denver metro area, and many scenic and historical railroads that attract visitors to rural communities. Colorado's freight rail system extends over 2,684 miles and is operated by 14 privately owned railroads. Together, these freight railroads moved more than 154.7 million tons of products into, out of, within, and through Colorado in 2014. That amounts to nearly 155 pounds for every Coloradan, every day. Together, these freight and passenger rail systems deliver goods, get people to work, create jobs, support communities, and provide choices for travelers and businesses.

The Colorado Department of Transportation (CDOT) works with transportation planning partners, regional economic development organizations, industry associations, businesses, and private and public railroads to plan and coordinate transportation across Colorado's rail systems. Colorado's freight rail system is privately owned, operated, and funded. Amtrak funds and operates intercity passenger rail, while RTD funds and operates the Denver metro area commuter and light rail network. Colorado is also home to nationally known scenic and historic railroads that are owned, operated, or supported by the State of Colorado, local governments, non-profit organizations, or private businesses.

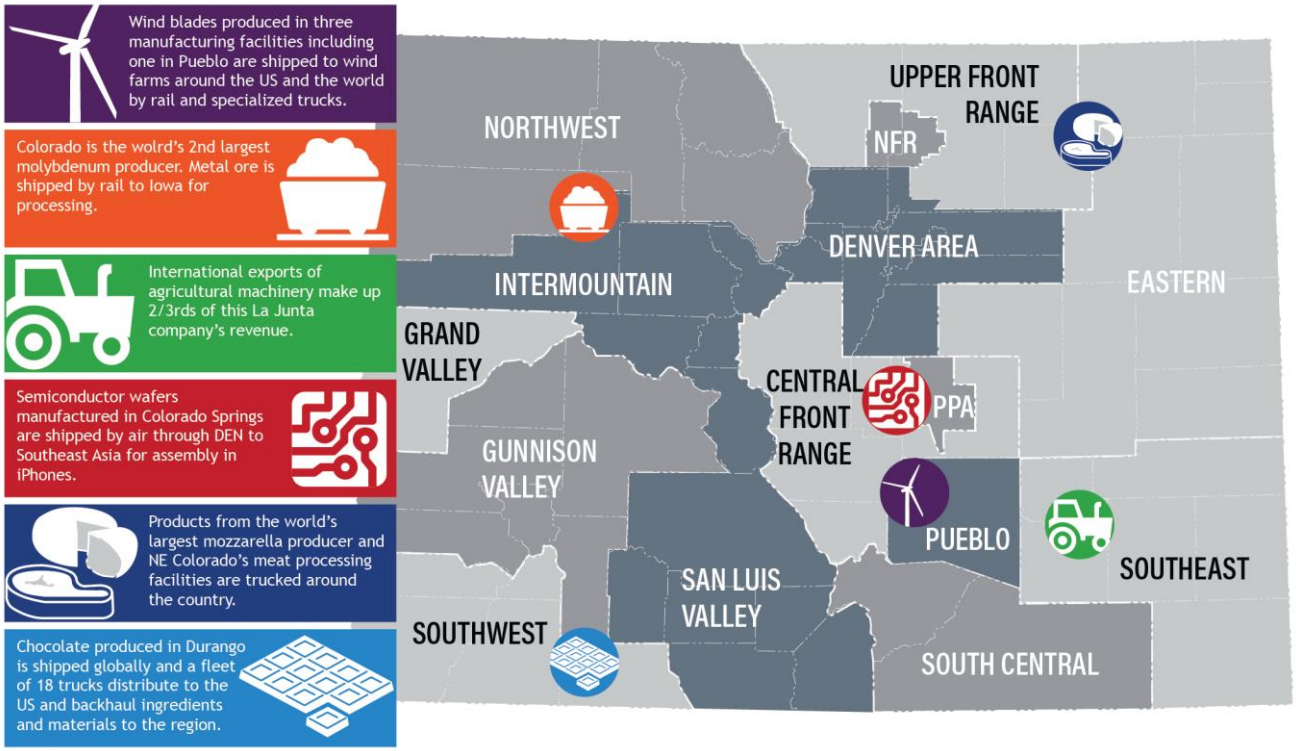
CDOT works closely with these public and private partners to ensure that rail planning is coordinated and helps to advance policies and projects that make these systems safer, more efficient, more reliable, and more accessible. To develop a plan for the future of rail in Colorado, CDOT collaborated with transportation planning partners to understand freight and passenger rail needs now and well into the future. The result of this outreach and engagement is Colorado's State Freight and Passenger Rail Plan (SFPRP) or "Rail Plan." This integrated rail plan documents Colorado's overall vision and strategic goals and provides CDOT with strategic guidance, identifies critical investments, and directs implementation actions to keep Colorado's people and goods moving by rail.

MADE IN COLORADO, SHIPPED TO THE WORLD

Our multimodal highway, rail, air, and intermodal transportation systems link people and businesses within Colorado and across the globe, create jobs, support small businesses, and play a vital role in Colorado's economic competitiveness. Businesses and workers in agriculture, manufacturing, mining and energy, construction, food processing, distribution, retail trade, manufacturing, aerospace, medicine, clean energy, and logistics depend on Colorado's freight rail network to produce, sell, and move products. According to the U.S. Bureau of Economic Analysis, more than $155.8 billion or one-third of Colorado's gross state product is generated in freight-reliant industries that depend on moving products as a core daily business function. Overall, 1 in 6 jobs in Colorado's economy similarly depend on our ability to safely, efficiently, and reliably move products and packages. Nearly 3,000 jobs in Colorado are directly supported by private freight railroad companies and hundreds more are supported by passenger and scenic rail operations.

Many Colorado companies are household names that develop products you might use every day, including Otterbox, Osprey, Crocs, New Belgium Brewing, Rocky Mountain Chocolate Factory, and MillerCoors. Colorado is home to many other small businesses, family farms, growers, ranchers, exporters, producers, and processors that rely on freight rail connections. A growing number of corporate headquarters and major employers are locating in the Denver metro region near passenger rail stations. Colorado ranks among the top 10 states producing beer, eggs, wheat, beef, precious minerals, and oil and natural gas, as well as dozens of other products and commodities. Businesses locate in Colorado to leverage our skilled workforce, diverse and unique communities, natural resources and beauty, and our multimodal transportations systems, including freight and passenger rail.

Transportation represents a significant cost to businesses. In total, U.S. business logistics costs in 2015 grew to $1.48 trillion or about 7 percent of the total U.S. economy. Preserving and improving Colorado's freight and passenger rail systems, expanding intermodal connections, and providing access to national transportation networks are critical to supporting and expanding Colorado companies and the quality jobs they support.



THE ROAD TO THE FUTURE ISN'T ONLY A ROAD

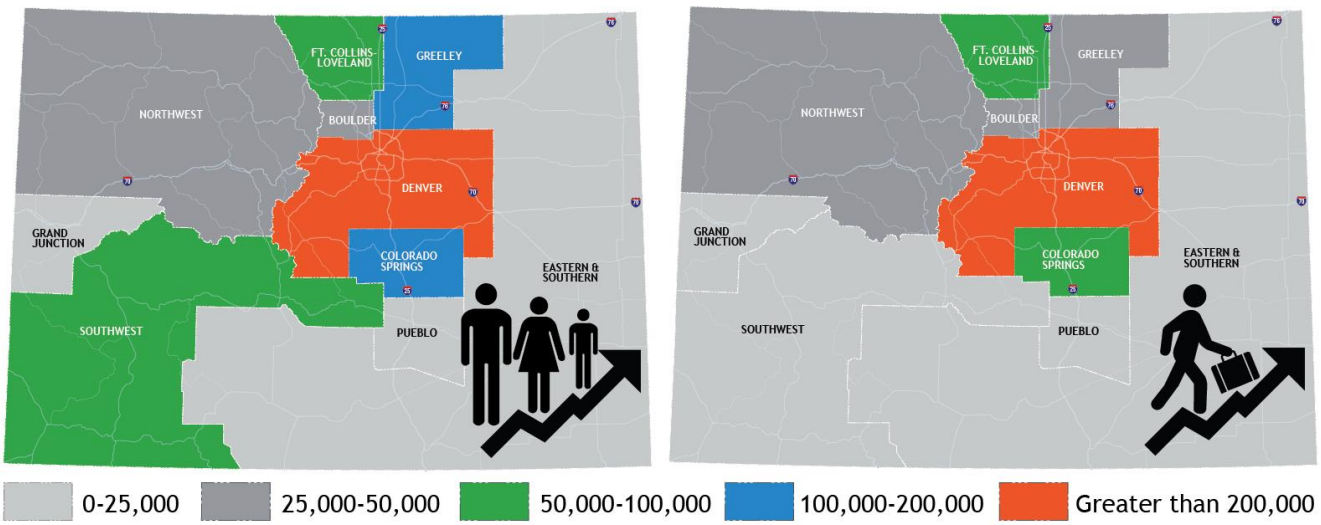
Our multimodal transportation system connects Colorado's communities, create work opportunities, and enable technology and innovation that benefit Coloradans in every region of our state. Colorado's population and economy are growing. Estimates from the State Demography Office suggest that by 2030 nearly 6.9 million residents will call Colorado home, compared to 5.6 million in 2017. That annual growth is equivalent to adding a city the size of Longmont or Greeley each year between now and 2030. Most population growth will occur along the Front Range and in existing urban areas. Each new Colorado resident generates more demand for food, fuel, housing, and retail products that must be shipped and delivered.

Colorado also anticipates future economic growth in the form of new businesses, workers, and visitors. According to the Colorado Department of Labor and Employment, by 2026 another 560,000 workers will be employed in Colorado. Tourism to Colorado is also expected to grow. In 2015, alone more than 77.7 million tourists visited Colorado and spent $19.1 billion on goods and services. Together, new residents, new workers, and new visitors will place additional demands on the state's multimodal transportation systems. Colorado's freight and passenger rail systems are integrated and connected components of the state's multimodal transportation system, which also includes highways, airports, transit systems, and cyclist and pedestrian facilities.

Business formation and entrepreneurship remain strong in Colorado with an average of 25,500 new businesses started each quarter, according to the Colorado Secretary of State. Some of those businesses produce goods that are shipped across the country or exported overseas. In 2015, nearly $8 billion in goods were exported from Colorado to destinations around the world. Estimates from the International Trade Administration indicate that more than 5,000 Colorado companies exported goods abroad and 87 percent of those were small businesses. Freight and passenger rail systems enable these businesses to start and grow in communities across the state and for Colorado-made products to reach consumers around the globe.

Maintaining and improving our freight and passenger rail systems creates economic opportunities for communities to grow and for residents to prosper. When moving products and people is reliable and efficient, people can live and work in any one of Colorado's unique communities and still access products or customers across the globe or employment centers in urban areas. Visitors to Colorado expect modern and accessible passenger rail service options to match our world-class destinations, including national parks, mountain resorts, universities, and regional attractions.

Forecasted Population and Employment Growth 2016-2026



COLORADO DELIVERS

Our multimodal transportation system benefits our daily lives by delivering the goods we depend on: on time, every day, and no matter where. Colorado consumers expect rapid and reliable delivery of a wide variety of goods to our homes. Nearly everything can be ordered online and delivered the next day—from laundry detergent, to pet food, and even ready-made meals. Increasing connectivity also enables businesses to locate anywhere in Colorado and remain connected to customers across the globe.

A survey commissioned by UPS in 2016 found that more than one-half of all purchases in the United States are now made online. As a result, e-commerce is growing rapidly—more than doubling sales volumes between 2006 and 2016—to reach $394.9 billion nationally in 2016, according to the U.S. Department of Commerce. These trends are changing the demands placed on Colorado's multimodal freight systems by putting more packages and products on our highways, railroads, and airports. Colorado is a consumer state; we bring more products into our stores and to our homes than we ship out. Most packages ordered online are destined for our homes, which means more trucks on the roads, in more places, more often. Freight rail systems provide efficient and safe alternatives to transporting products by truck and can help alleviate the growing demand on the state's highway systems.

Businesses across Colorado also expect reliable service and dependable delivery. Agricultural producers depend on freight rail service to transport crops to market on time. Our electric utilities depend on deliveries of coal and natural gas by rail to power our homes. Manufacturers, home improvement stores, and retail stores rely on railroads to deliver sales inventory and stock store shelves with supplies.

Passenger rail is also critical to Colorado's economic competitiveness. In the Denver metro area, more than 28.9 million passengers boarded a commuter rail or a light rail train in 2016. Many of these riders depend on passenger rail to get to and from work and to get around without driving on congested highways. Amtrak's two Colorado routes stop at nine stations in the state and bring 250,000 passengers a year into and across Colorado. Amtrak provides the only intercity passenger rail service in Colorado, connecting visitors to destinations in Colorado and providing travel for residents. Colorado's eight scenic and historic railroads attract hundreds of thousands of visitors each year and provide jobs and sales tax revenues to rural communities across the state.

Imagine if home improvement stores could not stock lumber, if utilities ran out of energy, if products ordered for a jobsite did not arrive, or if commuters could not get to work on time. The need for reliability and redundancy in Colorado's freight and passenger rail systems is critical.

Energy to power our homes and businesses

Agricultural products to market

Consumer imports to store shelves

Commuters to work and visitors to destinations

COLORADO'S PLANNING PROCESS

About This Rail Plan

Colorado's Rail Plan is the most recent comprehensive plan to address freight and passenger rail transportation across the state. This plan continues the work and priorities established in Colorado's 2012 State Rail Plan and is consistent with plan guidance issued by the Federal Railroad Administration (FRA). This Rail Plan helps CDOT and our planning partners better understand the complexities of the rail systems that Colorado businesses, residents, and visitors rely on, by:

- **Defining** a vision and strategic goals for our rail systems;
- **Illustrating** and analyzing the role of rail in Colorado's economy;
- **Assessing** current conditions and identifying needs and issues;
- **Examining** future trends and their impact on rail service demand in Colorado;
- **Prioritizing** potential projects and creating a rail service and investment plan;
- **Identifying** short and long-term strategies to address needs and issues; and
- **Developing** a short-list of critical implementation steps to keep Colorado moving.

The SFPRP guides policies, planning, improvements, and investments to support Colorado's future vision for rail systems that are a critical component of our multimodal transportation system and that enhance mobility and advance economic vitality for all Coloradans.

This Rail Plan provides a framework for future action by CDOT and public and private partners. It is a resource for rail planning partners to understand current issues and future needs, connecting trends and issues to opportunities, and providing priority strategies and implementation pathways for future action.

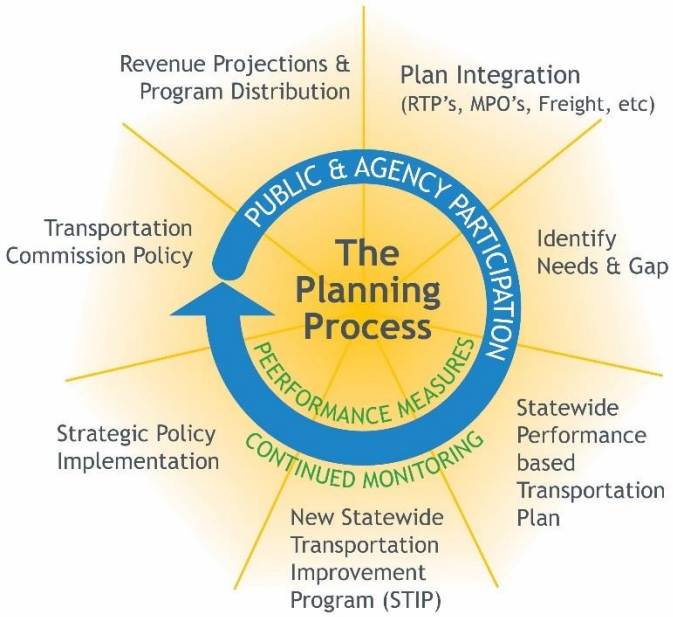
To achieve Colorado's vision for the future of rail, this Rail Plan:

- **Complies** with the Federal Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and is consistent with planning requirements of the FRA and State of Colorado;
- **Engages** key stakeholders in the planning process and encourages education and communications initiatives to reach the traveling public and decision makers;
- **Develops** CDOT's networks and partnerships with key public and private planning partners, including rail operators;
- **Enables** access to federal and state funding sources, including future competitive federal grant opportunities and potential state or local funding sources; and
- **Identifies** a framework and high priority strategies for future action, study, coordination, and communication.

This Rail Plan will be updated on a four-year cycle to reflect changing conditions, needs, and opportunities. However, CDOT and our partners will regularly review the framework, strategies, key actions, and coordination opportunities identified in this Rail Plan to ensure that this plan is flexible, agile, and responsive to stakeholders and the traveling public.

Statewide and Regional Planning

CDOT's mission is to provide the best multimodal transportation system for Colorado that most effectively moves people, goods, and information.



The efficient movement of people and products is critical to keep Colorado's economy moving. Yet, the rail transportation issues and needs of Colorado's industries and residents are constantly changing and rapidly evolving in response to global economic forces, national trends, and local opportunities. CDOT, together with our planning partners and stakeholders, is continually looking ahead and planning to meet future needs.

CDOT plans ahead so that we can create the best system possible with limited resources. Like setting a household budget, CDOT and planning partners must prioritize projects that provide the greatest benefits at the lowest costs. How do we make major investment decisions when project needs far outweigh resources? How do we prioritize among enhancing station areas, improving the safety of at-grade rail crossings, supporting freight rail infrastructure improvements, expanding intercity passenger rail service, or preserving railroad rights-of-way for future use? CDOT makes these decisions by approaching state and regional planning through a continuous, comprehensive, and collaborative process, consistent with federal and state requirements. Planning enables CDOT to decide what is important, where to start, and what steps are necessary to implement improvements and achieve our strategic goals. The SFPRP reflects this considerate approach to planning and incorporates data and analysis that inform our decision-making, including establishing goals and objectives, prioritizing resources, and developing implementation plans.

CDOT's roadmap for the next 10 to 25 years is the Statewide Transportation Plan (SWP). The SWP provides the strategic direction for Colorado's future transportation system and balances the need to maintain our existing system against important priorities of expanding the system, providing more travel choices, and increasing efficiency and safety.

Statewide goals identified in the SWP include:

- **Safety** - Move Colorado toward zero deaths by reducing traffic-related deaths and serious injuries.
- **Mobility** - Improve mobility and connectivity with a focus on operations and transportation choice.
- **Economic Vitality** - Improve the competitiveness of the state economy through strategic transportation investments.
- **Maintaining the System** - Preserve and maintain the existing transportation system.

The SWP is the umbrella document for CDOT's family of regional, modal, and operational plans, including safety, operations, asset management, transit, bicycle and pedestrian, freight, and this Rail Plan. These plans are fully integrated and support the overall goals of the SWP to ensure that CDOT is moving forward with policies and projects that leverage limited funding and provide the best return on our investments. While the SWP provides high-level guidance and sets strategic goals, the SFPRP focuses on extensive stakeholder engagement and data

analysis to develop strategic priorities and policies specific to freight and passenger rail. These goals, strategies, and key implementation recommendations support and advance statewide goals and will be integrated into future statewide plans.

Rail Planning in Colorado

The SFPRP is not the first or only rail-specific planning effort in Colorado. CDOT continuously examines the needs of Colorado's freight and passenger rail systems and studies specific needs to address current and future issues. These previous planning efforts helped set the stage for the SFPRP, which provides a comprehensive look at current challenges and emerging opportunities across all rail transport in Colorado.

State legislation created CDOT's Division of Transit & Rail (DTR) in 2009. DTR is responsible for planning, developing, operating, and integrating transit and passenger rail into the statewide multimodal transportation system. DTR works in coordination with public and private rail providers to plan, promote, and implement investments in transit and passenger rail services statewide, with the goal of providing a coordinated multimodal system to meet Colorado's transportation challenges now and in the future. DTR's primary functions include administering federal and state grant programs; planning for transit and rail service; coordinating with agencies and stakeholders; complying with federal and state regulations; and providing transit services such as Bustang and Outrider. CDOT's Division of Transportation Development (DTD) integrates freight rail services into multimodal freight and statewide transportation plans and coordinates with freight railroads through the Freight Advisory Council. DTR and DTD work cooperatively to address both passenger and freight needs and issues throughout the state. CDOT's Division of Project Support manages the federal railway-highway crossing safety program, which funds safety improvements to crossing infrastructure and equipment and grade separation projects.

Plan Development Partners and Process

Colorado's Rail Plan was guided by input from residents, businesses, and community leaders; freight and passenger rail operators and industry representatives; agency partners; and elected officials. Together, this diverse set of stakeholders provided ideas and insights that helped shape this Rail Plan to position Colorado to proactively address freight and passenger rail issues and priorities.

CDOT DTR led the development of this Rail Plan. Planning efforts were coordinated with DTD's Multimodal Planning Branch, along with CDOT Engineering Regions, Transportation Planning Regions (TPRs), and regional planning partners such as metropolitan planning organizations (MPOs). Key state agency partners in developing and guiding this planning effort included the Colorado Public Utilities Commission (PUC), Colorado Office of Economic Development and International Trade (OEDIT), Colorado Tourism Office, and Colorado Department of Agriculture. Private railroads and business leaders were directly involved in developing this Rail Plan through committee engagement and stakeholder outreach. The SFPRP was developed in parallel with the Colorado Freight Plan (CFP), recognizing that freight rail is a common element to both plans and improvements, policies, and plans must be coordinated across modes.

State Freight and Passenger Rail Plan Advisory Committees

CDOT recognizes and appreciates the partners who helped develop and shape this Rail Plan with their insights and ideas. The following committees provided critical guidance and input throughout the development of this Rail Plan and CFP:

- **Statewide Transportation Advisory Committee (STAC)** provides guidance to CDOT on statewide transportation planning and policy. STAC members include elected officials and regional planning staff from each TPR and Colorado's two tribal governments. STAC provided a forum for discussing regional rail

transportation issues and provided feedback and guidance to CDOT on stakeholder input and key recommendations within this Rail Plan.

- **Transit and Rail Advisory Committee (TRAC)** advises CDOT on policies and programs related to transit and passenger rail service. TRAC includes representatives from public and private transit providers, railroads, local agencies, rail and public interest advocacy groups, and the public. This committee received quarterly updates on Rail Plan progress and guided development of the recommendations within this Rail Plan. Several TRAC members participated on the Rail Plan Working Group.
- **Colorado Freight Advisory Council (FAC)** is an independent forum for private sector and public partners to work together to advocate for commercial transportation, influence transportation policy, and collaborate with partners. Supported by CDOT, the FAC includes two dozen public and private sector representatives from businesses, industry associations, transport modes, and local and regional agency planning partners. This committee provided information and insight on freight rail related issues and guided development of key strategies and implementation actions.

In addition to the standing committees described previously, a **Joint Project Advisory Committee (JPAC)** of public and private representatives was formed specifically to guide the development of both this Rail Plan and the CFP. The JPAC provided guidance, oversight, and direction to the development of this Rail Plan. JPAC members included representatives from the private sector and public planning partners across all transportation modes. These members provided unique perspectives on goods movement, urban and rural communities, economic development, manufacturing and retail, shippers and carriers, logistics and supply chain management, and multimodal freight and rail systems in Colorado. This group met quarterly throughout this planning effort and developed the guiding principles, education and communications strategy, and implementation actions embedded within this Rail Plan. JPAC members also participated on the STAC, TRAC, and FAC and will play key roles in future partnership, education, and implementation efforts.

In coordination with the JPAC, a **Rail Plan Working Group** met monthly throughout this planning effort to review key findings and outreach results, develop vision and goal statements, review strategies and recommendations, and provide critical oversight to inform the strategic direction of this Rail Plan. Members included representatives from BNSF Railway (BNSF), Union Pacific Railroad (UP), OmniTRAX, American Short Line & Regional Railroad Association, Iowa Pacific Holdings, RTD, Denver Regional Council of Governments (DRCOG), North Front Range MPO, Pikes Peak Area Council of Governments, Pueblo Area Council of Governments, University of Denver Transportation Program, Colorado PUC, Colorado Rail Passenger Association (ColoRail), STAC, TRAC, I-70 Coalition, and CDOT staff. CDOT acknowledges and appreciates the efforts and ongoing work of our partners and champions who helped make this rail plan possible.

Federal and State Planning Requirements

In 2008, the U.S. Congress passed PRIIA with the expressed intent of improving passenger rail service across the country. One feature of the legislation is the requirement that any state seeking federal assistance for either passenger or freight rail improvements must develop and maintain an updated state rail plan. This legislation further mandates a standardized rail plan format, lists minimum rail plan content, and codifies procedural requirements for rail plan preparation.

This Rail Plan meets federal requirements, including the 2008 PRIIA legislation, and is consistent with state planning guidance included in the State of Colorado's 2009 Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Act and Policy Directives issued by the Colorado Transportation Commission. Approval of Colorado's SFPRP will make the state compliant with 49 United States Code Section 22102 concerning state rail plans and state rail administration.

This Rail Plan follows PRIAA guidance and is outlined in six chapters:

ES. Introduction and Overview reviews why rail is a critical component of Colorado's multimodal freight system and discusses the partners involved in and the process of completing this Rail Plan.

1. **The Role of Rail in Statewide Transportation** summarizes the key goals and objectives of this Rail Plan and describes the current and proposed future role of rail in Colorado, rail-related governance and oversight agencies, state rail funding authority, and past freight and passenger rail planning initiatives.
2. **Colorado's Existing Rail System** presents an overview of existing freight and passenger rail systems, including trends and forecasts, and summarizes critical needs and issues.
3. **Proposed Passenger Rail Improvements and Investments** lists potential investments in passenger rail and identifies service needs and opportunities.
4. **Proposed Freight Rail Improvements and Investments** lists potential investments in freight rail and identifies service needs and opportunities.
5. **Rail Service and Investment Program** identifies fiscally constrained rail funding within a short-range 4-year program and summarizes known and fiscally unconstrained vision improvements for the passenger and freight rail system over a 20-year program.
6. **Coordination and Review** summarizes stakeholder involvement and key issues and needs addressed in the development of this Rail Plan.

Appendix includes a glossary of common terms and acronyms, profiles of freight railroads operating in Colorado, presentation materials generated through the rail planning process, and excerpts of industry and public survey efforts undertaken during the development of this Rail Plan.

CHAPTER 1 – THE ROLE OF RAIL IN STATEWIDE TRANSPORTATION

Chapter 1 describes Colorado's vision and goals, summarizes existing freight and passenger rail systems in Colorado, and identifies the entities involved in governing and funding Colorado's rail systems.Colorado's population is projected to grow from 5.5 million in 2016 to more than 7 million residents by 2030—an increase of 1.5 million residents. Over 80 percent of future population growth will occur along the Front Range corridor in existing communities and new planned developments. This growth will increase demand for efficient and safe multimodal transportation options for the traveling public. Colorado's communities, residents, businesses, and visitors benefit from freight and passenger rail service that is coordinated with, and connected to, the state's transit, highway, air, bicycle, and pedestrian transportation systems.

With future population growth, Colorado faces growing transportation challenges, including longer travel times, worsening congestion, deteriorating air quality and infrastructure, and the rising risk of highway crashes. Freight and passenger rail infrastructure will relieve additional demand on highway systems as the state grows and will help move the products and people on which the Colorado economy depends. Improving and expanding freight and passenger rail service helps Colorado attract businesses and compete with other states that are investing in critical rail infrastructure and expanding passenger rail service. Further developing commuter rail, intercity passenger rail, or new travel technologies will also enable Colorado's tourism industry to compete as a world-class destination.

1.1 COLORADO'S RAIL VISION AND GOALS

This Rail Plan establishes an ambitious vision for the future of rail in Colorado. Stakeholders and partners involved in the Rail Plan Working Group developed this shared vision, with consultation from key planning partners and CDOT committees.

State Freight and Passenger Rail Plan Vision

Colorado's rail systems are a critical component of our multimodal transportation system that enhance mobility and advance economic vitality for all Coloradans.

This vision reflects the importance of establishing Colorado's rail systems as critical and integral components of the state's multimodal transportation system. A focus on providing mobility options for both products and people emphasizes the importance of freight and passenger rail connections and accessibility. This planning effort and vision also concentrate on advancing economic development through rail infrastructure and services to increase the economic competitiveness of Colorado's communities through freight and passenger rail connections.

To support this vision, the Rail Plan Working Group established goal statements that aligned with Colorado's SWP, CFP, Statewide Transit Plan, and the guiding principles of the DTR. Together, Colorado's vision, goals, and high-priority implementation recommendations provide the framework and strategic direction for evaluating future opportunities, acting on recommendations, pursuing improvements and investments, and aligning future decision-making.

State Freight and Passenger Rail Plan Goals

Ensure that Colorado's rail systems are SAFE and SECURE

EXPAND and IMPROVE Colorado's rail systems for passengers and freight

Provide users and travelers with greater MOBILITY and CONNECTIVITY options

PRESERVE and MAINTAIN critical corridors and infrastructure to support Colorado's rail systems

Advance ECONOMIC VITALITY and ENVIRONMENTAL QUALITY of Colorado's communities and regions

This strategic framework for rail in Colorado will guide future implementation activities and planning efforts, not only for CDOT but also for public and private rail partners and stakeholders across the state. SFPRP goals are also aligned with the objectives and improvements proposed in the Rail Service and Investment Program described in Chapter 5.

1.2 THE ROLE OF RAIL IN COLORADO

Rail shaped Colorado's settlement and development. Most of the state's highways and roadways are adjacent to existing, or now abandoned, rail corridors, building on the same paths first carved by the railroads. Many communities were established around rail junctions, passenger stations, mine sites, or agricultural elevators and, even if the tracks no longer exist, those communities have continued to thrive. Abandoned rail rights-of-way and rail corridors now provide green spaces and recreational access to Colorado's great outdoors.

Today, railroads continue to shape Colorado's communities and industries by playing a vital role in growth and development. Class I freight railroads serve traditional and emerging industries in the state and provide important connections to national markets and international ports and trade gateways. Short line railroads provide essential connections to key agricultural industries and natural resource production sites in many regions of the state. Freight rail service provides Colorado businesses and consumers with environmentally efficient and safe options for moving goods, compared to highway movements.

Colorado's railroad and streetcar networks were developed beginning in the 1860s and served as the primary mode of transportation for both passengers and freight. However, as personal automobiles and trucking on public roads became more widespread and as interstate highways expanded, the way Coloradans traveled and moved goods shifted. Automobiles, highways, and commercial airlines replaced trains as the preferred mode for long-distance travel.

In 2017, nearly a decade after service was discontinued, the Winter Park Express passenger rail service resumed connecting Denver to Winter Park Resort. Southeast Colorado communities continue to support Amtrak's Southwest Chief and have collaborated to improve track and infrastructure conditions in order to secure the future of this route. Future Front Range passenger rail service is supported by many residents as a viable option for relieving congestion on key highway corridors. Scenic railroads in rural communities continue to attract hundreds of thousands of visitors every year and provide a connection to Colorado's railroading past.

Freight and passenger rail services play a critical role in Colorado's multimodal transportation system. Rail provides a safe, efficient, and competitive option for moving both products and people and provides essential connections for travelers and rail customers across Colorado.

Colorado's Freight Rail System

At this time, 14 privately owned freight railroads operate in Colorado. These railroads operate on 2,684 route miles of track and maintain a wide array of equipment, yards and terminals, maintenance facilities, and crossings throughout the state. Colorado's freight rail network directly serves 48 of the state's 64 counties and provides critical connections for local economies.

Two Class I railroads operate in Colorado: BNSF and UP. Combined, these railroads operate more than 80 percent of freight track miles and carry most freight by volume and by value in the state. Coal is the predominant commodity by weight for trips originating and terminating in Colorado, representing 50 percent of total tonnage and 28 percent of product value carried by rail in 2014. Intermodal shipments account for a growing volume of rail traffic. The importance of intermodal shipments is understated as available data measures rail cargo by tonnage.

Class I railroads are privately owned and make significant private investments in Colorado every year to maintain and improve services to their customers. In 2015, BNSF and UP directly employed 2,783 Coloradans and supported $255.4 million in payroll to local communities. Primary commodities handled by Colorado's Class I railroads include coal, non-metallic minerals, concrete and aggregates, farm and food products, consumer products, automobiles, and metal and timber products.

Colorado's 12 short line railroads provide essential regional connections to Class I railroads and serve customers in key agricultural and natural resource producing regions. They provide the "first and last mile" of connections to the national freight rail network. These private railroads operate approximately 20 percent of freight track miles in the state. Short line railroads are valuable assets to local economies, and the services they provide are crucial to some of Colorado's most important regional industries. Short line railroads directly employ hundreds of Coloradans and indirectly support many more jobs by providing freight connections among the national freight rail network and major utilities, manufacturers, and agricultural producers.

Freight rail plays a vital role in Colorado's multimodal transportation system by providing safe and efficient transport of critical heavy weight or hazardous materials, by providing long-distance and interstate connections for Colorado producers and consumers, and by supporting the economic competitiveness of Colorado's communities and regional economies.

On average, a freight train can carry the load of 280 or more trucks and move a ton of freight nearly 500 miles on a gallon of fuel, helping to reduce highway congestion and ease vehicle emissions.

Colorado's Passenger Rail Systems

The primary passenger rail system in Colorado consists of light rail, commuter rail, and intercity passenger rail. RTD provides light rail and commuter rail services throughout the Denver metro area. Amtrak operates two interstate routes as part of its national long-distance service network and one intrastate route within Colorado.

Colorado's intercity passenger rail network is experiencing growth and renewed interest. Amtrak, the National Railroad Passenger Corporation, is the only provider of intercity passenger rail service in Colorado. Ridership of Colorado's Amtrak routes grew from 226,364 in 2015 to 250,711 in 2016, an 11 percent increase. Amtrak currently operates two intercity passenger routes and one seasonal service in Colorado:

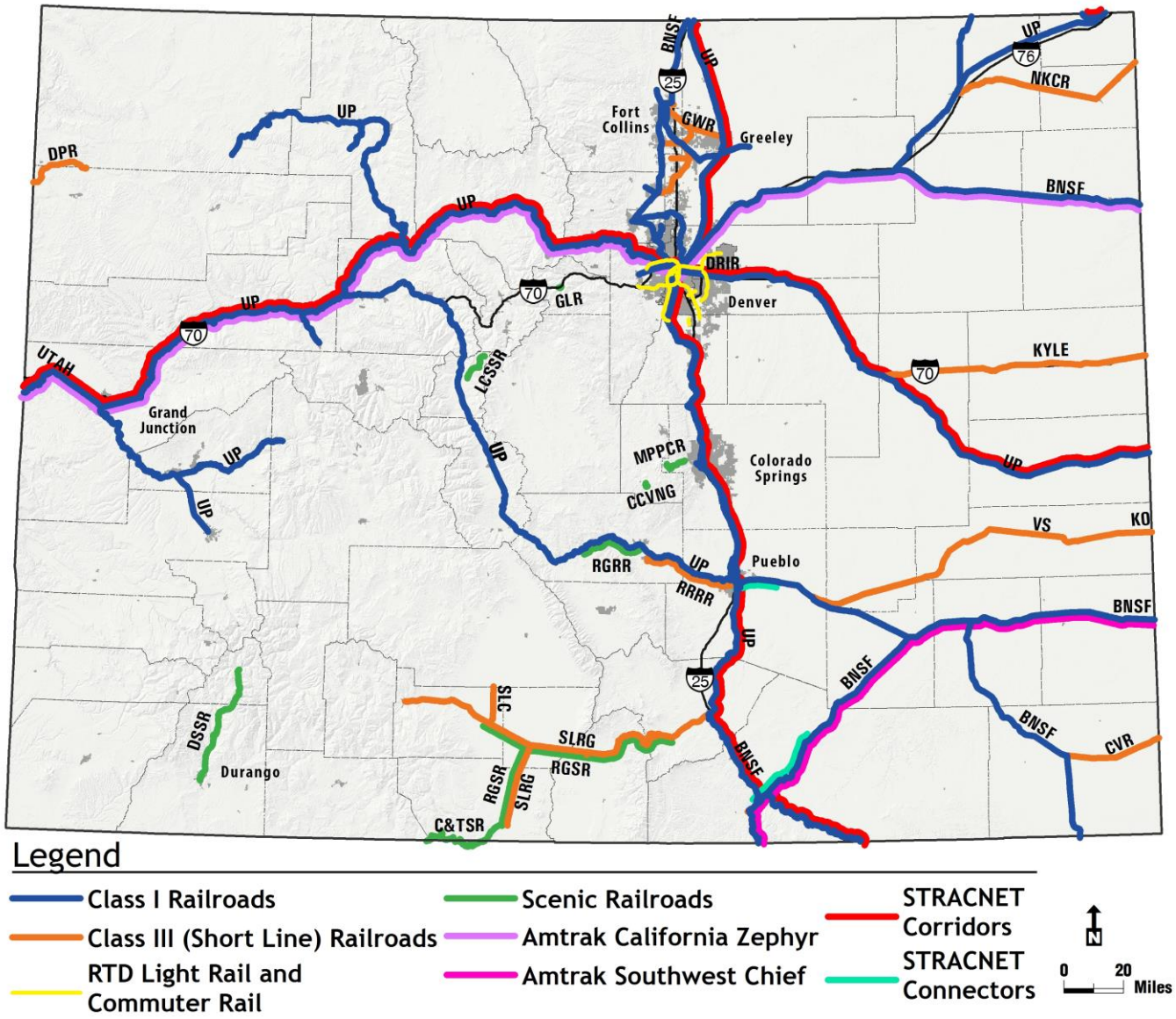
- **California Zephyr**, a daily service that runs between Chicago and San Francisco, connects Colorado to Oakland/Emeryville, Salt Lake City, Omaha, and Chicago and other locations in between. The Zephyr traverses the state with stops in Fort Morgan, Denver, Fraser/Winter Park, Granby, Glenwood Springs, and Grand Junction. Amtrak Thruway bus service provides access to Alamosa, Buena Vista, Colorado Springs, Fairplay, Frisco, Gunnison, Pine Junction, Poncha Springs, Pueblo, Salida, and Vail.
- **Southwest Chief**, a daily service that runs between Chicago and Los Angeles, connects southeast Colorado to Los Angeles, Albuquerque, Kansas City, and Chicago. Colorado stops include Lamar, La Junta, and Trinidad. Connecting through-ticket services on Amtrak Thruway bus service provides access to Denver, Colorado Springs, and Pueblo via Raton, New Mexico, for points between Raton and Los Angeles, California.
- **Winter Park Express** is a seasonal service that connects Denver Union Station directly to Winter Park Resort and serves residents and tourists visiting the ski area. In 2017, the first full season of restored service, more than 16,500 riders used this service.

RTD operates light rail service in the Denver metro area with 5 light rail lines. In 2016, average weekday light rail boardings were more than 75,900 per day. Two commuter rail lines are currently operating with another two lines to be opened by 2022. In 2016, average weekday commuter rail boardings were 19,400 per day. Passenger rail services play a critical role in Colorado's multimodal transportation system by providing transportation alternatives and choices for residents and visitors. Light rail and commuter rail in the Denver metro area provide commute and travel options for residents and connect to pedestrian and cyclist networks, park-n-rides, and other commuter facilities, including bus depots and transfer stations. Amtrak intercity passenger rail provides connections for visitors to Colorado and long-distance travel options for residents. Passenger rail services take vehicles off Colorado highways and roads and reduce demand for parking facilities in increasingly congested urban areas.

Colorado's Scenic and Historic Railroads

Colorado is home to eight scenic railroads that operate on standard or narrow-gauge tracks, and in one case, on a cog rail system. These lines are located in the communities of Cripple Creek, Durango, Silverton, Georgetown, Leadville, Manitou Springs, Cañon City, and Alamosa. Scenic railroads typically operate under private or local government authority and are either publicly or privately funded or maintained. The State of Colorado and the State of New Mexico jointly own and operate the Cumbres & Toltec Scenic Railroad (C&TSRR). The State of Colorado owns and supports the Georgetown Loop Railroad with service provided by a private operator. The Royal Gorge Route Railroad and the Rio Grande Scenic Railroad operate on rights-of-way owned by private freight railroads. Colorado's scenic railroad corridors generate significant economic activity in the communities and regions in which they operate. Statistics from the Colorado Tourism Office indicate that 10 percent of Colorado tourists visit a scenic railroad. A recent study found that the C&TSRR scenic rail operation generated $14.8 million in economic impact to local communities. Scenic railroads play a role in Colorado's multimodal transportation system by providing destinations for travelers and enhancing the economic vitality of the regions in which they operate.

Colorado Freight and Passenger Rail Systems Map



1.3 INSTITUTIONAL GOVERNANCE OF RAIL IN COLORADO

Private railroad businesses own, maintain, and operate nearly all rail infrastructure in Colorado. Railroads work cooperatively with state and local public sector agencies to plan and coordinate rail services and infrastructure and are regulated by federal and state agencies. Railroads decide on the use of privately owned infrastructure, rights-of-way, and other assets. Federal, state, and local agency rail activities in Colorado include long-term strategic planning, coordination, safety grant administration, as well as project planning and programming processes conducted in coordination with private rail operators. The following subsections identify the public agencies involved in planning and overseeing Colorado's freight and passenger rail systems.

1.3.1 Federal Agencies

Created in 1995, the **Surface Transportation Board (STB)** is an independent adjudicatory and regulatory agency directed to resolve railroad rate disputes, to review proposed railroad mergers and acquisitions, and to regulate railroad abandonments. The agency has jurisdiction over railroad rate and service issues, as well as rail restructuring transactions, such as mergers, line sales, line construction, and line abandonments. The STB is an independent decision-making body administratively affiliated with the U.S. Department of Transportation (USDOT).

Federal Railroad Administration (FRA) is an agency of the USDOT with authority to develop and enforce freight and passenger rail safety regulations, administer railroad assistance programs, conduct research and development in support of improved railroad safety, and set national rail transportation policy. The FRA regulates rail safety on all railroad classes, except light rail. Under PRIAA, FRA provides guidance to states in developing state rail plans. FRA also administers federal grants to Amtrak and provides fiscal oversight of Amtrak spending.

Pipeline and Hazardous Materials Safety Administration (PHMSA), an agency of the USDOT, develops and enforces safety regulations, including transporting hazardous materials by rail. In coordination with the FRA, PHMSA provides rulemaking, oversight, guidance, education, and resources to improve the safety of transportation hazardous materials by rail.

Federal Transit Administration (FTA), an agency of the USDOT, provides financial and technical assistance to local transit agencies, including light and commuter rail systems. FTA provides grant funding to rail systems and railroad operators for safety and capital improvements and certifies the safety of passenger rail systems.

Transportation Security Administration (TSA), an agency of the Department of Homeland Security, is responsible for the safety of national passenger transportation systems, including passenger rail. The Transportation Security Administration provides rulemaking, enforcement, education and training, guidance and oversight, and support to improve the safety and security of passenger rail systems.

1.3.2 State Agencies

Colorado Department of Transportation

CDOT provides the safe and efficient movement of people, goods, and information throughout Colorado. CDOT is responsible for designing, constructing, operating, and maintaining state multimodal systems; managing infrastructure assets; conducting multimodal planning; and improving transportation safety. For this Rail Plan, CDOT serves as both the *State Rail Transportation Authority* and the *State Rail Plan Approval Authority*. The FRA requires designation of these authorities for the purposes of state rail planning. DTR coordinates passenger rail planning activities, while freight rail activities are coordinated through DTD. Rail-related responsibilities of key CDOT divisions include:

- **Division of Transit and Rail** develops policies and priorities for transit and passenger rail issues. In 2009, state legislation created the DTR with responsibilities to plan, develop, operate, and integrate transit and rail into the statewide transportation system. DTR coordinates with other divisions of CDOT, regional transit agencies, Amtrak, private rail operators, and other stakeholders to coordinate passenger rail planning and improvements.
- **Division of Transportation Development** coordinates statewide and regional multimodal planning activities, including freight rail coordination. DTD integrates planning products from different regions and divisions, engages the public and planning partners, provides data and analysis, and formulates policy. Within DTD, the Systems Analysis Section coordinates freight planning activities, including freight rail-related planning and policy development and supports the FAC.
- **CDOT Engineering Regions** coordinate the planning, design, construction, maintenance, and operations within their area of the state. Regional planning staff support planning efforts and communicate with citizens, local jurisdictions, and elected officials.
- **CDOT Division of Project Support** manages the federal railway-highway crossing safety program. This program, funded through the Federal Highway Administration (FHWA), is commonly known as the Section 130 Program. This program provides federal funding, administered by CDOT, to improve and upgrade railway-highway crossing infrastructure and equipment.

Various oversight and advisory committees also provide feedback on CDOT's plans, programs, and projects. The responsibilities and members of these committees vary, but they provide guidance and recommendations for improving Colorado's multimodal transportation network. The following represent key CDOT committees with influence on rail planning and policy:

- CDOT manages the state's transportation system under the direction of the **Colorado Transportation Commission**. The Transportation Commission consists of 11 Governor-appointed commissioners representing urban and rural areas of the state. Responsibilities include approving the statewide plan and statewide transportation improvement program; adopting CDOT's budget and approving expenditures; advising the Governor and Legislature on transportation issues; and formulating policies on CDOT management and decision processes.
- **Statewide Transportation Advisory Committee (STAC)** was created by state statute to advise CDOT on policy and to provide regional perspectives on transportation issues. Committee members include one representative from each TPR and Colorado's two tribal governments. The STAC provides a forum for discussing state and regional transportation issues and provides guidance to CDOT on policies and programs.
- **Transit and Rail Advisory Committee (TRAC)** was formed in 2011 to advise the DTR. Members include representatives from public and private transit providers, railroads, regional and local agencies, and the public. The TRAC provides advice and decision-making on public transit and passenger rail policies and priorities.
- **Freight Advisory Council (FAC)** was formed in 2015 as an independent council to guide CDOT on freight issues and to coordinate with private sector partners. The FAC provides a platform for freight industry representatives, businesses, and the public to coordinate on freight issues and to advise CDOT.

Colorado Public Utilities Commission

Operating as a division of the Colorado Department of Regulatory Agencies, the **Colorado Public Utilities Commission (PUC)** regulates utilities including telecommunications, energy, water, gas pipelines, commercial transportation, and railroads. The PUC's oversight of rail transportation focuses on safety for both freight and

passenger railroads. The PUC is the designated State Safety Oversight Agency for rail fixed guideway public transportation systems in Colorado. The PUC also administers a state funded rail safety crossing program.

Colorado Department of Higher Education

Under the **Colorado Department of Higher Education**, History Colorado is a 501(c)(3) charitable organization and an agency of the State of Colorado. History Colorado provides funding to scenic railroads through historic preservation grants. History Colorado owns the Georgetown Loop Railroad property and assets, with operations provided by a private vendor.

1.3.3 State Authorities

Southwest Chief and Front Range Passenger Rail Commission

In 2014, House Bill 1161 created the Southwest Chief Rail Line Economic Development, Rural Tourism, and Infrastructure Repair and Maintenance Commission. In 2017, Senate Bill (SB) 153 passed the Colorado General Assembly. This legislation replaced the 2014 body with the Southwest Chief and Front Range Passenger Rail Commission (SWC&FRPRC). The mission of this expanded group is to preserve existing Amtrak Southwest Chief rail line service in the state and to explore service to Pueblo and Walsenburg. The SWC&FRPRC is also charged with developing recommendations for a Front Range passenger rail system that provides passenger rail service along the I-25 corridor as a well-integrated component of a modern, efficient, and cost-effective multimodal transportation system. Voting member organizations of the SWC&FRPRC include UP; BNSF; ColoRail; a Passenger Rail Advocate representative; a resident of Huerfano, Las Animas, Otero, or Pueblo counties; Pueblo Area Council of Governments; South Central Council of Governments; Pikes Peak Area Council of Governments; DRCOG; RTD; and the North Front Range MPO. CDOT and Amtrak are non-voting members of this body.

Cumbres & Toltec Scenic Railroad Commission

The states of New Mexico and Colorado purchased the C&TSRR in 1970. In 1977, the Cumbres & Toltec Scenic Railroad Commission (C&TSRC) was created as a bi-state agency to act on behalf of the two states in overseeing the operation of this railroad. The C&TSRC consists of four members, two from each state, appointed by their respective state Governor and is responsible for setting policies for the management of the C&TSRR and contracting with vendors to provide railroad operations.

1.3.4 Regional Authorities

Regional Transportation District (RTD)

RTD, established in 1969, is the public transit agency for the greater Denver metro region. RTD transit services include local bus, light rail, commuter rail, shuttle, and paratransit service. Rail service includes 9 lines, connecting 53 stations throughout the region. In 2004, RTD began implementing the FasTracks program, which includes 122 miles of commuter and light rail, as well as bus rapid transit system expansions.

1.4 STATE FINANCING AUTHORITY AND RAIL FUNDING

1.4.1 Funds, Grants, and Loans

General Fund Transfers

The Colorado General Assembly periodically authorizes the transfer of General Funds to CDOT for strategic transportation investments. SB-1, in place from 1997 to 2009, resulted in annual financial transfers to CDOT. In 2009, SB-228 was enacted to transfer 2 percent of General Fund revenues to CDOT when certain revenue thresholds were met. Initial estimates indicated that up to $200 million annually in additional transportation funding was to be available between Fiscal Year (FY) 2016 and FY 2020.

General Fund transfers must be used to implement strategic programs and projects approved by the Colorado Transportation Commission. At least 10 percent of these General Fund transfers were allocated for transit purposes or for transit-related capital improvements. These monies, administered by CDOT DTR, fund projects of regional and statewide significance. Funds may be used to support passenger rail services through planning or design, construction, or other capital improvements. The passage of SB-267 terminated SB-228 after two years' worth of General Fund transfers had occurred.

Funding Advancements for Surface Transportation and Economic Recovery Act

SB-108, the Funding Advancements for Surface Transportation and Economic Recovery Act of 2009, is also known as FASTER. FASTER allows CDOT to improve roadway safety, repair deteriorating bridges, and support and expand transit. This fund generates nearly $200 million per year for CDOT: $80 million for safety, $100 million for bridges, and $15 million for transit. Transit funds are split between local transit grants and statewide projects. CDOT competitively awards $5 million for local transit grants and $10 million for statewide, interregional, and regional projects. FASTER funds have been used to fund investments in passenger rail service planning, station area and platform improvements for Amtrak, and support for RTD capital equipment and commuter rail corridor improvements. No funding from this program can be used to condemn land for relocating a rail corridor or line.

Colorado State Infrastructure Bank

The Colorado State Infrastructure Bank (COSIB), a revolving fund created by the Colorado General Assembly, is authorized to provide loans to public and private entities to finance transportation projects. The COSIB operates four distinct programs for highways, transit, aviation, and rail. The objective of the COSIB is to seek loan applications for transportation projects that both benefit from assistance and meet terms for loan repayments. The proposed project must ultimately have revenue sources available to it to repay the loan. Historically, the program is primarily used for aviation-related projects.

State Rail Bank Fund

In 1997, the General Assembly enacted SB-37, concerning the disposition of abandoned freight and passenger railroad rights-of-way in Colorado. This legislation also created the State Rail Bank Fund in state statute to provide the authority and funding to acquire abandoned railroad rights-of-way. Appropriations for moneys in the State Rail Bank Fund may be requested and used to acquire, maintain, improve, or dispose of rail lines, railroad right-of-way, or any other purpose necessary to carry out the implementation of Colorado's rail preservation policies. The State Rail Bank has been used only once so far. In 1998, $10.4 million was allocated for the purchase of the NA Towner rail line from the UP.

1.4.2 Public-Private Partnerships

High-Performance Transportation Enterprise

High-Performance Transportation Enterprise (HPTE), a quasi-private entity within CDOT, is empowered to pursue innovative and efficient financing opportunities for CDOT projects, including public-private partnerships (P3s). Authorized in 2009, HPTE may impose tolls and other user fees, issue revenue bonds, and enter P3s. As of 2016, the HPTE has supported 10 projects along major corridors in Colorado. State legislation does not limit HPTE by mode and allows innovative financing of any surface transportation infrastructure projects. To date, no rail-related transportation projects have been financed through HPTE.

Public-Private Partnerships are commonly long-term contracts between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance. RTD supports P3s within the FasTracks program, including commuter and light rail service improvements. RTD has used public-private financing for several notable projects in the recent past, including the Denver Union Station redevelopment. RTD's Eagle P3 project is a $2.2 billion, 36-mile, 3-line commuter rail system procured through a 34-year public-private design-build-finance-operate-maintain contract.

1.4.3 State Rail Funding in Colorado

Colorado provides no dedicated or recurring state funding for freight or passenger rail capital investments. CDOT's Division of Project Support administers the FHWA Railway-Highway Crossings (Section 130) Program which provides Federal funding for railway-highway crossing improvements. CDOT DTR may award FASTER funds to rail projects of regional or state significance. FASTER funds are awarded on a discretionary and competitive basis. Between 2012 and 2017, CDOT invested approximately $35.3 million in rail safety, capital infrastructure projects, and rail planning initiatives, as shown in the following table.

State Rail Funding in Colorado, 2012-2017

Source	Improvements and Activities Funded	Funds
USDOT, Section 130	Improvements to highway-rail crossing safety equipment and infrastructure, including grade separation projects.	$16,941,538
State of Colorado, FASTER	Passenger rail planning and capital projects including service studies, matching grant funds, station-area improvements, and equipment and crossing investments	$18,350,000
	Total	**$35,291,538**

1.5 PAST FREIGHT AND PASSENGER RAIL INITIATIVES

Colorado has a long history of supporting freight and passenger rail investments. The first state rail plan was developed in 1976 and updated in 1991 and 2012. This Rail Plan serves as a comprehensive policy plan that updates earlier rail plans and draws on parallel passenger rail planning efforts.

Beginning with light rail studies for Denver in the early 1970s, CDOT, RTD, and local and regional organizations have supported several critical rail planning efforts in the state, including studying the feasibility of high-speed passenger rail service, considering intercity passenger rail, evaluating advanced guideway system connections, and examining the potential of freight rail relocation.

The following studies laid the groundwork for advancing passenger rail throughout the state. Major corridor development initiatives completed since 2010 are described in greater detail in the following section.

- 1997 Colorado Passenger Rail Study
- 1997 RTD Guide the Ride Program
- 1998 I-70 Mountain Corridor Major Investment Study
- 2000 North Front Range Transportation Alternatives Feasibility Study
- 2002 Eastern Colorado Mobility Study
- 2004 RTD FasTracks Program
- 2005 Public Benefits Study
- 2007 Rail Relocation for Colorado Communities Study
- 2008 Denver Union Station Environmental Impact Statement
- 2009 Colorado Freight Roadmap
- 2009 Amtrak Pioneer Line Feasibility Study
- 2010 Rocky Mountain Rail Authority, High Speed Rail Feasibility Study
- 2011 I-70 Mountain Corridor Programmatic Environmental Impact Statement and Record of Decision
- 2011 North I-25 Environmental Impact Statement
- 2012 State Freight and Passenger Rail Plan
- 2014 Mountain Corridor Advanced Guideway System Feasibility Study
- 2014 Northwest Area Mobility Study
- 2014 Southwest Multi-State Rail Planning Study
- 2014 Colorado Interregional Connectivity Study
- 2015 North I-25 Environmental Impact Statement Commuter Rail Update
- 2015 Statewide Transit Plan
- 2017 Interregional Connectivity Study Interoperability Report

1.5.1 Corridor Development Initiatives

The last 20 years have seen the implementation of many study concepts for freight and passenger rail operations in Colorado, while other ideas and plans continue to evolve. Rail planning efforts in Colorado have considered using existing freight railroad track in combination with the creation of new passenger rail corridors to complete an expanded passenger rail network across the state and to improve efficiency on existing freight rail corridors. Past initiatives have advanced coordination, planning, environmental assessments, and feasibility work to identify three corridors as the state's top priority rail opportunities: I-70 Mountain Corridor from Denver International Airport (DEN) to Eagle County; Front Range Passenger Rail Corridor along I-25 from Fort Collins to Trinidad; and Southwest Chief route in southeastern Colorado.

Interest and planning for rapid speed travel in Colorado date back to the 1990s. The genesis of today's future rail corridors largely stems from the formation of the Rocky Mountain Rail Authority. This public entity formed by intergovernmental agreement by more than 40 public agencies guided the completion of a High-Speed Rail Feasibility Study in 2010. This study examined options within the Front Range corridor along I-25 from Wyoming to New Mexico, as well as the I-70 West Mountain Corridor from Denver to Grand Junction. This study focused on determining whether options could meet FRA technical, financial, and economic criteria, most importantly positive operating and cost-benefit ratios. Conclusions from this study indicated that high-speed rail was feasible and that further study and more detailed analysis was needed. Study recommendations led to continued coordination and planning efforts on the I-70 Mountain and the Front Range corridors.

Key plans and studies completed since 2010 within Colorado's three emerging rail and rapid transportation corridors are summarized below.

I-70 Mountain Corridor

Continuing the initial work of the Rocky Mountain Rail Authority, the ***I-70 Mountain Corridor Programmatic Environmental Impact Statement (EIS) and Record of Decision*** was completed in 2011. This study resulted in the selection of the Preferred Alternative in the I-70 Mountain Corridor EIS Record of Decision by CDOT and FHWA in 2014. The EIS specifies a multimodal solution, including the possibility of an advanced guideway system (AGS) that could best meet the need for a long-term transportation solution in the I-70 Mountain Corridor from Eagle County Regional Airport to C-470. Formed in 2004, the ***I-70 Coalition*** continues to serve as an organizing body to provide project oversight, to advocate for improvements, and to coordinate across 28 local governments and businesses along the corridor.

The I-70 Coalition was an active participant in the ***Advanced Guideway System (AGS) Feasibility Study*** completed in 2014. This study determined the technical and financial feasibility of implementing a high-speed transit system on a fixed guideway along the I-70 Mountain Corridor. Alternatives analyzed technology, alignments, stations, land uses, costs, funding, and financing. The study indicated that an AGS is feasible and would result in benefits to surrounding communities and the state. However, the study's financial analysis determined there would be a significant funding shortfall that local, regional, state, or federal funding sources could address. Because of financial constraints and engineering challenges along this corridor, planning activities have focused on near-term travel demand management, specific highway improvements, managed lanes, and operational strategies, including interregional bus service.

Also, in 2014, the FRA led the ***Southwest Multi-State Rail Planning Study*** involving stakeholders from Arizona, California, Colorado, Nevada, New Mexico, and Utah in developing a multi-state vision for passenger rail. The study demonstrated an analytical framework for developing early-stage high-speed passenger rail network planning concepts and examining the institutional context for establishing and implementing a long-range rail vision.

The success of returning the **Winter Park Express** train to service has demonstrated the potential for rail or AGS solutions in the I-70 Mountain Corridor. The Winter Park Express train provides a direct connection between Denver Union Station and Winter Park Resort. The original "Ski Train" operated for nearly 70 years before service stopped in 2009. Service recently resumed during winter weekends in 2017 on a limited basis. To restore service, Amtrak, the City and County of Denver, the Denver Chamber of Commerce, ColoRail, CDOT, UP, and other private partners evaluated service alternatives and made improvements, including a new curved heated platform and safety improvements at Winter Park. This $3.5 million platform and track safety project was funded through a $1.8 million investment from Winter Park ski area operator Intrawest Resort Holdings, a $1.5 million grant from CDOT, $100,000 from the City and County of Denver, and $100,000 from the Town of Winter Park. The service proved to be successful with 16,568 customers served during its inaugural season in 2017. Amtrak and partners plan to continue and to expand this service in the future.

Front Range Corridor

The Rocky Mountain Rail Authority also provided critical momentum for evaluating passenger rail service along the Front Range Corridor. Several recent studies have provided a foundation of work and helped to understand the needs, challenges, community and public preferences, and potential for passenger rail along this corridor. In 2014, the **Colorado Interregional Connectivity Study (ICS)** presented a series of alignment alternatives for implementing high-speed passenger rail service, based on engineering, environmental, and financial feasibility. The alignment examined in this study extended from Pueblo to Fort Collins, connecting with major cities along the I-25 corridor.

Related to the ICS, as well as ongoing discussion and coordination with RTD and key stakeholders in the Denver region, was the 2014 ***Northwest Area Mobility Study (NAMS)***. This study developed a prioritized list of mobility improvements for the northwest area of RTD's service area. RTD initiated the study in response to significant cost increases associated with building and operating commuter rail in the 41-mile Northwest Corridor. The study was undertaken in collaboration with local agencies, RTD, and CDOT. NAMS concentrated on evaluating options including phased construction of Northwest Rail and the feasibility of extending the North Metro Rail Line to Longmont. The consensus agreement among stakeholders acknowledged that with funding and operational challenges the completion of Northwest Rail remains a longer-term goal for communities in the region. Some elements of the Northwest Rail project, such as park and rides, and other minimal improvements might make a bus rapid transit system affordable and operable in the meanwhile.

With NAMS underway, CDOT and regional and local partners examined opportunities for commuter rail along north I-25. In 2015, the ***North I-25 EIS Commuter Rail Update*** was completed as an update to the initial North I-25 EIS completed in 2011. The 2015 EIS update provided cost estimates related to right-of-way, operating, and capital expenditures for commuter rail service based on conditions that had changed since 2011. Recommendations from the EIS included preserving the corridor and right-of-way to minimize future costs, conducting additional evaluation of the study area due to changing demographics in the region, and updating ridership modeling. The EIS commuter rail update recommends moving forward with the intent of the North I-25 EIS.

CDOT and partners also used residual funds from the 2014 ICS to continue to examine the potential for passenger rail service along the entire Front Range Corridor. The 2017 ***ICS Interoperability Report*** documented preferred alternatives, explored interoperability issues, identified rail technologies, examined potential rail alignments, and provided estimates for capital and operating costs for the initial operating segment of Front Range passenger rail from Fort Collins to Colorado Springs. Three alternative alignments were considered, including routes through Denver Union Station, Denver International Airport, and connections between. The alternative connecting through Denver International Airport was determined to best meet project goals.

Southwest Chief Corridor

Beginning in 2011, Amtrak began expressing concern to the states of Kansas, New Mexico, and Colorado about the future of the **Amtrak Southwest Chief** route, which traverses southern Colorado, with stops in Lamar, La Junta, and Trinidad. Amtrak service uses tracks owned by BNSF, which had experienced decreased freight traffic in recent years. With decreased freight traffic and revenues, it was not good business for BNSF to continue to maintain tracks, beyond freight service requirements, to meet passenger service standards (FRA Class 4). Amtrak was unable to fund the necessary maintenance required to upgrade tracks to passenger service standards, resulting in slower service and increased delays. To continue efficient passenger service, Amtrak, the Federal government, and/or state and local governments would need to fund track maintenance and upgrade responsibilities. BNSF offered a reroute solution through the Texas Panhandle, which would have removed the Southwest Chief service from Colorado if no action was taken before the end of 2015. BNSF estimated that $97 million in capital improvements and $111 million in ongoing maintenance over 10 years was necessary to upgrade the line to passenger service standards. Rerouting the Southwest Chief was also estimated to be as costly as upgrades to the existing track.

Faced with these funding uncertainties and the possibility that Southwest Chief passenger rail service to some communities in Kansas, Colorado, and New Mexico could end, local communities began organizing in support of continuing this Amtrak route. A broad coalition of local governments and advocacy organizations, including the ColoRail, spearheaded efforts to secure funding and make necessary track improvements to retain and expand Southwest Chief service in the region.

In 2014, a coalition led by Garden City, Kansas, applied for federal Transportation Investment Generating Economic Recovery (TIGER) VI funding. The **Southwest Chief Route Improvement Project** was awarded $12.5 million in funding. Amtrak, the Kansas DOT (KDOT), BNSF, and 14 communities and organizations in Kansas and Colorado provided matching funds, resulting in a total initial estimated project cost of $24.3 million. This project made improvements to existing track, including new rail, turnouts, and grade crossings. In 2015, a TIGER VII grant application for the **Southwest Chief Route Advancement and Improvement Project** was awarded to a coalition led by the City of La Junta. Grant funding of $15.2 million was awarded with additional state, local, and private matching funds contributed to the project, for an estimated total project cost of $24.4 million. This project enabled Amtrak to continue service along the Southwest Chief route in Colorado by continuing the rehabilitation of the BNSF La Junta Subdivision. Ten local communities and organizations in Colorado provided matching funds to this effort. In 2016, a coalition of partners led by the City of Lamar submitted an unsuccessful grant request under the TIGER VIII funding round.

Demonstrating the commitment of state agencies, local communities, and public and private partners along this corridor, a follow-up grant application, led by Colfax County, New Mexico, was submitted under TIGER IX funding in 2017 and awarded in 2018. This TIGER IX award for the **Amtrak Southwest Chief Route Stabilization Project** will continue work along the route. Grant funds requested $17.5 million to be matched with $9.2 million in funding from the states of New Mexico, Colorado, and Kansas; local communities and organizations along the route; and financial support from BNSF and Amtrak. Federal grant funding awarded to this project under TIGER IX totaled $16 million with a total project cost estimated at $26.7 million. Without this funding and additional track improvement, Amtrak service could face increased delays and safety risks. Continued support for track improvements and potential extension of Amtrak's Southwest Chief route are critical to supporting communities in southeastern Colorado, western Kansas, and northern New Mexico.

The State of Colorado, southeastern Colorado communities, and Colorado advocacy and business organizations have been critical in guiding grant efforts and building support for the Southwest Chief service to continue and expand in the state. In 2014, the Colorado General Assembly authorized the **Southwest Chief Rail Line Economic Development, Rural Tourism, and Infrastructure Repair and Maintenance Commission**. This 2014 group worked to ensure the continuation of Amtrak Southwest Chief service and to coordinate Federal grant applications.

In 2017, the Colorado General Assembly passed legislation replacing the original body with the **Southwest Chief and Front Range Passenger Rail Commission (SWC&FRPRC)**. The mission of this renewed group is to preserve existing Amtrak Southwest Chief service in the state and to explore additional Amtrak rail service between La Junta and Pueblo with possible extension of service to Walsenburg. The SWC&FRPRC is also charged with assessing the future of Front Range passenger rail and with developing recommendations to facilitate the development of passenger rail service throughout Colorado. Chapter 4 of this Rail Plan summarizes recommendations developed in 2017 by the SWC&FRPRC to the Colorado General Assembly.

CHAPTER 2 – COLORADO'S EXISTING RAIL SYSTEMS

Chapter 2 describes the critical role that freight and passenger rail plays in enhancing Colorado's economic vitality and quality of life in communities across the state.

Freight railroads efficiently transport agricultural, natural resource, energy, and consumer products within and into the state and move Colorado products to markets, terminals, international seaports and trade gateways to Canada and Mexico. Intercity passenger rail provides critical long-distance and interstate connections for Colorado residents and visitors. For workers and businesses, commuter rail service in the Denver metro area provides mobility options and attracts new residents and major employers to the Front Range. Colorado's historic and scenic railways attract visitors, boost local economies, and help preserve the state's railroading past. This chapter of Colorado's Rail Plan provides an overview of Colorado's freight and passenger railroads, including:

- Description of the existing freight rail, intercity passenger rail, commuter rail, and scenic rail systems;
- Accounting of passenger rail service performance measures;
- Summary of public financing for rail improvements;
- Overview of rail safety and security programs and issues;
- Analysis of the economic and environmental impacts of rail;
- Synthesis of trends impacting future rail demand; and
- Description of issues and opportunities for freight and passenger rail.

2.1 DESCRIPTION AND INVENTORY OF EXISTING FREIGHT AND PASSENGER RAIL SYSTEMS

Rail services in Colorado are complex with many operators, transport functions, customers, markets, facilities, and rail lines. Private businesses, the federal government, regional public agencies, the state government, and

local non-profit organizations own, operate, and maintain Colorado's rail systems. While most rail systems connect to North American freight and passenger rail networks, other rail systems provide transportation options solely within the state. Rail moves bulk goods, automobiles, agricultural commodities, consumer products, daily commuters, intrastate travelers, domestic visitors, and international tourists. Each Colorado rail system faces distinct challenges and presents unique opportunities.

The subsections that follow provide an overview of Colorado's primary rail systems, operators, services, and lines.

Within this Rail Plan, Colorado's rail systems are defined to include:

- Freight railroads, including national operators and regional short lines;
- Intercity passenger rail service operated by Amtrak;
- Commuter and light rail service operated by RTD within the Denver region; and
- Scenic and historic railroads.

2.1.1 Freight Rail System

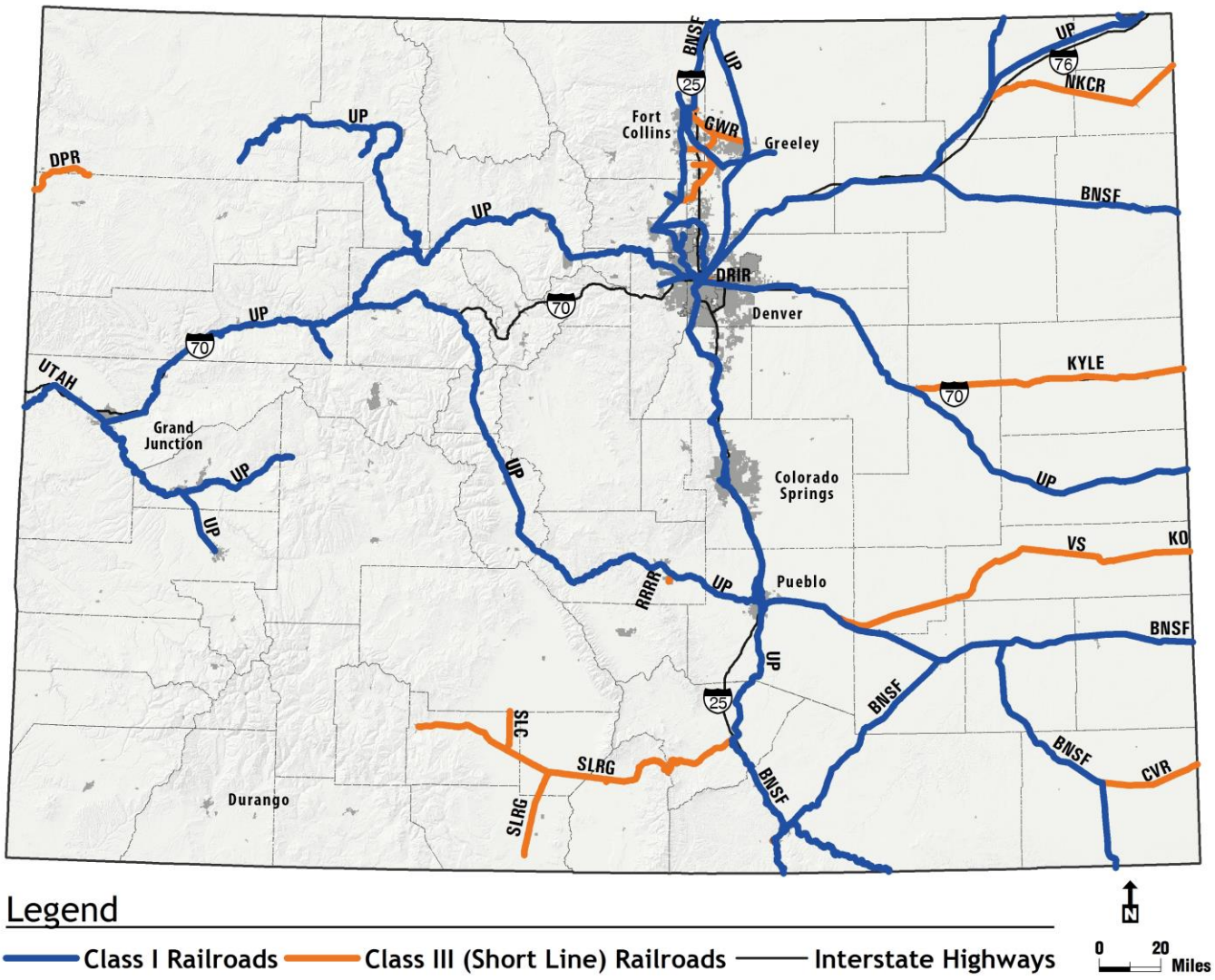
Railroads ship wheat from Colorado's Eastern Plains to seaports for export overseas; transport coal from the Western Slope of Colorado to power plants for electrical generation; haul concrete, gravel, and limestone from quarries in southeast Colorado for use in construction materials across the country; move crude oil from northeast Colorado; transport wind turbine blades made in northern and southern Colorado; and deliver automobiles and everyday products to consumers along the Front Range of Colorado. Freight rail provides safe and efficient transportation for these products and hundreds of other goods used every day by consumers, manufacturers, farmers, and producers. Rail service provides critical links for regional economies that depend on farming, ranching, extraction, energy, and mining.

In Colorado, 14 privately owned freight rail companies operate over 2,684 route miles of track. The STB categorizes railroads into classes determined by operating revenue. Colorado has 2 Class I railroads and 12 Class III, or short line railroads. Colorado's 2 Class I railroads are BNSF and UP. These rail systems are the primary arteries for rail cargo traveling to and from Colorado and provide important connections for rail traffic to the national rail networks and international markets.

Compared to the national operations of BNSF or UP, Colorado's short line railroads focus on regional and local services and provide rail access to specific customers and regional industries, usually in connection with Class I carriers. Ten short line railroads operate line-haul services that connect multiple customers to the national rail network. Two other railroads are switching or terminal railroads that serve a specific facility or rail yard.

Colorado freight railroads moved more than 154 million tons of product through, into, and out of the state in 2014, according to STB Waybill Sample "Waybill" data. Throughout this Rail Plan, rail volumes are referenced in terms of tonnage or value. This information is available from Waybill data and from figures railroads submitted to the PUC. Rail tonnage can be misleading and overstate the importance of heavy commodities such as coal relative to lighter weight consumer products. Rail volumes are also measured in carloads or units, but these data are not consistently reported for commodities in Colorado. Railcar units can be thought of in comparison to semi-trucks. One railcar handles the equivalent weight of three to four trucks, and one intermodal trailer or container handled by rail is generally equivalent to the amount of product that can be hauled by a truck.

Colorado Freight Rail System and Railroads Map, 2018



Freight Rail Movements in Colorado

In 2014, Colorado's freight railroads moved more than 78.6 million tons of goods and products into, from, and within the state (excluding through movements). Railroads transport approximately 13 percent of all freight handled in Colorado. For key commodities such as coal, chemicals, wheat, grain, and paper products, railroads handle a significant portion of all movements—up to 85 percent of all coal, for example.

Nearly two-thirds of rail cargo volume in Colorado is generated by "through movements" or rail traffic that passes through the state en route to other destinations. Much of this through traffic is north-south movements of coal and other commodities. Inbound commodities, or rail traffic destined for Colorado, totaled 23.4 million tons with a revenue value of $1.2 billion in 2014. Outbound commodities, or rail traffic originating in Colorado, totaled 22.6 million tons valued at $1.1 billion. Intrastate movements occur solely within the state and represent a small portion of total rail movements. In 2014, intrastate rail commodities totaled 8.5 million tons with a revenue value of $116.8 million.

Data on freight rail movements and tonnage and value handled are derived from the Surface Transportation Board's Carload Waybill Sample. This dataset is commonly referred to as "Waybill Data" and is a stratified sample

of carload waybills for all U.S. rail traffic submitted by rail carriers terminating 4,500 or more revenue carloads annually. At the time of the development of this rail plan, 2014 Waybill data was the most recent available due to processing issues with the 2015 dataset. CDOT will continue to request and analyze more recent data through plan implementation efforts.

Key Commodities and Trading Partners

Colorado's rail market includes trading partners in states coast to coast. The tables on the following pages highlight the top four state trading partners for rail tonnage and rail revenue inbound to Colorado and outbound from Colorado.

Commodities are grouped into six major industries, including the following product types, as categorized within Waybill data:

- **Farm and Food** (Farm, Food, and Kindred Products)
- **Coal and Petroleum** (Coal, Crude Petroleum, Natural Gas, and Related Products)
- **Mining** (Clay, Concrete, Stone, Metallic Ores, Nonmetallic Minerals, Primary Metal Products)
- **Intermodal and Mixed Freight** (Freight Forwarder Traffic, Mail or Contract Traffic, Misc. Freight Shipments, Shipping Containers, Small Packaged Shipments)
- **Bulk Goods** (Chemicals or Allied Products, Lumber or Wood Products, Printed Matter, Pulp, Paper or Allied Products, Rubber or Misc. Plastics, Waste Hazardous Materials, Waste or Scrap Materials)
- **Manufactured Products** (Apparel or Related Products, Electrical Equipment, Fabricated Metal Products, Furniture or Fixtures, Instrument, Photo Equip, Optical Equipment, Machinery, Manufacturing Products, Ordnance, Textile Mill Products, Transportation Equipment)

Several states show up as key trading partners across multiple commodities in both inbound and outbound shipments. For example, Texas, Illinois, and California are major trading partners for Colorado. Improving and expanding rail connections to these states is critical for Colorado's key industries and producers. Outbound rail movements and rail services are particularly important to Colorado-based producers, farmers, manufacturers, and transportation and logistics companies. Goods and products made in Colorado provide significant value-added to local economies and contribute to Colorado's gross economic output. Ensuring that these industries have access to efficient and cost-effective rail service is vital. For example, much of eastern Colorado's winter wheat harvest is shipped by rail to Texas for international export. Coal produced on the Western Slope fires power plants in Kentucky. Crude oil extracted in northern Colorado is transported to refineries in Louisiana and Texas. Bulk products such as chemicals, pulp paper, and waste and scrap are shipped by rail to processors and manufacturers in California and Illinois. Manufacturers across Colorado rely on rail service to move machinery and equipment to international seaports and distribution centers in Texas, Illinois, and other gateways.

The following tables highlight tonnage and value for key state trading partners by summarized commodity groupings.

Total Inbound and Outbound Rail Tons, by Commodity Group and State, 2014

Top Inbound Trading Partners					Top Outbound Trading Partners			
Nebraska	Montana	North Dakota	Minnesota	Farm and Food	Texas	Illinois	California	Oregon
260.9	223.9	207.4	130.8		761.6	293.2	264.7	186.2
Wyoming	Minnesota	Kansas	California	Coal and Petroleum	Kentucky	Texas	Nevada	Louisiana
9,538.7	78.0	47.3	32.7		3,742.1	3,269.1	2,084.2	1,798.2
Minnesota	Wisconsin	Nebraska	Illinois	Mining	Texas	South Dakota	New Mexico	Iowa
1,623.6	1,028.1	660.0	565.6		409.2	197.1	184.6	175.7
Illinois	California	Utah	Texas	Intermodal and Mixed Freight	California	Illinois	Utah	Washington
621.4	394.5	129.9	101.1		346.5	268.1	60.8	40.0
Utah	Texas	Oregon	Wyoming	Bulk Goods	California	Illinois	Utah	Texas
415.1	301.6	291.6	273.3		137.4	81.3	79.5	64.9
Illinois	Texas	California	Missouri	Manufactured Products	Texas	Illinois	Indiana	California
336.0	125.2	100.2	43.7		112.0	28.9	23.6	23.2

Source: Surface Transportation Board Waybill 2014 | Tonnage represents thousands of tons

Total Inbound and Outbound Rail Revenue, by Commodity Group and State, 2014

Top Inbound Trading Partners					Top Outbound Trading Partners			
North Dakota	Montana	Texas	Nebraska	Farm and Food	Texas	Oregon	California	Illinois
$9.9	$9.3	$9.2	$8.5		$32.5	$20.1	$17.7	$11.2
Wyoming	Minnesota	California	Texas	Coal and Petroleum	Texas	Kentucky	Louisiana	California
$118.8	$3.6	$2.4	$2.3		$180.8	$117.4	$105.1	$77.8
Minnesota	Wisconsin	Nebraska	Illinois	Mining	Texas	Illinois	South Dakota	California
$86.5	$62.1	$30.3	$28.9		$12.1	$8.2	$6.9	$5.5
California	Illinois	Texas	Washington	Intermodal and Mixed Freight	California	Illinois	Washington	Utah
$68.3	$59.4	$12.2	$11.0		$48.0	$20.3	$8.8	$4.1
Oregon	Washington	Utah	Texas	Bulk Goods	Utah	California	Illinois	Texas
$22.4	$18.0	$16.5	$15.6		$8.4	$7.6	$5.2	$4.1
Illinois	Texas	California	Missouri	Manufactured Products	Texas	Indiana	Illinois	California
$83.5	$36.0	$28.2	$9.9		$21.3	$5.5	$5.5	$5.0

Source: Surface Transportation Board Waybill 2014 | Values represent millions of dollars

Trends in Commodity Movements

Railroads can move heavy or bulky goods that are outputs or inputs of farming, forestry, mining, or energy industries, as well as mixed freight, automobiles, and intermodal trailers and containers. National and global macroeconomic trends, drought and weather conditions, international trade flows, and fluctuations in commodity prices affect supply and demand of these commodities. As a result, rail traffic generated by commodities such as coal, grain, or metals can change from year to year, and long-term changes in national markets affect rail movements in Colorado.

According to Waybill data, total rail freight tonnage moved into, out of, within, and through Colorado decreased from 163.8 million tons in 2009 to 154.8 million tons in 2014. Inbound and outbound rail tonnage in Colorado actually increased over this period by more than 7 million tons. However, this growth was offset by a significant decline in through rail traffic. Declining demand for coal from the Powder River Basin deposits in Wyoming accounted for most of the decline in through rail movements since 2009.

Colorado Freight Rail Movements by Tonnage, 2009-2014

Flow	2009	2014	Change
Inbound to Colorado	18.4	23.4	*27%*
Outbound from Colorado	19.8	22.6	*14%*
Within Colorado	9.3	8.5	*-9%*
Through Colorado	116.3	100.3	*-14%*
Total	**163.8**	**154.8**	**-5%**

Source: Surface Transportation Board Waybill Sample, 2014

Data from 2009 are drawn from STB Waybill data obtained for the 2012 Rail Plan. During this period, the impacts of the national economic downturn ending were still evident in Colorado.

While coal remains the top commodity, the decline in total tonnage both inbound and outbound is evident and mirrors national trends. Other top commodities transported by rail from Colorado have also declined, including cement, grain, petroleum refining products, and general freight. Over the same time, some products produced in Colorado and shipped outbound have seen substantial growth in rail movements, including crude oil moved by rail, intermodal containers, and electricity generation turbines. Farm and food products remain among the top commodities originating in Colorado. However, Colorado's agricultural sector experienced lower yields in recent years due to drought and global commodity prices. This trend may be reversed as wheat production reached record levels in 2016, which is not reflected in current rail data.

The following table highlights the top commodities originating in Colorado in 2014 and change since 2009.

Top Rail Commodities Outbound from Colorado by Tonnage, 2009-2014

Top 20 Outbound Commodities	2009	2014	Change
Bituminous Coal	21,288,586	13,323,623	-37%
Crude Petroleum	145,332	3,205,087	2,105%
Portland Cement	1,222,504	1,200,703	-2%
Grain	1,287,619	946,867	-26%
Petroleum Refining Products	981,040	481,152	-51%
Freight of All Kind Shipments	470,560	457,240	-3%
Malt Liquors	682,600	348,600	-49%
Animal Byproducts	194,140	259,720	34%
Semi-Trailers Returned Empty	162,560	239,920	48%
Primary Iron or Steel Products	272,908	235,886	-14%
Steam Engines, Turbines, etc.	n/a	183,494	n/a
Paper Waste or Scrap	183,240	171,760	-6%
Potassium or Sodium Compound	114,600	157,600	38%
Metal Scrap or Tailings	643,200	149,520	-77%
Liquefied Gases, Coal or Petroleum	119,888	139,268	16%
Malt	132,680	128,320	-3%
Miscellaneous Nonmetallic Minerals	103,120	118,320	15%
Flour or Other Grain Mill Products	105,360	115,040	9%
Sugar, Refined, Cane or Beet	92,560	93,040	1%
Railroad Cars	45,738	48,976	7%
Source: Surface Transportation Board Waybill Sample, 2014			

The top commodities shipped by rail into Colorado are generally consistent from 2009 to 2014. Coal for electrical generation remains the top commodity, although the total tonnage of coal handled has declined over that period. Today, top rail-shipped products such as gravel, steel, and lumber products are used in construction industries, and consumer products such as motor vehicles are imported to meet the needs of Colorado's growing population. Shipments of agricultural products such as grain tend to rise and fall depending on global markets and production within the state. Changes in tonnage of other products used in industrial processes are subject to changes in the state's economy, the ability of in-state producers to meet demand, and competition with truck movements.

Coal accounts for the most rail freight tonnage originating, terminating, and moving within the state. Coal production in Colorado has fallen by 64 percent since 2005 due to operational changes in mines and competition with natural gas for electricity generation. Coal is still used to generate most electricity in Colorado. More than half of all coal produced in Colorado is exported by rail to other states. However, demand for coal is likely to continue to decline resulting in fewer rail movements and reduced revenues for Class I railroads. This trend may affect rail traffic on key lines in Colorado and result in reduced rail service, particularly on rail lines serving Colorado's Western Slope and Northwest communities. For example, UP's decision to close its Burnham shop yard

and repair facility in Denver in 2015 was primarily related to reduced demand for loaded coal trains, which reduced the need to service locomotives in Colorado.

The following table highlights the top commodities terminating in Colorado in 2014 and change since 2009.

Top Rail Commodities Inbound to Colorado by Tonnage, 2009-2014

Top 20 Inbound Commodities	2009	2014	Change
Bituminous Coal	16,405,364	9,538,694	-42%
Gravel or Sand	1,382,332	4,093,960	196%
Freight of All Kind Shipments	794,040	1,118,680	41%
Primary Iron or Steel Products	398,440	860,692	116%
Lumber or Dimension Stock	312,920	611,440	95%
Grain	1,010,564	590,335	-42%
Motor Vehicles	296,120	588,600	99%
Portland Cement	790,132	458,464	-42%
Miscellaneous Wood Products	224,720	446,000	98%
Potassium or Sodium Compound	455,632	397,360	-13%
Metal Scrap or Tailings	511,968	339,344	-34%
Chemical or Fertilizer Mineral Crude	201,156	279,911	39%
Ashes	119,360	243,156	104%
Lime or Lime Plaster	218,640	238,548	9%
Chemical Preparations	73,440	217,640	196%
Asphalt Coatings or Felt	284,976	186,940	-34%
Wet Corn Milling or Milo	318,840	185,640	-42%
Miscellaneous Industrial Organic Chemicals	189,140	179,056	-5%
Fiber, Paper or Pulpboard	253,240	175,880	-31%
Paper	223,040	160,640	-28%
Source: Surface Transportation Board Waybill Sample, 2014			

Future Freight Rail Corridors

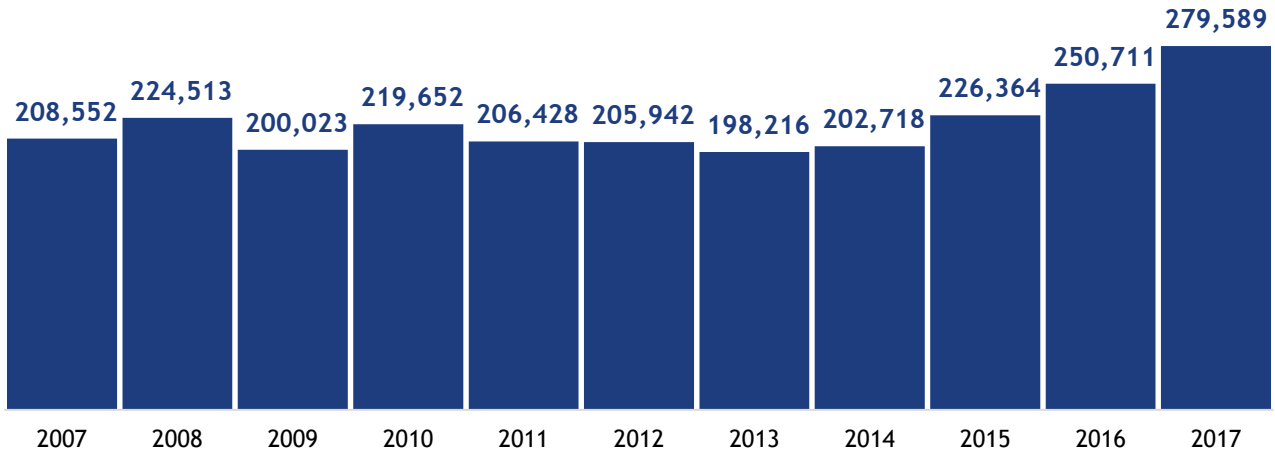
No significant investments in entirely new freight rail lines or corridors are planned in Colorado for the near future. UP and BNSF continue to upgrade track and facilities to accommodate increased demand and a greater diversity of rail-served industries and commodities. Interest in Colorado from regional economic development organizations and business for new sidings, rail-served industrial parks, and redevelopment of out-of-service elevators or rail facilities into intermodal terminals remains high, and new investments in rail industrial sites are occurring. Economic development organizations in Colorado Springs and Pueblo and in Adams and Weld counties view rail-served industrial development as a key opportunity to attract and retain major manufacturing employers.

The concept of a freight rail "Eastern Bypass" that would relocate major freight rail lines from current tracks along the congested Front Range to the Eastern Plains was last studied in 2009. Viewing relocation as an opportunity to use current Front Range rights-of-way for passenger rail and to bring economic stimulus to eastern Colorado communities, some advocacy organization and trade associations supported this idea. However, in 2012, CDOT's Executive Director declared the Eastern Bypass "inactive." This decision was based on input from concerned eastern Colorado property owners who feared negative impacts to their property values and from the freight railroads because their investment strategies and economic conditions had changed due to commodity flows, particularly coal. There are no current plans to reassess the feasibility of freight rail relocation.

2.1.2 Intercity Passenger Rail System

Colorado's intercity passenger rail system includes routes connecting communities in Colorado and providing connections to the national rail network. The National Railroad Passenger Corporation, more commonly known as Amtrak, provides intercity rail service in Colorado. Amtrak funds and operates two national routes that connect Colorado: the California Zephyr and the Southwest Chief. Amtrak also provides seasonal corridor service through the Winter Park Express. Amtrak national routes served more than 250,700 rail passengers within Colorado in 2017, as measured by boardings and alightings at stations within the state. The Winter Park Express attracted 16,568 riders in 2017—the first full season of renewed operation. The following figure highlights Amtrak ridership at all Colorado stations for the past decade.

Amtrak Ridership in Colorado, 2007-2017



Source: Amtrak, State Fact Sheets

Amtrak's service provides critical connections to residents and visitors. For many rural communities, national intercity passenger train service, such as the Southwest Chief, may provide the only option for long-distance travel, including critical connections to healthcare facilities in multistate regions. Amtrak stations in rural communities act as economic drivers, attracting tourists and providing value added benefit to local economies. A 2014 analysis of the economic impact of Southwest Chief service in Colorado found that out-of-state visitors generated $2.9 million in economic activity, including indirect jobs and local sales tax revenues. A 2015 analysis by Amtrak found that all routes within the state generated over $52 million in economic impact, after accounting for capital investment, direct jobs, and tourism spending. Amtrak's California Zephyr route attracts visitors from around the country and the world to Colorado and is an important link in the state's passenger rail network. Winter Park Express service provides a direct connection in the winter season between Denver Union Station and Winter Park Resort. This service alleviates congestion along I-70 and helps attract tourists and residents to Colorado by providing dedicated rail service to a resort area.

Current Amtrak Routes in Colorado

The California Zephyr provides daily service between Chicago, Illinois, and Emeryville, California, with stations in Fort Morgan, Denver, Fraser-Winter Park, Granby, Glenwood Springs, and Grand Junction. Ridership of this route within Colorado has grown steadily, increasing from 192,670 boardings and alightings in 2012 to 248,924 in 2017. Denver is the most used station, followed by Glenwood Springs and Grand Junction. This service operates on track owned by BNSF east of Denver and UP to the west.

The Southwest Chief operates daily between Chicago and Los Angeles, with stations in Lamar, La Junta, and Trinidad. In 2017, 14,097 passengers boarded or alighted in Colorado, up from 13,272 in 2012. This service operates on track owned by BNSF and provides key rail connections to southeastern Colorado communities. Extensions of this route to Pueblo and Walsenburg, Colorado, are being considered.

The Winter Park Express, formerly known as the "Ski Train," was initiated in 1940 but discontinued in 2009. In 2017, service was restored through an agreement with Amtrak, Winter Park Resort, UP, and state and local partners, including CDOT. The route operates from January through March, providing passengers a direct connection between Denver Union Station and Winter Park Resort. This renewed service exceeded initial ridership expectations and drew 16,568 passengers during the 2017 season.

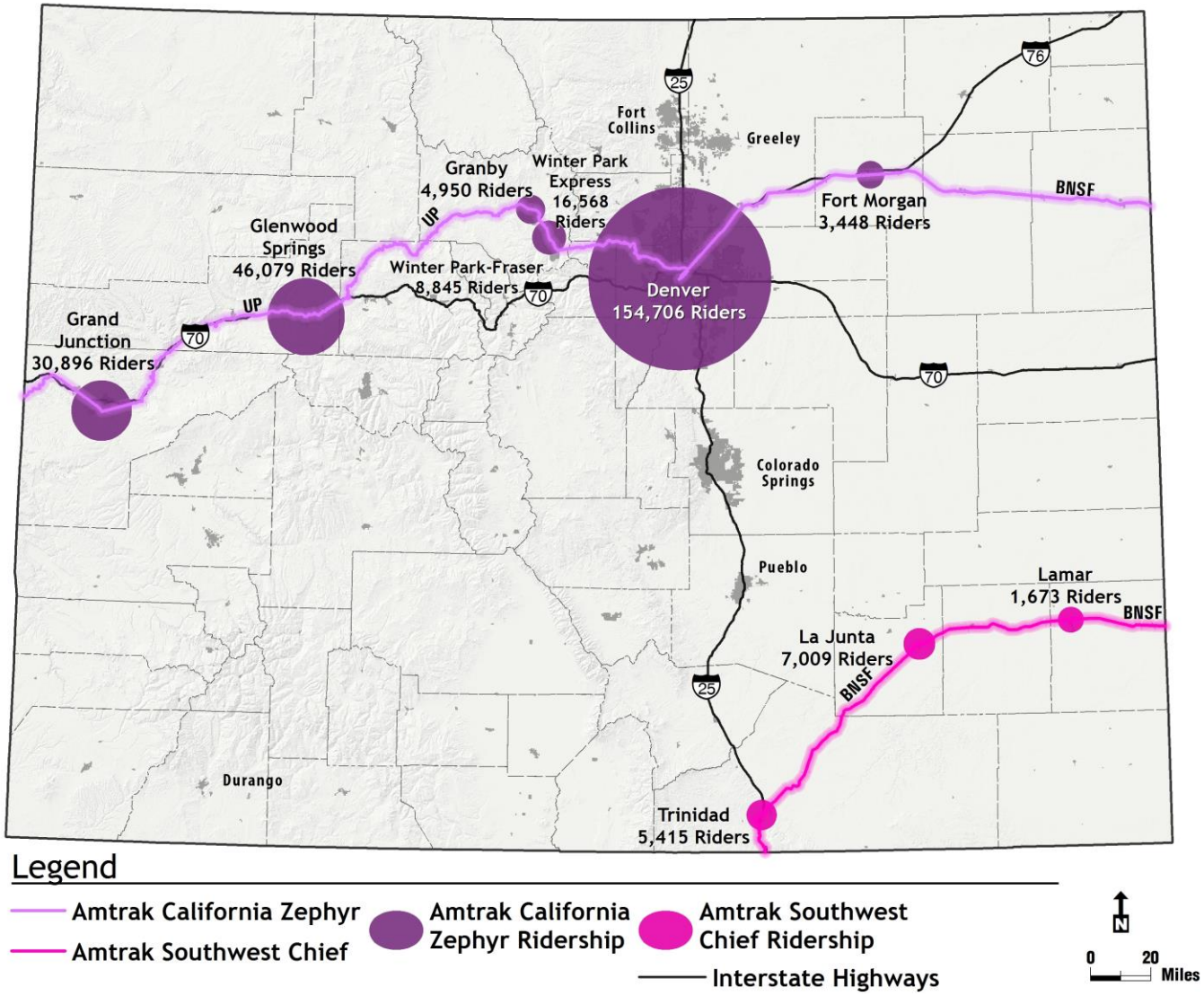
Schedules and service times for Amtrak routes in Colorado are shown in the following table.

Amtrak Passenger Service Schedules within Colorado, 2017

Amtrak Passenger Service	Station	Service Times (all times MST)
California Zephyr	Fort Morgan	5:05 AM (Westbound) 8:2 5PM (Eastbound)
	Denver Union Station	8:05 AM (Westbound) 7:10 PM (Eastbound)
	Fraser-Winter Park	10:07 AM (Westbound) 3:50 PM (Eastbound)
	Granby	10:37 AM (Westbound) 3:12 PM (Eastbound)
	Glenwood Springs	1:53 PM (Westbound) 12:10 PM (Eastbound)
	Grand Junction	4:10 PM (Westbound) 10:23 AM (Eastbound)
Southwest Chief	Lamar	6:59 AM (Westbound) 8:40 PM (Eastbound)
	La Junta	6:30 AM (Westbound) 7:41 PM (Eastbound)
	Trinidad	9:50 AM (Westbound) 5:49 PM (Eastbound)
Winter Park Express	Denver (Union Station)	7:00 AM (Westbound)
	Fraser-Winter Park	4:30 PM (Eastbound)

The following map overlays 2017 ridership information for each intercity and seasonal Amtrak route in Colorado.

Amtrak Intercity Passenger Service Ridership by Route Map, 2017



Amtrak Stations

Colorado's Amtrak stations range from historic depots constructed as early as the 1880s, to station area platforms developed between 1920 and 1950 with limited accessibility and amenities, to new and modern facilities and intermodal centers. Historic Denver Union Station underwent a $500 million redevelopment into a regional, intermodal transportation hub and reopened to Amtrak service in 2014. In 2017, with support from CDOT, a new $4 million Americans with Disabilities Act (ADA)-compliant heated platform and other track safety improvements were completed at Winter Park to connect Amtrak's Winter Park Express directly to the ski resort. Between 2012 and 2016, Amtrak invested more than $575,000 in station improvements in Colorado, including ADA compliance and state of good repair updates.

Amtrak assesses stations according to the total number of customers served and availability of amenities. The following categories are used to describe Amtrak stations across the country:

- **Category 1** stations serve centers and edges of large urban areas, are highly integrated with supporting public transportation systems, and are staffed regularly. Category 1 stations serve 400,000 customers or more a year.
- **Category 2** stations serve a wide variety of communities. They are primarily oriented to State Corridor service or major destinations along long-distance routes. Category 2 stations are staffed with ticket offices and serve between 100,000 and 400,000 passengers annually.
- **Category 3** stations are not staffed by Amtrak agents but do include an interior waiting facility and restrooms. Category 3 stations serve between 20,000 and 100,000 passengers annually.
- **Category 4** stations are not staffed and include only a shelter and/or a platform canopy. Category 4 stations serve fewer than 20,000 passengers annually.

The following table summarizes Amtrak stations in Colorado, recent ridership, accessibility, and a summary of station amenities.

Amtrak Stations by Type, Accessibility, and Intermodal Connections, 2017

Station	2017 Colorado Ridership	Station Type and Accessibility	Americans with Disabilities Act (ADA) Accessibility	Station Amenities
Denver Union Station	154,706	Category 2 Station with waiting room	ADA Accessible	Restrooms, Ticket Sales, Baggage Service
Glenwood Springs	46,079	Category 3 Station with waiting room	ADA Accessible	Restrooms, Ticket Sales, Baggage Service, Parking
Fort Morgan	3,448	Category 4 Station with waiting room	Limited Accessibility	Parking
Grand Junction	30,896	Category 3 Station with waiting room	ADA Accessible	Restrooms, Ticket Sales, Baggage Service, Parking
Fraser-Winter Park	8,845	Category 4 Platform with shelter	ADA Accessible	Parking
La Junta	7,009	Category 3 Station with waiting room	Limited Accessibility	Ticket Sales, Baggage Service, Parking
Trinidad	5,415	Category 4 Platform no shelter	Limited Accessibility	Parking
Granby	4,950	Category 4 Station with waiting room	Limited Accessibility	Parking
Lamar	1,673	Category 4 Platform no shelter	Limited Accessibility	Parking

Future Intercity Passenger Rail Service

Amtrak does not anticipate significant service or operation changes to the California Zephyr or Winter Park Express routes. Through the SWC&FRPRC, the Southwest Chief line has been considered for extension via a connecting train service from the existing station in La Junta to a newly expanded station in Pueblo. Extended

service has been discussed since at least 2013 and remains under consideration by Amtrak, the State of Colorado, and local communities along the route.

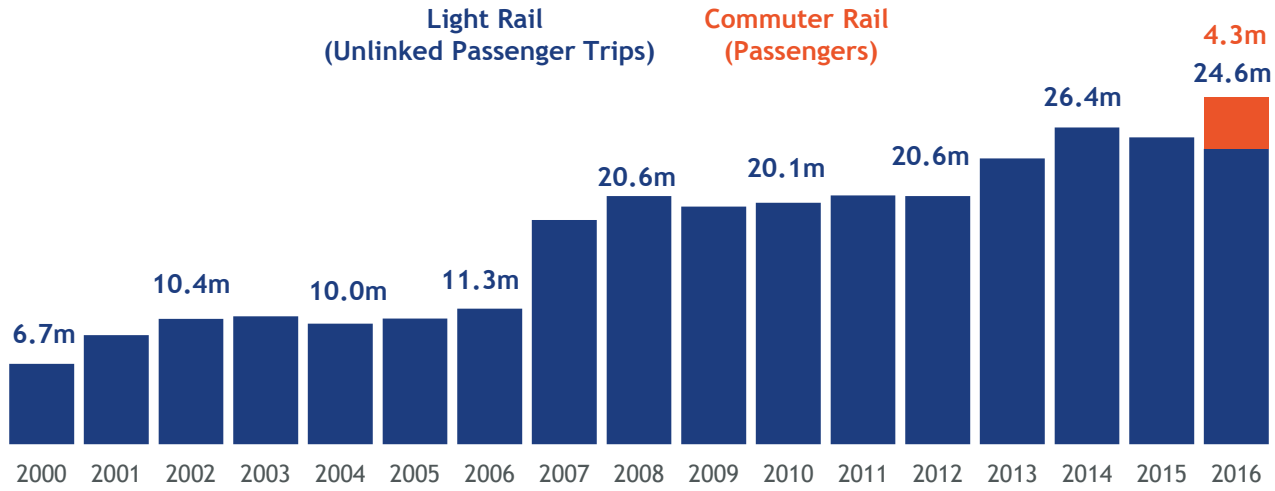
A Colorado State University-Pueblo study in 2014 found the yearly economic impact of a stop in Pueblo would be approximately $3.4 million. A 2016 Amtrak study found that a Pueblo stop could attract 14,000 new riders annually and generate approximately $1.45 million in ticket revenues. However, significant track upgrades between La Junta and Pueblo and completion of Positive Train Control safety systems are needed to accommodate 79 mile per hour speeds. Cost estimates for needed investments to support this extension are not currently available. The Southwest Chief could run from La Junta to Pueblo, then on to Trinidad without missing a stop versus the current Southwest Chief route. However, some options, such as running from Pueblo to Trinidad through Walsenburg, are cost prohibitive. The concept of running through cars, cutting cars from the train at the La Junta stop and operating them to and from Pueblo is under consideration. Any train that operates on routes less than 750 miles on Amtrak must be funded by a state. Operation of the "through car" service would not obligate Colorado to pay for extension of Southwest Chief service La Junta to Pueblo.

In 2017, the SWC&FRPRC was charged with presenting a plan to the Colorado Legislature to evaluate Southwest Chief service preservation and route extension to Pueblo and to explore the benefits of extending service to Walsenburg. In 2018, the SWC&FRPRC commissioned studies to update planning-level estimates for capital and operating costs, PTC support needs, local issues, and station area design and updates.

Commuter and Light Rail Network

RTD provides passenger rail service in Colorado throughout the greater Denver metro area. RTD has operated light rail in Denver since 1994, with the opening of the D Line through downtown, and has since expanded to seven routes. Light rail serves travelers throughout the region, with significant service to the south, west, and east. Commuter rail service began in 2016 with two routes connecting downtown Denver to Denver International Airport and to Westminster and communities northwest of downtown. RTD's service area is home to more than 2.92 million people across 8 counties. On any given day, RTD provides transportation to more than 300,000 passengers on the regional bus and rail system. RTD currently runs 172 vehicles over 58 miles of light rail track serving 62 stations. Commuter rail service includes 66 vehicles and 29 miles of track serving 9 stations. Since light rail service began in Denver in 1994, ridership has continued to grow. In 2016, light rail passenger trips totaled 24.6 million and commuter rail passengers totaled 4.3 million.

Commuter and Light Rail Ridership Trends, 2000 to 2016



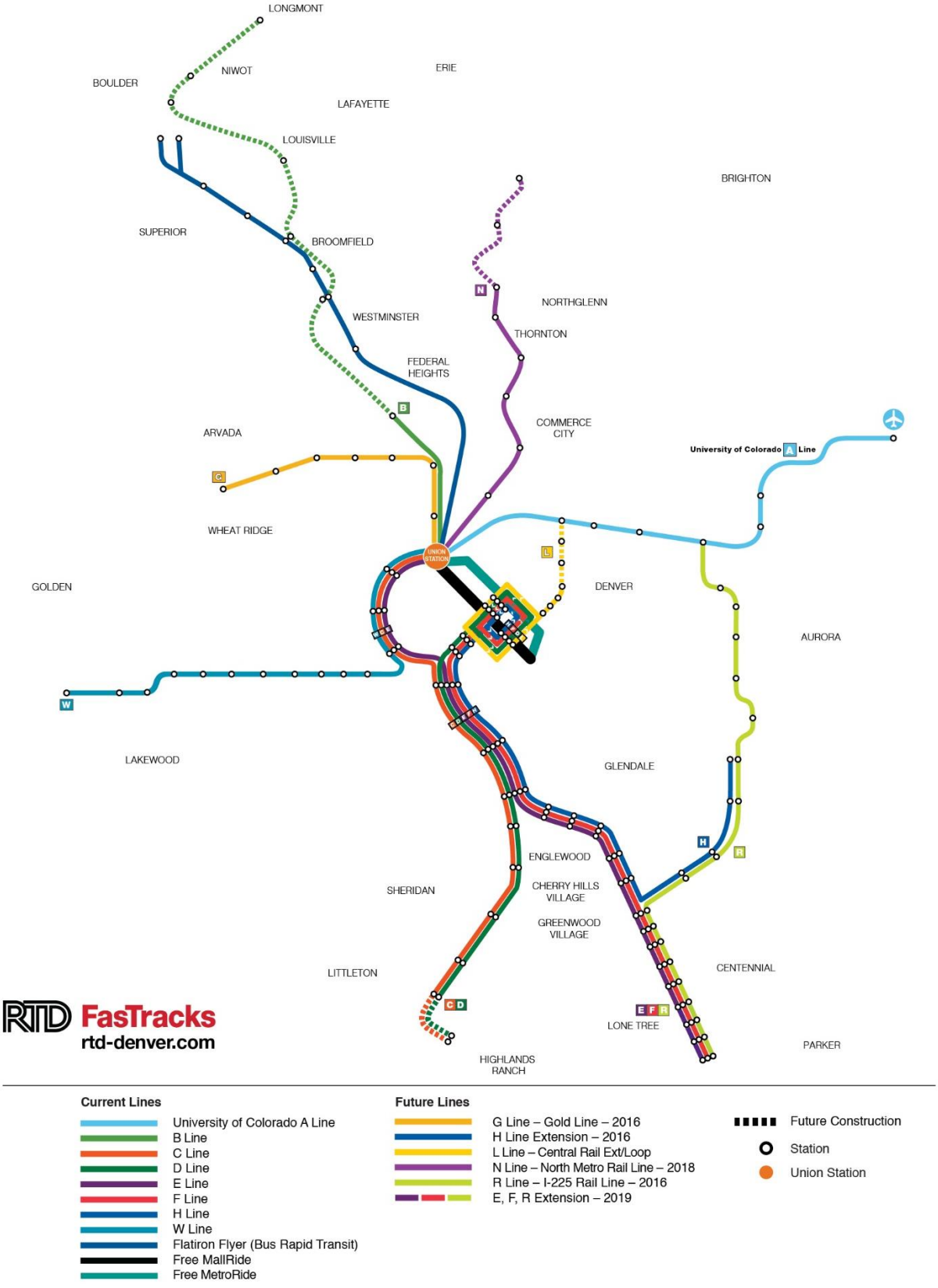
Source: American Public Transportation Association, National Transit Database and Regional Transportation District

The renovation of the historic Denver Union Station in 2014 brought multiple transit elements under one roof in downtown Denver. Transforming Denver Union Station into a multimodal transportation hub allowed Amtrak to resume passenger train service to the new train terminal. RTD bus service and commuter rail lines serving Westminster and Denver International Airport connect into this multimodal station. Partnerships among RTD, the City and County of Denver, CDOT, DRCOG, Union Station Neighborhood Company, Denver Union Station Project Authority, and the Union Station Alliance made this $500 million project possible. Today, the entire Union Station Neighborhood is an economic engine for Denver and the greater metropolitan region, generating $3.8 billion in initial impact and an additional $2.9 billion of impact on an ongoing basis. In 2015, RTD opened a new Commuter Rail Maintenance Facility to serve the needs of a growing commuter rail network. The Commuter Rail Maintenance Facility is in Denver's Globeville neighborhood, just north of I-70 and west of I-25. The facility sits on 30 acres with 6 tracks that run through the building. Approximately 240 mechanics, operators, and other staff work at this facility.

Many riders depend on passenger rail service to get to and from work and for daily travel options. Denver's commuter and light rail network is connected to regional and local bus transit services and intercity bus routes and provides significant mobility benefits and choices for residents and workers. Rail investments in the region have also spurred significant commercial and residential redevelopment around station areas. Though Denver has a long history of local transit through a network of streetcars, suburban and interurban railways, which ended in 1950, it was not until 1994 that light rail service returned to the metro area. In 2004, a voter-approved tax initiative known as FasTracks developed a plan for a multibillion dollar expansion of commuter rail, light rail, and express bus service throughout the region. RTD continues to plan, finance, develop, and operate rail corridors with significant future expansion plans. A brief timeline of light and commuter rail routes in the Denver metro area follows:

- **1994** – The D Line light rail route (5.3 miles) was the first rail corridor in Denver's system. Extended in 2000, this corridor connects Denver and Littleton with stations serving communities southwest of downtown.
- **2002** – The C Line provides service between Denver Union Station and Littleton with 12 stations. The Central Platte Valley Extension was 2.1 miles.
- **2006** – The E Line connects Denver Union Station to Lone Tree and communities to the southeast.
  - The F Line connects downtown Denver to Lone Tree and communities to the southeast with 18 stations.
  - The H Line connects downtown Denver and Aurora with communities to the southeast and east.
  - The 2006 "Southeast Corridor" extension was 19.1 miles.
- **2013** – The W Line (11 miles) connects Denver Union Station and Golden with stations serving Lakewood and communities west of downtown.
- **2016** – The University of Colorado A Line (24.5 miles) provides commuter rail service connecting Denver Union Station to Denver International Airport with stops in Aurora. This corridor was constructed and is operated under the Eagle P3. The line uses UP right-of-way along a portion of the route.
- **2016** – The B Line (6.2 miles) provides commuter rail service from Denver Union Station to Westminster and operates on BNSF right-of-way for a portion of the corridor. This line was also constructed and is operated under the Eagle P3.
- **2017** – The R Line light rail (10 miles) connects Aurora to Lone Tree with 16 stations along older portions of the light rail system and along newly constructed rail through Aurora. The line provides connections to the University of Colorado A Line and Denver International Airport and the E, F, and H Lines.

RTD Light and Commuter Rail Network, FasTracks Vision Map



Future Commuter and Light Rail Corridors

RTD is planning new lines and extensions to existing commuter and light rail routes. Expansions are primarily toward the north and south of Denver reaching communities not yet served by passenger rail.

- **G Line to Wheat Ridge** – The new G Line is slated to open in 2018, connecting Denver Union Station to Wheat Ridge over 11 miles and connecting to eight stations and seven new park and rides. This corridor was constructed and will be operated under the Eagle P3 agreement.
- **N Line to Thornton** – The N Line will provide commuter rail service connecting Denver to the northern metro area, including Commerce City, Northglenn, Thornton, and northern Adams County. The route extends over 13 miles and includes seven stations and six park and rides. A future planned extension to 162nd Avenue and Colorado will add another 5 miles.
- **Central Rail Extension** – The L Line replaces the D Line between 16th and Stout in downtown Denver and 30th and Downing to the east of downtown Denver. A planned future extension of the L Line from the 30th and Downing station to 38th and Blake station will provide a connection between downtown Denver and the University of Colorado A Line.
- **Southwest Rail Extension** – This extension of the existing Southwest Corridor, Lines C and D, is a 2.5-mile extension bringing rail to Highlands Ranch.
- **Southeast Rail Extension** – Scheduled to open in 2019, this extension of the existing Southeast Corridor, Lines E, F, and R, is a 2.3-mile extension bringing rail farther into Lone Tree.
- **B Line to Longmont** – The newly built B Line to Westminster is anticipated to continue further along the northwest corridor, connecting Boulder, Longmont, and other cities to Denver. The full corridor would add 34.8 miles to reach Longmont from the existing Westminster station.

CDOT, RTD, and regional and local planning partners continue to assess the feasibility of commuter rail and high speed passenger rail along the Front Range. Studies such as the ICS and the North I-25 EIS have evaluated alternatives and developed estimated costs and needs for various levels of service for passenger rail, including "starter" commuter rail service that could be upgraded in the future. Chapter 4 of this Rail Plan discusses future expansions and plans for passenger rail within the Denver metro area and along the Front Range.

Scenic and Historic Rail Operations

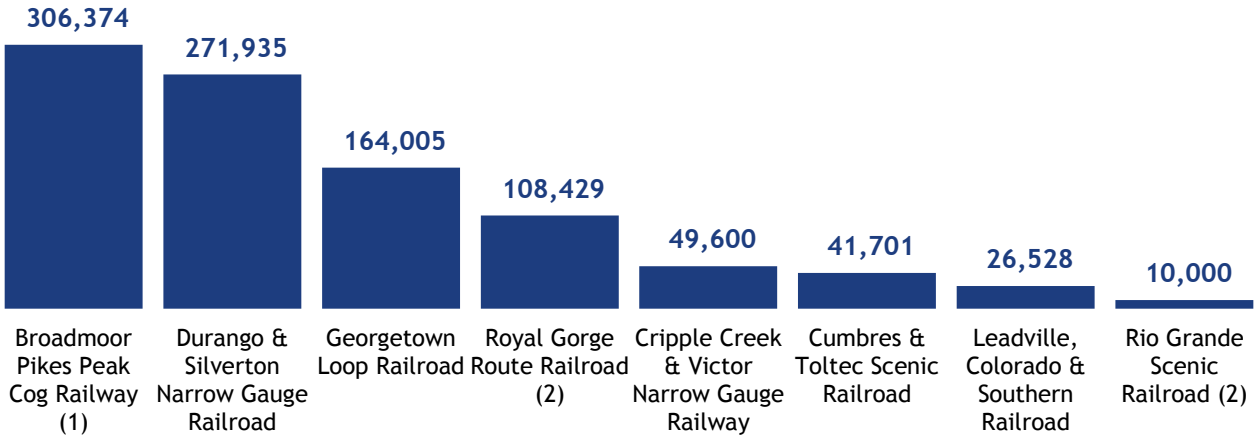
Colorado is home to eight scenic and historic railroads that provide critical links to Colorado's railroading past.

Colorado's scenic and historic railroads provide visitors with experiences of steam locomotives, cog railways, and narrow-gauge track through remote mountainous areas, through deep canyons, and over scenic bridges. Many of these railroads have roots in Colorado's mining past and run on routes constructed in the late 1800s.

Colorado OEDIT estimates 10 percent of Colorado visitors ride one of Colorado's eight scenic railroads each year. Ridership of individual scenic rail operators ranges from less than 10,000 to more than 300,000 annually. On average, tourism to these railroads amounts to more than 950,000 combined rail passengers each year. These visitors generate significant local economic impact in sales and lodging tax revenues and boost indirect spending in the towns and counties surrounding these historic assets. According to a recent study of the C&TSRR, rail operations support 147 direct jobs and result in a total annual economic impact of $14.8 million in the surrounding five-county region of Colorado and New Mexico.

Consistent ridership and visitor counts are not available from all scenic railroads. The chart below summarizes data from the Colorado PUC on annual ridership of these systems.

Scenic and Historic Railroad Reported Annual Ridership, 2016-2017



Source: Colorado Public Utilities Commission

Notes: (1) The Broadmoor and Pike Peaks Cog Railway did not operate a complete season in 2017 and remains closed for the 2018 season as the owner evaluates maintenance and operational needs. Ridership is reported for 2016. (2) Royal Gorge Route Railroad and Rio Grande Scenic Railroad annual reports were not available at time of publication. Ridership is reported for 2016.

Colorado's scenic and historic railroads offer visitors unique experiences, preserve railroading history, and contribute significantly to tourism-based economies in rural regions. Each railroad offers different excursions and amenities and ranks among the state's most popular tourism destinations. The following table shows available operating characteristics.

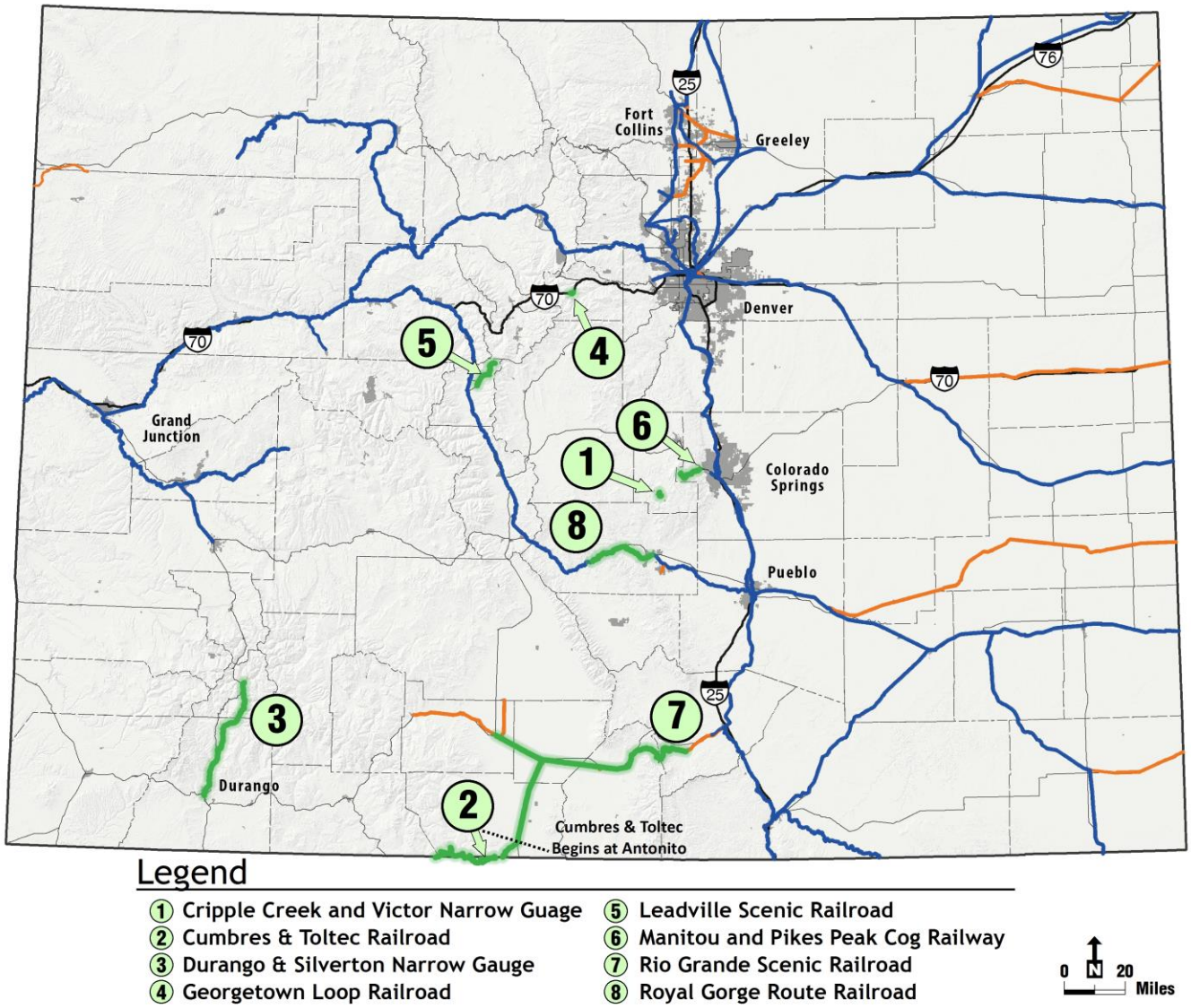
Scenic and Historic Railroad Operating Characteristics

Scenic Railroad	Route Miles	Gauge	Trips per Day	Operating Season
Broadmoor Pikes Peak Cog Railway	9	Cog Railway	6-8	Year Round
Durango & Silverton Narrow Gauge Railroad	47	Narrow	4	Year Round
Georgetown Loop Railroad	5	Narrow	6	Late April to December
Royal Gorge Route Railroad	12	Standard	4	Year Round
Cripple Creek & Victor Narrow Gauge Railway	2	Narrow	10	Mid-May to Mid-October
Cumbres & Toltec Scenic Railroad	64	Narrow	2	Late May to Mid-October
Leadville, Colorado & Southern Railroad	13	Standard	2	Late May to Early October
Rio Grande Scenic Railroad	61	Standard	3	Late May to October

Typically, either individuals or national holding companies privately own scenic rail operations. History Colorado, a Division of the Colorado Department of Higher Education, owns the Georgetown Loop, which is operated by a private vendor. The states of New Mexico and Colorado jointly own and manage the C&TSRR with oversight by the governing C&TS Commission. Two scenic rail systems in Colorado also share lines with freight rail operators: the Rio Grande Scenic Railroad and the Royal Gorge Route Railroad.

Scenic rail operators rely on private funding, volunteer time and materials, and public grants for historic preservation from the State of Colorado to maintain and refurbish equipment, rolling stock, and facilities. Maintaining track and equipment in working order and meeting modern safety standards are critical to reducing safety risks and to improving operational speeds and reliability. FRA regulates scenic rail operators to meet those standards.

Colorado Scenic and Historic Railroad Map, 2018



Rail Corridor Preservation

The State of Colorado does not currently own any freight or intercity rail corridors or rail infrastructure assets. The State does own and operate two scenic and historic railroads. CDOT prepares an annual report to the Colorado Transportation Legislation Review Committee detailing priority potential rail abandonments and rail acquisition opportunities. This report, known as the SB-37 report, is prepared in response to 1997 legislation that created the State Rail Bank Fund. The State Rail Bank Fund is not currently funded and requires appropriations from the state legislature to fund any potential acquisitions.

CDOT recognizes that significant rail corridors represent an irreplaceable state transportation asset and preservation of future use is critical.

In 2000, the Colorado Transportation Commission approved a Rail Corridor Preservation Policy, also known as Policy Directive 1607. Policy Directive 1607, updated in 2014, enumerates rationale and support for rail corridor preservation and establishes criteria to identify state significant rail corridors. CDOT maintains a list of State Significant Rail Corridors, provides updates to the Colorado Transportation Commission, and tracks corridors at risk of potential abandonment. Currently, several lines are considered of statewide significance, with CDOT monitoring these for potential acquisition or preservation.

- Owned by UP, the **Tennessee Pass Line** runs 178 miles from near Gypsum, through Eagle, Edwards, Avon, and Minturn, under Tennessee Pass (by tunnel) and along the Arkansas River via Leadville, Buena Vista, Salida, and Cañon City to Pueblo. The Tennessee Pass Line is identified as a State Significant Rail Corridor because of its potential to carry both passengers and freight and because it is the only existing trans-mountain alternative in Colorado to the Moffat Tunnel Line, which often runs near capacity. The Royal Gorge Route Railroad currently offers scenic tourist rail trips on 12 miles of the Tennessee Pass Line west of Cañon City. The Tennessee Pass Line may be used as an alternate route as trans-mountain rail demand grows due to increased development on the Western Slope or if the Moffat Tunnel were damaged or closed for any reason. The line provides critical network redundancy and opportunities for alternative uses. No freight has been shipped across the full Tennessee Pass Line since 1996. UP has not indicated plans to abandon this line in the near future.

- Owned and operated by UP, the **Fort Collins Branch Line** runs southeast from Fort Collins to Milliken and Dent, then east to La Salle. This line is identified as a State Significant Rail Corridor because it connects Greeley and Fort Collins to the North I-25 corridor. The line was identified as part of the preferred alternative in the North Front Range Transportation Alternatives Feasibility Study in 2000 but was not included in the 2011 Preferred Alternative of the North I-25 EIS. The North I-25 EIS recommends a new commuter rail line connecting the future extension of the commuter rail B Line in Longmont and the north end of RTD's N Line in Thornton. CDOT will continue to monitor activities on this rail line, but it will not be considered a potential line for acquisition until conditions may warrant action.

- Amtrak Southwest Chief service over the **Raton Pass Line** was previously considered at risk, and passenger rail service to southeastern Colorado communities was in jeopardy. Cooperative efforts by the states of Colorado, Kansas, and New Mexico, Amtrak, BNSF, local communities, and civic organizations secured USDOT grant funding. With recent track improvements, this line is not considered at-risk in the immediate future.

- The **Towner Line**, purchased by the State of Colorado in 1998, was later sold to Victoria & Southern Railway (V&S) in 2011. In 2012, 80 miles of the Towner Line were abandoned. In 2014, KCVN, and its wholly owned subsidiary Colorado Pacific Railroad, notified the STB of an offer to purchase the Towner Line from V&S. In 2016, KCVN brought a case before the STB to complete the purchase of the line. At that time, CDOT submitted a letter to the STB in support of KCVN's acquisition to maintain the line for transportation use and future options. In July 2017, the STB ruled that KCVN was eligible to purchase the line. In December 2017, following the STB ruling and arbitration, V&S agreed to sell the line to KCVN and Colorado Pacific Railroad for $10 million. KCVN intends to operate the line in the future for agricultural freight purposes.

2.1.3 Freight and Passenger Rail Intermodal Connections

Intermodal Freight Rail Traffic and Transload Facilities

Most rail traffic in Colorado is categorized as carload. This generally includes unit trains made up of 110 cars carrying the same products; for example, coal or wheat. Carload also includes single cars or a small number of cars serving specific customers or industries; lumber, concrete, scrap, or metal ores, for example. Intermodal freight is the largest source of revenue for Class I railroads nationally, but intermodal rail traffic represents only 10 percent of total rail tonnage in Colorado.

Intermodal service focuses on containers and highway trailers transferred between ship and rail at international seaports or between trucks and rail at domestic intermodal terminals. Colorado's rail carriers do not handle significant amounts of intermodal traffic because it remains more cost-effective for containerized goods to be transported from international seaports by truck to Colorado markets. According to an analysis by the Association of American Railroads (AAR) of 2016 Waybill data, Denver does not rank among the top 15 intermodal container rail markets in the country. The top intermodal rail markets are all located near major international trade gateways or seaports. AAR provides data and rankings for only the top 15 U.S. intermodal rail markets and comparable data for Colorado is not available.

Colorado's intermodal rail-served facilities include major intermodal, transload, and automobile terminal facilities operated by UP and BNSF in the greater Denver region. In 2014, BNSF opened an expanded auto transfer terminal in Littleton, Colorado, with three times the acreage, twice the trackage, and significantly more parking spaces than the previous Irondale, Colorado, facility it replaced. The BNSF "Big Lift" facility includes 2,200 parking spaces and 12,000 feet of track and can handle unloading up to 65 rail cars from an automotive unit train each day. UP also operates an auto transfer terminal, located in Henderson (Rolla), Colorado. Currently, more than 130,000 automobiles a year are transferred at the facility destined for dealerships throughout Colorado and the Mountain West region.

BNSF and UP also operate intermodal terminals (transfer facilities) that handle intermodal containers and transload operations. Transload operations focus on transferring freight between railcars and trucks to access rail shippers and receivers that do not have direct rail access. Key transload commodities in Colorado include agricultural goods like grain; bulk material like coal, gravel, plastics, soda ash and sand; project cargo like lumber or wind turbine blades; and an assortment of goods shipped by boxcar. Because these transfers require some degree of handling, these facilities typically provide direct truck access to railcars, crossdock warehouses, or other storage facilities.

Many short line railroads also have facilities and property that can be developed for transloading. Denver, Brighton, Henderson, Commerce City, Hudson, Johnstown, Loveland, and Windsor contain more than a dozen privately operated transload facilities. These facilities provide key links to automotive, construction, retail, manufacturing, and other industries and are served by Class I and short line railroads. The following table shows transload facilities, with rail connections, as identified by FHWA as key intermodal rail connectors on the National Highway Freight Network in Colorado. There are additional private intermodal terminals and yards provide transload and transfer services between rail and truck.

FHWA Key Intermodal Rail Connectors and Facilities, 2018

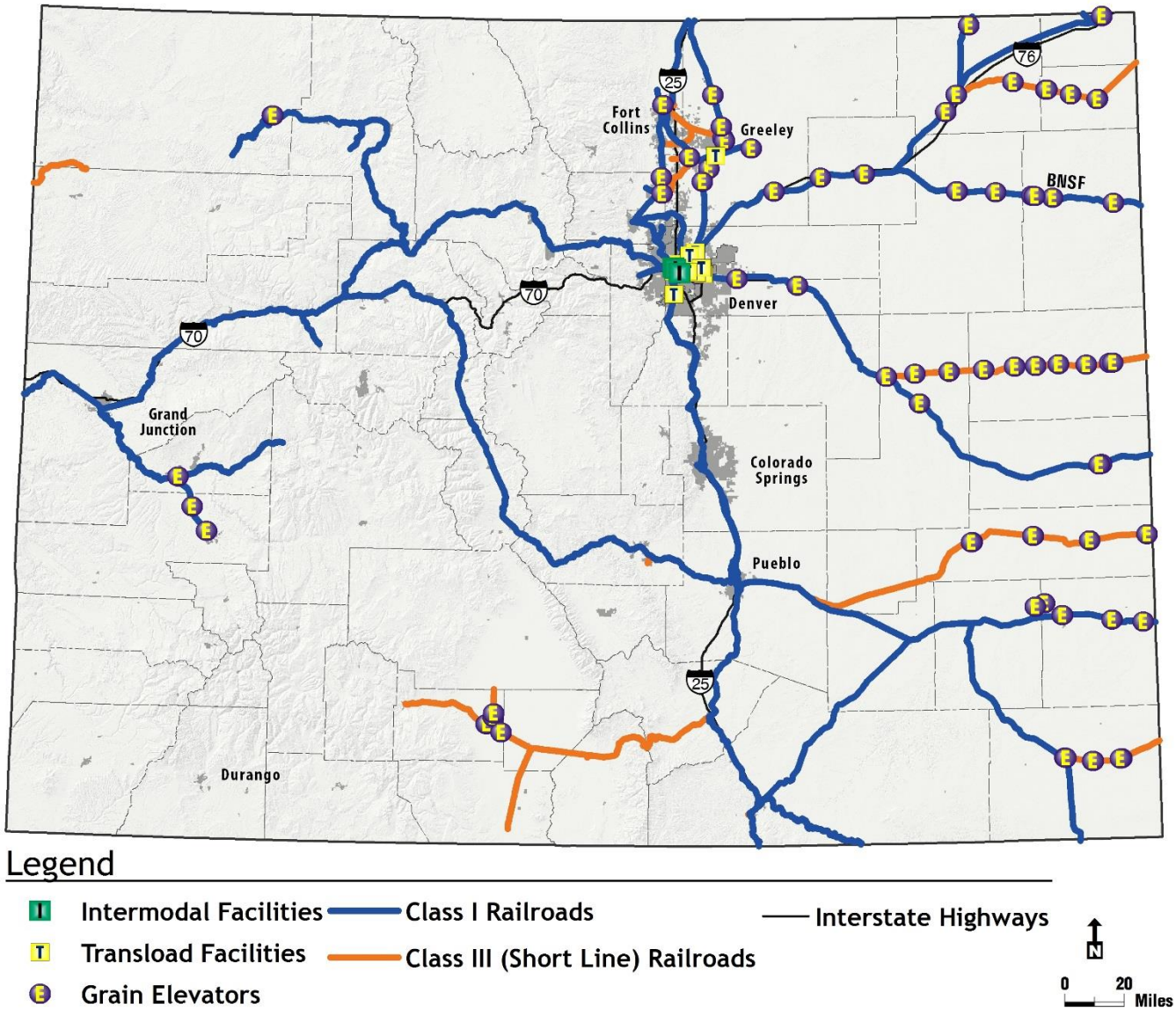
Facility	City
BNSF Railroad Transfer Facility – Rennicks Yard	Denver
BNSF Railroad Auto Transfer – Big Lift	Littleton
BNSF Railroad Transfer Facility – 38th Street Yard	Denver
UP Railroad Transfer Facility – North Yard	Denver
UP Railroad Auto Transfer - Rolla	Henderson
UP Railroad Transfer Facility – 36th Street Yard	Denver
Conoco Pipeline Transfer	Commerce City
Kaneb Pipeline Transfer - DuPont	Commerce City
Source: FHWA, National Highway Freight Network Map and Tables for Colorado	

Grain elevators also facilitate the transfer of agricultural products between rail and truck. Grains, including wheat, corn, sorghum, millet, feeds, and sunflowers, are among the key commodities transferred at these facilities. Other agricultural-related goods may also be processed at these hubs, including seeds and fertilizers. Colorado's rail network includes 97 grain elevators located throughout the state. Elevators range considerably in terms of active operations, age and maintenance needs, commodities handled, and rail shipper service capacity. Not all elevator facilities can accommodate high-volume 110-car "shuttle" unit trains, and most are designed for either single carloads or small "blocks" of railcars.

Colorado has relatively few shuttle loading facilities; UP, BNSF, the Nebraska, Kansas & Colorado Railway, and the Great Western Railway of Colorado (GWR) serve sites located in Johnstown, Byers, Windsor, Holyoke, and Cheyenne Wells. These sites are designed to load a 110-car unit train in 15 hours or less. Grain elevators lacking shuttle capabilities can limit the transportation options of producers and feed grain users and increase transport costs. Types of crops grown, global commodity prices, and widely varying crop yields between years due to climatic conditions also affect shuttle locations. High-volume elevator facilities in Kansas and Nebraska near Colorado production areas may attract truck hauls from Colorado to these out-of-state elevators for transfer to rail.

With record grain harvests in recent years, higher agricultural commodity prices, and lower freight rail rates, some shippers have expressed growing concerns over the capacity of Colorado's rail network to handle agricultural exports. Capacity constraints posed challenges for growers in 2014 and 2015. Although rail coal traffic as measured by tonnage has declined in Colorado in recent years; intermodal shipments and agricultural products shipped by rail have grown. As a result, no significant net new capacity has been created on existing rail lines. As intermodal traffic increases in the future to serve Colorado's growing population and markets, additional rail capacity may be required.

Colorado Rail Intermodal, Transload, and Grain Facilities Map, 2018



Passenger Rail Intermodal Connections

Passenger Travel Intermodal Hubs

With the addition of RTD's University of Colorado A line, Denver is now one of fewer than 20 cities in the U.S. with a direct rail connection between downtown and the state's primary passenger airport. This commuter rail line serves an estimated 18,600 boardings per average weekday. DEN's long-term vision includes significant development on airport property and surrounding lands to develop into a hub of commercial, business travel, and light industrial activity. This aerotropolis concept includes future connections for additional passenger rail lines into the airport, including potential alignments for Front Range passenger rail. Long-range master plans for DEN have also considered potential connecting spurs or rail lines for short line and Class I rail service within the airport property to serve industrial and warehousing and distribution customers and provide air to rail freight connections.

Amtrak Intermodal Connections

Many Amtrak stations in Colorado offer transfers to nearby intercity bus stations, such as Amtrak Thruway, Greyhound, or Bustang, as well as connecting local transit service. Local transit providers serve Amtrak stations through either fixed route scheduled service or by demand responsive transit options.

Providing seamless connections among trains, buses, and transit services is critical to expanding intercity rail service as a viable and convenient option for residents and visitors.

Amtrak Station Intermodal Transit Connections, 2018

Station	Intercity Bus Service (e.g., Greyhound), Distance to Nearest Bus Station	Amtrak Thruway Service Connection	Local Transit Service Type	Local Transit Direct Connection to Amtrak	Local Transit Connections by Mode
Denver (Union Station)	0.6 mile	Yes	Fixed Route	Yes	Light Rail, Commuter Rail, Bus
Glenwood Springs	2.8 miles	No	Fixed Route	No	Bus
Fort Morgan	1.2 miles	No	Demand Responsive	By Request	Shuttle
Grand Junction	0.5 mile	No	Fixed Route	No	Bus
Fraser-Winter Park	2.8 miles	No	Fixed Route - Seasonal	Yes	Shuttle
La Junta	0.01 mile	No	Fixed Route	No	Bus
Trinidad	2.9 miles	No	Demand Responsive	By Request	Shuttle
Granby	0.1 mile	No	No Service	No	No Service
Lamar	2.6 miles	No	Demand Responsive	By Request	Shuttle

Source: Amtrak, Colorado State Transit Plan, Google Maps, and online route information from local providers

Amtrak Thruway Bus Service

To extend the reach of Amtrak service to communities without rail service and offer a wider selection of destinations, Amtrak established Thruway intercity bus service. Bus services provide connections to Amtrak trains, serving 11 additional cities in Colorado. Amtrak Thruway service connects with the California Zephyr at Denver Union Station and the Southwest Chief in Raton, New Mexico. In Colorado, these services are operated by Greyhound and Express Arrow and provide direct connections to the intercity bus and light and commuter rail network at Denver Union Station. In other locations across the state, passengers must transfer from Amtrak stations to the local connecting intercity bus stations, which are generally not co-located. The following table shows Amtrak Thruway bus service routes serving Colorado.

Amtrak Thruway Services and Routes, 2018

Bus Route	Connecting Amtrak Route	Amtrak Station Stop	Service Daily Frequency	Local Thruway Service Stops *	Thruway Service Operator
Denver to Raton	California Zephyr	Denver Union Station	Northbound: 1 bus Southbound: 2 buses	Denver - Colorado Springs - Raton, NM	Greyhound Lines
Raton to Denver	Southwest Chief	Raton, NM	Northbound: 3 buses Southbound: 2 buses	Raton, NM - Colorado Springs - Denver	Greyhound Lines
Denver to Vail	California Zephyr	Denver Union Station	Westbound: 1 bus Eastbound: 1 bus	Denver – Frisco - Vail	Greyhound Lines
Denver to Alamosa	California Zephyr	Denver Union Station	Northbound: 1 bus Southbound: 1 bus	Denver – Pine - Fairplay - Buena Vista - Salida - Poncha Springs - Moffat – Gunnison - Alamosa	Express Arrow

Source: Amtrak Timetables, 2017 *Connections may be necessary

2.1.4 Passenger Rail Service Objectives

The following table presents summary statistics for passenger service objectives by corridor, including load factor measures that assess overall capacity and use of Amtrak routes. The average load factor is calculated by dividing passenger miles (the aggregation of trip lengths for individual passengers) by seat miles (the sum of the product of total seats available and total miles traveled for individual trains).

Amtrak Passenger Service Objective Measures, Fiscal Year 2017

Amtrak Passenger Service	Termini	Service Frequency	National Ridership	Train Miles	Passenger Miles (Millions)	Seat Miles (Millions)	Average Load Factor
California Zephyr	Chicago, IL / Emeryville, CA	1 train daily (both directions)	415,000	2,438	308.4	526.3	59%
Southwest Chief	Chicago, IL / Los Angeles, CA	1 train daily (both directions)	363,000	2,265	304.6	495.5	63%
Winter Park Express	Denver, CO / Fraser-Winter Park, CO	1 train daily (both directions)	n/a	n/a	n/a	n/a	n/a

Source: Amtrak, Monthly Performance Reports. FY2017 Data

2.1.5 Performance Evaluation of Intercity Passenger Services

The following section presents statistics on intercity passenger rail performance, including ridership and use, financial performance, on-time performance (OTP), and customer satisfaction. These metrics routinely tracked

by Amtrak are required for inclusion within state rail plans as established by the FRA under PRIAA. The State of Colorado and CDOT have limited roles in influencing the performance and use of Amtrak long-distance intercity passenger rail. Through partnerships with Amtrak and private railroads, CDOT continues to support actions and improvements to enhance and expand intercity rail service.

Ridership and Use

Amtrak use in Colorado has gradually increased in recent years, with sustained growth between 2012 and 2017. Two routes make up the 263,021 total boardings for the state. The California Zephyr route serves 6 stations in Colorado. Over 59 percent of Amtrak boardings and alightings in the state occur at Denver Union Station, followed by Glenwood Springs and Grand Junction. California Zephyr ridership in Colorado reached its highest levels in 2017, with more than 248,924 boardings and alightings along the line. Southwest Chief ridership has generally remained steady with over 14,097 boardings and alightings in Colorado. Amtrak operates the Winter Park Express route, and ridership was first reported in 2017 following renewed seasonal service.

Annual Boardings and Alightings at Amtrak Stations in Colorado, 2012 to 2017

City	2012	2013	2014	2015	2016	2017
California Zephyr						
Denver	113,393	108,124	111,426	126,403	139,652	154,706
Fort Morgan	3,343	3,196	3,551	3,705	3,539	3,448
Glenwood Springs	33,245	33,113	34,489	39,713	46,818	46,079
Granby	3,528	3,408	3,347	3,945	4,677	4,950
Grand Junction	31,999	29,826	29,672	29,811	32,302	30,896
Winter Park-Fraser	7,162	7,250	6,911	8,445	9,017	8,845
Total	***192,670***	***184,917***	***189,396***	***212,022***	***236,005***	***248,924***
Annual Change	***-0.4%***	***-4%***	***2%***	***12%***	***11%***	***5%***
Southwest Chief						
La Junta	6,566	6,711	6,918	7,256	7,080	7,009
Lamar	1,936	1,823	1,812	1,928	1,879	1,673
Trinidad	4,770	4,765	4,592	5,158	5,747	5,415
Total	***13,272***	***13,299***	***13,322***	***14,342***	***14,706***	***14,097***
Annual Change	***2%***	***0.2%***	***0.2%***	***8%***	***3%***	***-4%***
Total Intercity Amtrak Colorado						
Total	***205,942***	***198,216***	***202,718***	***226,364***	***250,711***	***263,021***
Annual Change	***-0.2%***	***-4%***	***2%***	***12%***	***11%***	***5%***
Winter Park Express						
Total	***n/a***	***n/a***	***n/a***	***n/a***	***n/a***	***16,568***
Annual Change	***n/a***	***n/a***	***n/a***	***n/a***	***n/a***	***n/a***

Source: Amtrak Fact Sheet for State of Colorado, Fiscal Year 2011 to 2017

The strategies and recommendations included within this Rail Plan are intended to continue support for Amtrak service in Colorado. CDOT, the State of Colorado, and private partners have provided financial support for station improvements, matching funds for federal grant opportunities, and private sponsorship contributions to ensure the continued use of routes in Colorado.

Financial Performance

The financial performance of the California Zephyr route has improved in recent years, while the Southwest Chief has remained stable. Revenue from the California Zephyr totaled $60.4 million in 2017. Operating costs of this route have remained steady at $118.8 million for an approximate cost recovery ratio of 51 percent. The Southwest Chief route collected $49.9 million of revenue, with operating costs of $104.0 million in 2017, for a cost recovery ratio of 48 percent. The national average cost recovery ratio for all long-distance routes is 52 percent. Ensuring continued federal financial support for Amtrak routes in Colorado is critical. Investments in rail service return direct economic benefits to communities with stations, including economically distressed communities along both routes.

Financial Performance of Amtrak Trains Serving Colorado, 2012 to 2017

Service	2012	2013	2014	2015	2016	2017
California Zephyr						
Operating Revenue	$53.2m	$55.7m	$55.8m	$55.3m	$59.1m	$60.4m
Operating Expenses	$121.9m	$126.4m	$115.8m	$115.6m	$115.3m	$118.8m
Southwest Chief						
Operating Revenue	$48.2m	$49.1m	$49.4m	$49.8m	$48.2m	$49.9
Operating Expenses	$113.3m	$114.9m	$108.9m	$100.9m	$103.0m	$104.0m
National Long-Distance Network						
Operating Revenue	$557.1m	$568.7m	$564.2m	$545.3m	$551.9m	$534.8m
Operating Expenses	$1,132.2m	$1,162.5m	$1,071.7m	$1,040.0m	$1,033.3m	$1,035.0m

Source: Amtrak Monthly Performance Report for September, 2012-2017

On-Time Performance

Amtrak defines on-time performance as the total number of trains arriving on-time at a station divided by the total number of trains operating on the route.

A train is considered on-time if it arrives within an allowed number of minutes of its scheduled arrival time at the final destination. Allowed minutes depend on the length of the trip. For long-distance routes over 550 miles, 30 minutes or less is considered within the on-time window.

The California Zephyr has an average six-year OTP of 54 percent, while the Southwest Chief's average OTP is 66 percent. The California Zephyr's OTP was highest in 2013 at 70 percent but dropped as low as 34 percent in 2014. In 2013, a Federal court invalidated performance metrics developed under Section 207 of PRIIA, designed to measure passenger train operations on freight railroads. Following that decision, Amtrak's OTP metrics on freight railroad tracks fell dramatically. Amtrak is working with the freight railroads to identify possible solutions, including priority dispatching of Amtrak trains as established under federal law.

The Southwest Chief's OTP is higher than the national average of all long-distance Amtrak routes, while the California Zephyr is relatively lower. The lines traveled by the California Zephyr in Colorado include mountain passes, tunnels, and urban areas, which can lead to delays and lower OTP. Delays may result from Amtrak

operations, delays due to the host railroad, or other sources such as weather or incidents. The most common type of delay on the California Zephyr route was train interference, accounting for one-quarter of all delays. These delays are related to other train movements in the area, primarily freight rail operations. Passenger operating delays were most common on the Southwest Chief route. These delays include passenger holds, equipment failure, crew-related delays, and operations-related issues.

Other delay causes include slow orders that restrict travel speeds over certain segments for safety reasons. Freight railroad operational delays typically result from track maintenance work, while all other delays include issues such as weather, accidents, and non-railroad involved factors. Amtrak addresses performance and on-time reliability through coordination with private host railroads and operating procedures.

On-Time Performance of Amtrak Trains Serving Colorado, 2012 to 2017

Route	2012	2013	2014	2015	2016	2017
California Zephyr						
On-Time Performance	51.6%	70.4%	33.8%	51.4%	68.3%	49.0%
Southwest Chief						
On-Time Performance	75.3%	85.1%	61.6%	47.9%	69.0%	59.8%
National Long-Distance Network						
On-Time Performance	70.7%	71.9%	50.4%	53.7%	63.1%	52.1%
Source: Amtrak Monthly Performance Report for September, 2012-2017						

Causes of Delay to Amtrak Trains Serving Colorado, Average from 2011 to 2016

Causes of Delay	California Zephyr	Southwest Chief	National Long-Distance Network
Train Interference Delays	24.6%	18.1%	31.1%
Passenger Operating Delays	21.0%	24.9%	21.4%
Slow Orders	16.2%	22.4%	15.3%
All Other Freight Railroads Operational Delays	17.1%	19.3%	17.5%
All Other Delays	21.1%	15.3%	14.7%
Source: Amtrak Monthly Performance Report for September, 2011-2016. 2017 data not available at time of publication.			

Customer Satisfaction

Amtrak's Customer Satisfaction Index is a measure based on survey responses asking about all aspects of passengers' travel experience on Amtrak. Scores indicate the percentage of respondents satisfied with various aspects of service. Amtrak has set a goal to consistently exceed the 2010 Standard. The following table reports average Customer Satisfaction Index scores of all quarters in fiscal year 2017. The California Zephyr and Southwest Chief were both below the standard 82 percent score for the overall service. Both routes also performed below standard among other performance measures, except for satisfaction with Amtrak personnel.

Customer Satisfaction on Amtrak Trains Serving Colorado, 2017

Performance	2010 Standard	California Zephyr	Southwest Chief
Overall Service	82%	77%	74%
Amtrak Personnel	80%	82%	82%
Information Given	80%	71%	69%
On-Board Comfort	80%	59%	60%
On-Board Cleanliness	80%	78%	74%
On-Board Food Service	80%	64%	68%

Source: Federal Railroad Administration, Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations, Q1-Q4 FY 2017

2.1.6 Public Financing for Rail Projects

Over the next 20 years, Colorado's rail investment needs could run into the tens of billions of dollars. Needs include continued private investment in infrastructure and safety technology by private freight railroads, private and potential public financing for short line rail maintenance and upgrade needs, historic rehabilitation and safety needs for scenic and historic railroads, as well as significant capital investments in new Front Range passenger rail service and corridor development.

Colorado's freight railroad network is privately owned, maintained, and operated. Freight railroads pay for investments and improvements in these lines to maintain the current network's safe operation and to expand the network's capacity as justified for traffic growth. However, public agencies and CDOT have a role in assisting and supporting improvements that benefit the freight rail network, including improving highway connectivity to intermodal facilities, major freight rail customers, and economic development areas.

Public agencies own and operate Colorado's passenger rail network. Most capital and operating expenses are paid with local funding sources, with additional support from federal agencies and the State of Colorado. With limited federal funding, constrained state funding, stretched regional and local financial abilities, and no publicly supported rail assistance program, new partnerships, revenue mechanisms, and alternative funding sources will need to be explored and instituted.

Funding Opportunities

Identifying and securing funding to cover needed rail improvements is a long-term goal of this Rail Plan and rail partners across the state.

To finance even the most basic freight and passenger rail improvements identified in the previous section will require coordination among partners, new alternative funding sources, or additional funding from existing programs. A range of funding mechanisms, competitive grants, commitments from the state, and contributions from public and private partners will be needed to fully achieve Colorado's rail vision.

State funding for rail improvements has been demonstrated through the limited use of FASTER and SB-228 funding to support key infrastructure or operational investments in commuter rail and Amtrak service. CDOT has also funded past studies and plans that have further developed rail concepts and alignments. Regional funds through RTD are generated from regional sales taxes. While the FasTracks system improvements are nearing completion, regional funding to date has not been sufficient to build out the entire commuter rail system on the originally envisioned schedule. Communities have committed local funds to support grant initiatives to restore Southwest Chief service and to make critical station improvements in Pueblo, Trinidad, and Winter Park. The multi-state

and public-private coalitions that have supported TIGER grant requests demonstrate the combined commitment and funding ability of local governments and civic and private sector partners.

Private railroads are critical partners in making key investments in freight rail infrastructure to maintain and improve the efficiency, safety, and reliability of the freight network. Railroads are also key partners in passenger initiatives, including providing matching funds for grant awards and contributing funds toward station and line improvements. Amtrak Winter Park Express service uses innovative approaches to leveraging private funds, including identifying presenting sponsors and seeking private funding to cover additional rider services. P3 and innovative financing mechanisms have been used to fund commuter rail investments, including RTD's Eagle P3 project.

The federal funding situation has changed considerably since the last rail plan was developed in 2012. The Moving Ahead for Progress in the 21st Century authorization enacted in 2012 did not include any substantive changes to funding sources for intercity passenger rail service and appropriation levels dropped substantially. The FAST Act of 2015 provided limited funding for freight investments, including the ability to fund improvements benefiting freight rail and privately owned freight intermodal yards. The FAST Act also marked the first-time intercity passenger rail programs were included in a comprehensive, multimodal surface transportation authorization bill, authorizing more than $2 billion for intercity passenger and freight rail grants.

However, this grant funding was authorized from the General Fund, not from dedicated funds. Congress determines the actual appropriations. For FY 2016, the FAST Act authorized $200 million for intercity passenger rail and freight rail improvements grants, but Congress did not appropriate any funding for this purpose. In the past, the federal government had authorized substantial funding for intercity rail and a national high-speed rail network under PRIIA. However, since 2010, Congress has not appropriated significant funding under PRIIA programs, including the High-Speed Intercity Passenger Rail grant program. In 2013, funding under the High-Speed Intercity Passenger Rail program was rescinded. Recent federal appropriations for intercity passenger rail have generally not included substantial funding for rail service outside the Amtrak Northeast Corridor.

Exploration of new funding opportunities are necessary to advance rail in Colorado. Options for the State of Colorado, CDOT, and regional and local partners may include:

- **Authorizing and empowering state authorities** - The SWC&FRPRC is authorized to receive and expend monies to advance rail development. Previous state authorities have been formed to investigate or develop travel options along the I-70 Mountain Corridor. The powers and abilities of the SWC&FRPRC could be expanded to include bonding authority or other financing mechanisms. The DTR is currently empowered to own and operate transportation services, as demonstrated by the state-supported Bustang service.
- **Developing public rail assistance programs** - Colorado is one of the few states with significant short line rail activity but without a publicly supported rail assistance program of some kind. Instituting a new assistance program to provide grants and/or loans to private and public partners or providing tax incentives through the state tax code, such as investment tax credits, could address future needs. Changes to the governing rules of the COSIB could enable public or private rail projects to be more readily eligible for publicly backed loans and could also enable future flexibility to support needed private investments. Currently, transportation projects restricted to private use (e.g., freight rail siding or track) are not eligible under the COSIB.
- **Pursuing federal grant programs** - The USDOT's TIGER discretionary grant program has provided funding for freight and passenger rail projects in Colorado. However, the program is highly competitive, requires significant matching funds, provides relatively limited funding, and may not be continued in its current form. Other recent grant opportunities include Federal competitive grant programs including CRISI, BUILD, and INFRA, as well as grants for completion of Positive Train Control systems.

- **Partnering with Amtrak** – Amtrak's Section 209 program for State Supported Rail Corridors enables the State of Colorado to enter an operating partnership with Amtrak. State funds are required for corridor development and for capital, equipment, and operating expenses. Amtrak acts as a service provider and service operator, and Colorado benefits from leveraging Amtrak's national customer systems, freight railroad agreements, and maintenance and improvement funding.
- **Encouraging public-private partnerships** – CDOT has limited power to enter P3 agreements. Current programs are directed toward roadway and bridge improvements. Alternative financing authority and mechanisms could be expanded to encompass passenger and/or freight rail financing arrangements. Current Hyperloop partnerships provide examples of P3s beyond traditional arrangements.
- **Expanding regional and local transportation authorities** – Transit services are supported in several counties and regions across the state through transportation authorities. These organizations may impose fees or taxes that directly fund transit and transportation improvements. The taxing authority and revenue generating ability of districts, whether independent or in a regionwide effort, are limited and may not be effective in funding the scale of improvements needed. As a variation of this strategy, rather than legislatively amending the authorities themselves, authorities could enter into intergovernmental agreements. An intergovernmental agreement between RTD and Pikes Peak Rural Transportation Authority, for example, would link the two largest such authorities in the state.
- **Integrating rail improvement projects into current programs** – CDOT could continue to integrate freight and passenger rail improvement projects into current state project development and funding programs, including the SWP, Statewide Transit Plan, 10-Year Development Program, and regional Transportation Improvement Programs. Funding directed by the DTR, including FASTER funds, could be expanded to support smaller rail improvement projects that would advance broader service development in the future. State funds are limited, highly competitive, and generally directed toward maintenance and state of good repair needs for roads.
- **Exploring alternative state funding arrangements** – Oregon, Kansas, Minnesota, Iowa, Pennsylvania, and other states provide dedicated state funding for multimodal transportation investments, including rail. These funds are derived from general funds, lottery funds, or transportation-related fees and charges, and, in limited circumstances, by Class I railroads. They are in addition to any federal surface transportation allocations. Colorado could explore the creation of new programs or the dedication of state funds to provide needed investment in rail opportunities. Short line railroads have had success in improving infrastructure at the federal level using the investment tax credit program adopted by Congress. This program allows short lines to use tax credits to undertake projects they otherwise could not fund.

Future funding strategies will require new partnerships, renewed state and public commitments, continued engagement with freight railroads and existing passenger rail operators, and entirely new funding mechanisms and models.

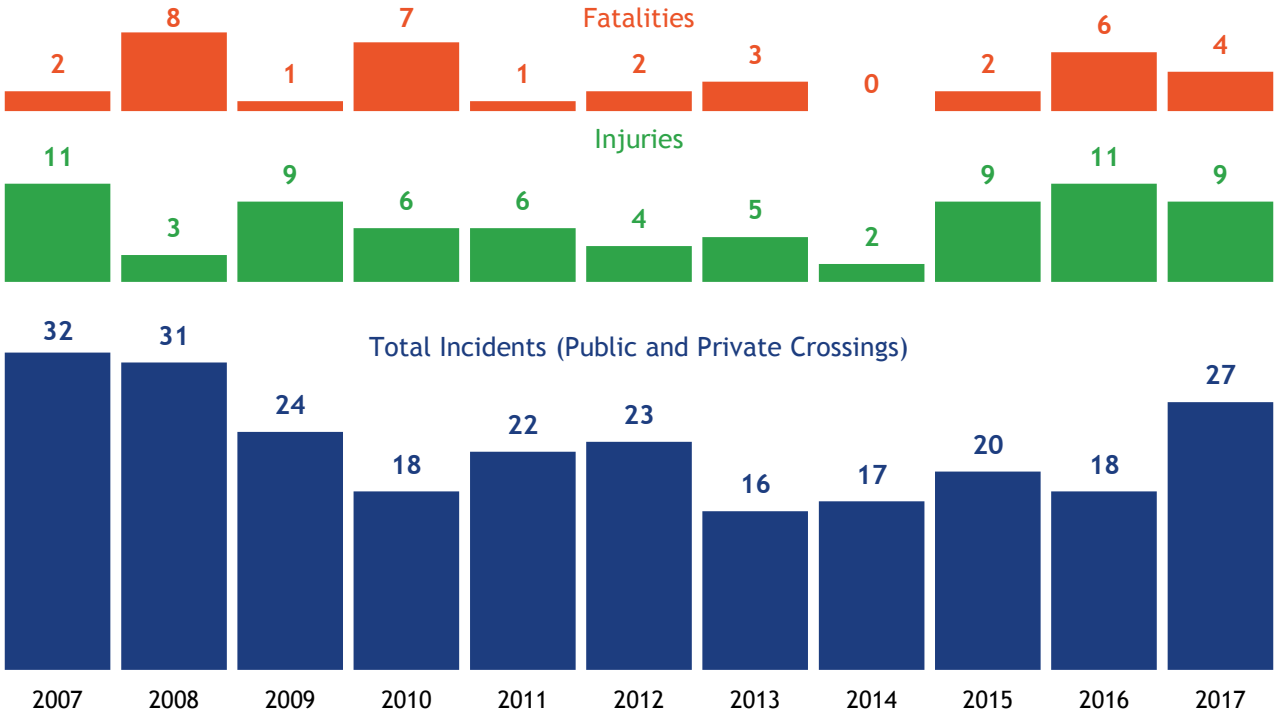
2.1.7 Safety and Security of Rail Transportation

CDOT's primary goal is to improve safety for all multimodal transportation system users. Ensuring the safety and security of Colorado's rail systems is critical to passengers, the traveling public, and rail workers. It is important to maintaining efficient and reliable rail service for businesses. Rail policies help ensure that railroad operations and property remain secure, highway-rail crossings are safe, and hazardous materials movements protect life and property. This subsection describes current programs and initiatives to improve rail safety and reports trends in rail-related incidents.

Railway-Highway Safety

Railway-highway crossing safety incidents in Colorado declined from 32 in 2007 to 27 in 2017. This trend generally mirrors improvements in roadway safety across Colorado, even with an increase in the number of vehicles on the road. These incidents generally occur at public at-grade rail crossings and involve accidental crashes when vehicles attempt to circumvent safety devices, when vehicles stall on tracks, or when pedestrians or vehicle drivers do not respond to warning signals. Other incidents may occur because of intentional behavior by a driver. Fatalities and injuries resulting from railroad-highway incidents have remained relatively stable from 2007 to 2016, with an average of 3 fatalities and 6 serious injuries per year. A single incident can result in multiple fatalities. The following figure reports total railway-highway related incidents in Colorado.

Railway-Highway Total Incidents, Serious Injuries, and Fatalities in Colorado, 2007 to 2017



Source: Federal Railroad Administration Office of Safety Analysis, Ten Year Accident / Incident Overview

Commercial trucks may be at a greater risk at rail crossings. Trucks stall on railway-highway crossings or fail to completely clear a crossing on a congested roadway. Northeast Colorado has both a high number of public and private at-grade rail crossings and significant truck travel on rural roads due to oil and gas development. Many at-grade crossings in rural areas have only passive warning signs. An analysis completed by CDOT to support the CFP examined locations and patterns of commercial truck crashes compared to total vehicle crashes to identify safety hot spots. This analysis found no locations in the state with a significantly higher rate of truck crashes at railway-highway crossings than the average of all vehicle crashes. With a growing population and increased residential development along major travel corridors, the number of at-grade crossings and the risk of incidents at all crossings may increase. CDOT, through the FHWA Section 130 Program, seeks to improve crossing safety at high-hazard locations. Local governments and private railroads also improve crossings and maintain warning devices to improve roadway safety.

FHWA Railway-Highway Crossings (Section 130) Program

The Railway-Highway Crossings (Section 130) Program is one of several federal programs intended to mitigate the frequency and the severity of accidents to vehicles and pedestrians at railroad crossings. The program, funded by FHWA, is administered by CDOT's Division of Project Support. Colorado receives approximately $3 million annually in federal funding under Section 130 that is directed to projects that improve railway-highway at-grade crossings. Improvements include train-activated warning bells, flashing lights, overhead gates, or constant warning systems, as well as upgrades to signal equipment and modernization of adjacent highway infrastructure. Section 130 improvements have been attributed to significant decreases nationally in fatalities at railway-highway grade crossings.

Freight railroads in Colorado are private organizations, responsible for their own maintenance and improvement projects, while state and local agencies are responsible for evaluating railway-highway grade crossing risks and prioritizing grade crossings for improvement. The PUC has primary jurisdiction over all public railway-highway crossings in Colorado, including opening, closing, or upgrading rail crossings and approval of final decisions on crossing improvements. CDOT distributes federal funding for improvements to railway-highway crossings and coordinates with local agencies to identify and prioritize those investments. In Colorado, 1,751 of 2,129 public railway-highway grade crossings are at-grade.

Section 130 provides federal funds to eliminate hazards at railway-highway crossings. This is the only federal funding programmed in the current Rail Service and Investment Program (RSIP). Fifty percent of Colorado's apportioned funds are dedicated to the installation of protective devices at crossings, while the remaining funds can be used for any hazard elimination project, including protective devices. Funds may also be used as incentive payments for local governments to close public at-grade crossings if funds are matched by private railroad operators. The 2015 FAST Act extends eligibility to include projects at-grade crossings to eliminate hazards posed by blocked crossings due to idling trains. Unlike most other federal highway funds, local agencies cannot request Section 130 funds. Section 130 funding is limited to safety improvements only and cannot be used to fund improvements on behalf of counties or municipalities seeking to establish a quiet zone through the FRA.

Section 130 funds are programmed based on a "hazard index," which identifies the most critical railway-highway crossings statewide. This hazard index is used to consistently compare the crash potential of one crossing to another. CDOT's Division of Project Support develops the state rail crossing inventory and manages the hazard index process. The hazard index considers the following factors when prioritizing safety needs: Vehicle stopping sight distance; existing traffic protection devices at crossing; highway annual average daily traffic; rail line train volume; and, number and type of railroad tracks at crossing.

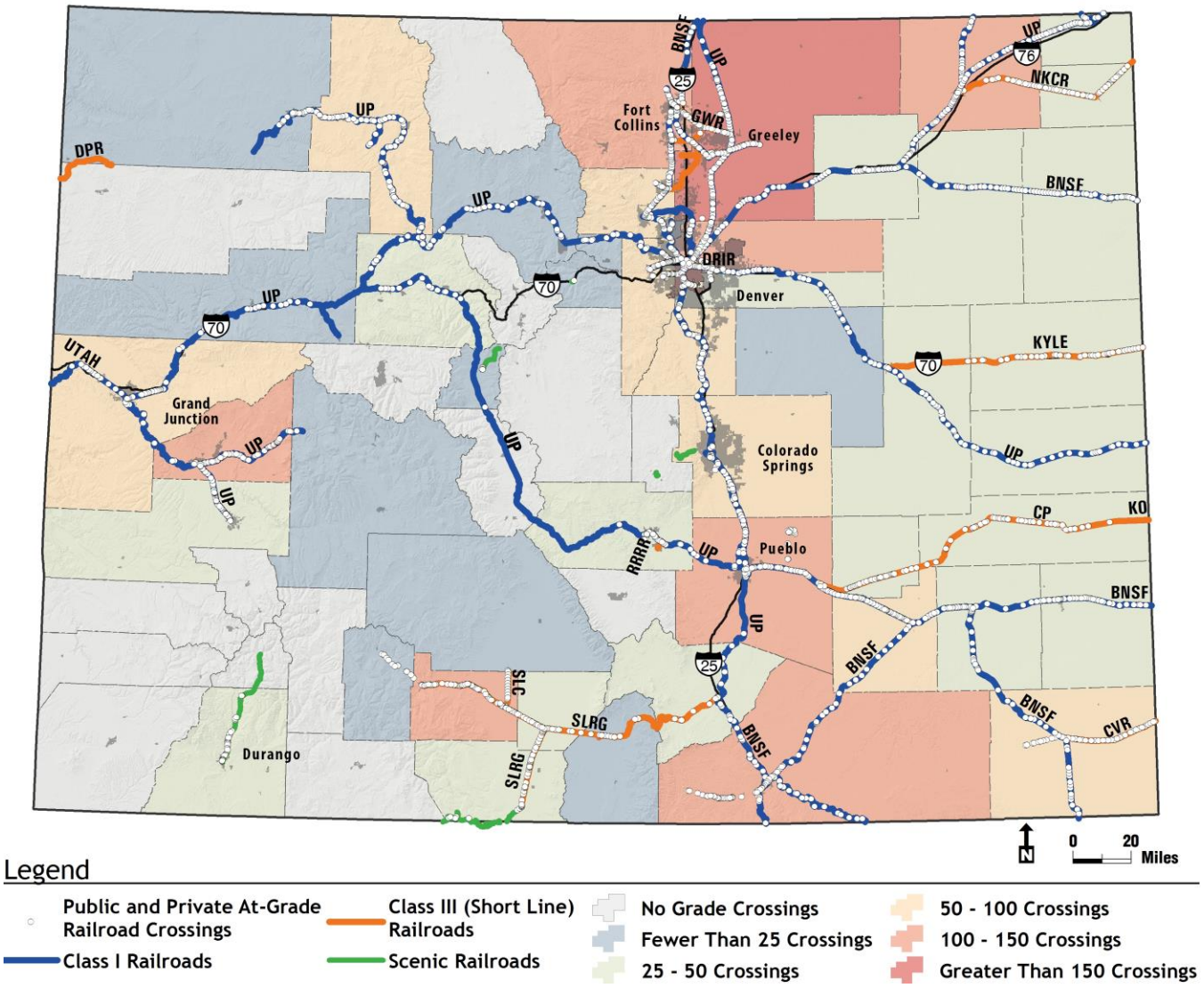
To develop and implement safety improvement projects that will reduce the number and severity of train collisions with motor vehicles, bicycles, and pedestrians, staff from CDOT Division of Project Support visits crossings that exhibit features or characteristics suggesting a possible tendency for accidents. Crossings with the highest hazard index values are studied in detail by performing crossing safety diagnostics. These crossing safety diagnostics include safety and traffic professionals on-site to evaluate an existing or a proposed railway-highway or railway-pathway crossing. Transportation professionals often include PUC staff, CDOT staff, local jurisdiction, and representatives from the railroad, transit agency, or owner of the track. The purpose of these diagnostics is to evaluate the existing or proposed conditions to determine the appropriate safety mitigation measures for a given location.

A quiet zone is a specified area or location, where, by agreement, motorists and residents will not hear the routine sounding of locomotive horns in approach to public crossings.

If there is a reason the locomotive engineer needs to sound the horn at a crossing (e.g., obstruction or vehicle in the crossing), FRA rules require the engineer to sound the horns. CDOT is currently completing a statewide inventory of all public crossings and implementing changes to the

administration of Colorado's Section 130 program. The following map highlights the location of public and private railway-highway at-grade crossings in Colorado and those counties with the greatest density of rail crossings.

Public and Private At-Grade Railway-Highway Crossings Map, 2017



Legend

- Public and Private At-Grade Railroad Crossings
- Class I Railroads
- Class III (Short Line) Railroads
- Scenic Railroads
- No Grade Crossings
- Fewer Than 25 Crossings
- 25 - 50 Crossings
- 50 - 100 Crossings
- 100 - 150 Crossings
- Greater Than 150 Crossings

Colorado's rail network has 1,751 public at-grade crossings that employ a variety of warning devices ranging from active warning gates and lights to passive warnings systems, such as signs or fixed gates. Approximately 44 percent of at-grade crossings use active warning devices, such as flashing lights and gates. All other at-grade crossings, particularly those in rural areas with relatively low train and vehicle volumes, rely on passive warning devices, such as signs. Many of the state's at-grade crossings are located along the Front Range and Eastern Plains region. More than 1,063 private at-grade railway-highway crossings in Colorado do not fall under the jurisdiction of CDOT or the PUC. These private crossings are sometimes unmarked without safety devices or signage. Private railroads install and maintain their own signage and warnings at these private crossings. The following table identifies types of current warning devices and the proportion devices at all public at-grade crossings.

Warning Devices at Colorado Public At-Grade Crossings, 2017

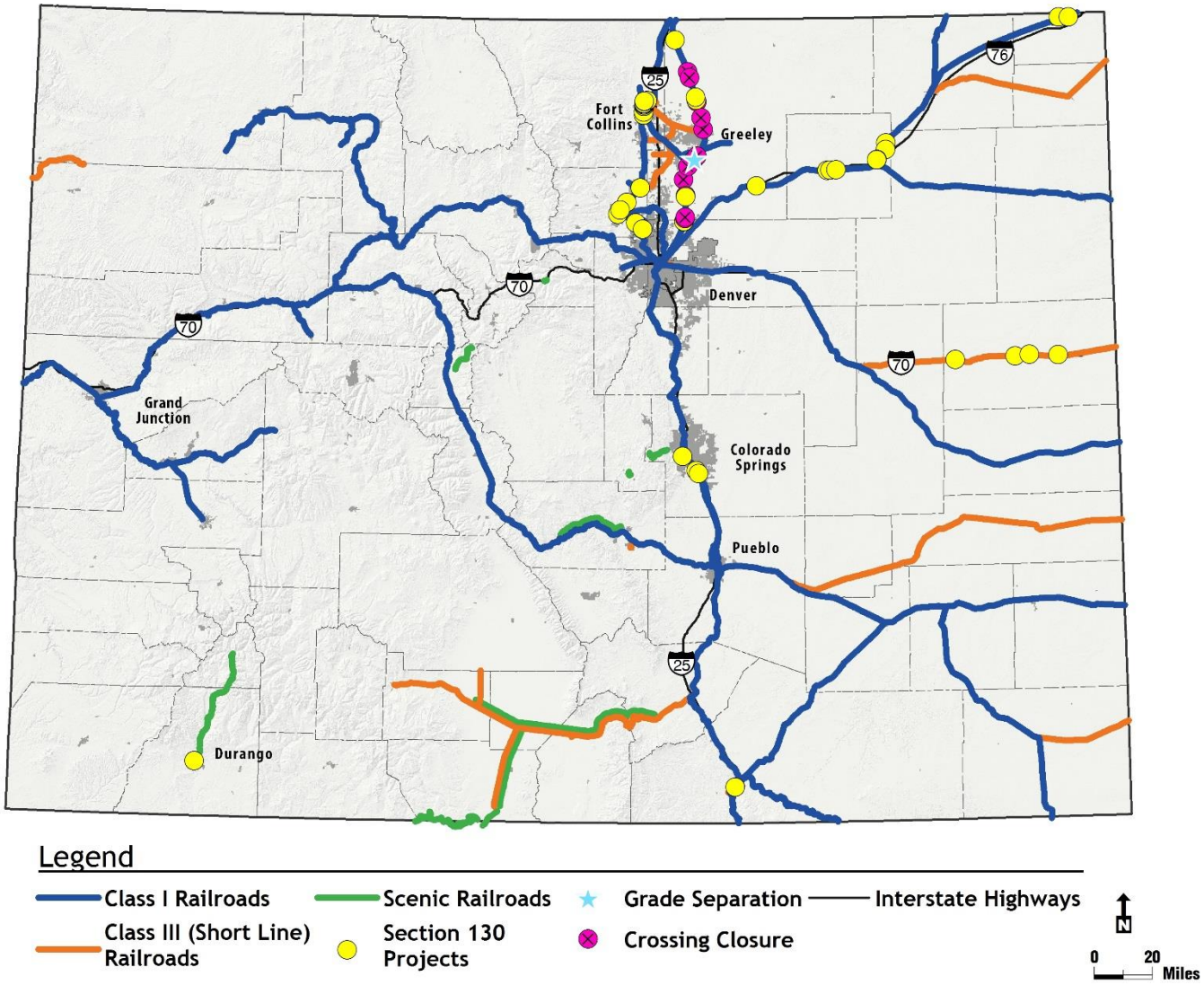
Warning Device	Four Quad Gates	Gates	Flashing Lights	Highway Traffic Signals/Bells	Special Warning	Stop Signs	Cross Bucks	Other	None
Crossings	33	525	148	34	19	157	786	9	33
Percentage	2%	30%	8%	2%	1%	9%	45%	1%	2%
Source: Federal Railroad Administration Office of Safety Analysis, Public Grade Crossing Inventory									

Because funds are allocated based on a data-driven risk assessment, local governments may not apply for funding for specific projects. Local governments may work directly with private railroad operators to jointly assess and fund crossing, signal, or related safety projects. Private rail operators maintain crossing equipment, including signals, lights, gates, and bells on an ongoing basis. In addition to Section 130 funding, the PUC administers the Colorado Highway-Rail Crossing Signalization Fund (HRCSF), which provides additional funding for crossing improvements not otherwise funded through Section 130. In 2016, the Colorado General Assembly restored appropriations to the HRCSF after 13 years, with up to $240,000 per year available for crossing improvements. Local governments may request funding to offset the cost of crossing signals. Railroad operators are required to provide at least 20 percent matching funds, with the remaining costs split between the HRCSF and the local government.

Planned Future Section 130 Railway-Highway Public-Safety Projects

CDOT's Division of Project Support has programmed Section 130 railway-highway at-grade crossing improvements through 2022. These improvements are identified based on the statewide rail crossing inventory, hazard index assessments, and input from local governments, railroad operators, CDOT, and the PUC. The following map displays Section 130 projects planned between 2017 and 2022. Section 130 projects are tentatively programmed, and project status may change depending on project status, funding, and coordination with local governments, the PUC, and railroads. The projects presented in this chapter should not be considered final.

Planned Section 130 Projects Map, Fiscal Year 2018-2022



Many of Colorado's near-term future rail crossing safety projects are associated with the US 85 and UP rail lines in Weld County. Northern Colorado has experienced high rates of population and economic growth over the last several decades. Overall highway corridor usage on US 85 has doubled since the 1990s, resulting in operational and safety issues that interfere with the movement of goods and people; another doubling in usage is projected by 2035. These increases will continue to exacerbate the challenging issues faced today. The operational issues of this corridor, caused by the minimal distance between the highway and railroad, have had a negative impact on the corridor's safety, capacity, and emissions with respect to the movement of freight through the region. Proximity of rail lines and US 85 can negatively affect both highway and rail operations. Passing or standing trains restrict travel to and from the east of US 85 and can cause substantial queuing at some cross streets, sometimes extending into through lanes of US 85. The facilities are so close at some cross streets that a single large truck cannot queue between US 85 and rail lines without either overhanging the tracks or encroaching on US 85, resulting in safety concerns. To address these issues, 12 crossings are proposed for closure in the US 85 corridor. The 2019 list of Section 130 projects includes a grade separation project at Weld County Road 44 along the UP.

The following tables provide available information for planned Section 130 investments from fiscal year 2018 through fiscal year 2022. These improvements are subject to change and should not be cited as the final Section 130 work program. CDOT typically receives approximately $3 million per year in Section 130 funding. However, due to delays and reorganization of the program within CDOT, 2017 project funds were reprogrammed to 2018.

Fiscal Year 2018 Section 130 Projects

Project	Location	USDOT Number	Railroad	Project Costs
Active Grade Crossing Equipment Installation Upgrade Projects				
21060	Morgan CR W7	057551T	BNSF	$350,000
21061	Morgan CR oad 15	057241Y	BNSF	$350,000
21063	Sedgwick CR 39	805401B	UP	$350,000
21064	Weld CR 126	804893F	UP	$350,000
21065	Weld CR oad 86	804881L	UP	$350,000
21066	Weld CR 84	804878D	UP	$350,000
21068	Sedgwick CR 34	805397N	UP	$350,000
21069	Weld CR 18	804377Y	UP	$350,000
21075	Morgan CR U	057570X	BNSF	$350,000
21076	Morgan CR 31	057569D	BNSF	$350,000
21077	Morgan CR X5/10	057554N	BNSF	$350,000
21078	Morgan CR 17	057243M	BNSF	$350,000
21079	Morgan CR 14	057240S	BNSF	$350,000
21080	Weld CR 75	057224H	BNSF	$350,000
21756	Kit Carson, Bethune - CR 40 N of US 24	594720H	KYLE	$250,000
21757	Kit Carson, Stratton - Colorado NO 1st	594732C	KYLE	$250,000
21758	Kit Carson, Vona - 1st NO US 24	594737L	KYLE	$250,000
21759	Kit Carson, Flager - Ruffner S of 2nd Street	594746K	KYLE	$250,000
21659	2018 Crossing Inventory Update	–	–	$100,000
			Fiscal Year 2018 Total	**$6,000,000**

Fiscal Year 2019 Section 130 Projects

Project	Location	USDOT Number	Railroad	Project Costs
Grade Separation Project				
n/a	Weld CR 44	804352D	UP	$6,000,000
Grade Crossing Elimination Projects				
n/a	Weld CR 104	804865C	UP	$100,000
n/a	Weld CR 100	804867R	UP	$100,000
n/a	Railroad Ave (Ault jurisdiction)	804877W	UP	$100,000
n/a	Weld CR 72	804852B	UP	$100,000
n/a	'O' Street	804845R	UP	$100,000
n/a	Weld CR 46/35	804354S	UP	$100,000
n/a	Weld CR	804351W	UP	$100,000
n/a	Weld CR 29	804346A	UP	$100,000
n/a	Weld CR 30 (Platteville jurisdiction)	804338H	UP	$100,000
n/a	Weld CR 18.5	804378F	UP	$100,000
n/a	Weld CR 4	804481T	UP	$100,000
n/a	Weld CR 2.5	804480L	UP	$100,000
			Fiscal Year 2019 Total	**$7,200,000**

Fiscal Year 2020 Section 130 Projects

Project	Location	USDOT Number	Railroad	Project Costs
Active Grade Crossing Equipment Installation Upgrade Projects				
n/a	Boulder County, Main Street	244849V	BNSF	$360,000
n/a	Larimer County, N College Ave	244856F	BNSF	$360,000
n/a	Larimer County, Cherry Street	906297N	UP	$360,000
n/a	El Paso County, Fontaine Blvd	003527S	BNSF	$360,000
n/a	Larimer County, 9th Street	244645J	BNSF	$360,000
n/a	Larimer County, W Laurel Street	244633P	BNSF	$360,000
n/a	Larimer County, W Mulberry Street	244635D	BNSF	$360,000
n/a	Larimer County, N College Ave	244643V	BNSF	$360,000
			Fiscal Year 2020 Total	**$2,880,000**

Fiscal Year 2021 Section 130 Projects

Project	Location	USDOT Number	Railroad	Project Costs
Active Grade Crossing Equipment Installation Upgrade Projects				
n/a	Boulder County, Jay Rd	244823T	BNSF	$370,000
n/a	Larimer County, W Harmony Rd	244620N	BNSF	$370,000
n/a	Boulder County, US 287 S of Dillon Rd	057097J	BNSF	$370,000
n/a	Larimer County, W Horsetooth Rd	244622C	BNSF	$370,000
n/a	Larimer County, University Ave	244629A	BNSF	$370,000
n/a	Boulder County, S Boulder Rd	244804N	BNSF	$370,000
n/a	Larimer County, W Prospect Rd	244626E	BNSF	$370,000
n/a	Adams County, Longs Peak (Spur)	921471H	UP	$370,000
			Fiscal Year 2021 Total	**$2,960,000**

Fiscal Year 2022 Section 130 Projects

Project	Location	USDOT Number	Railroad	Project Costs
Active Grade Crossing Equipment Installation Upgrade Projects				
n/a	Boulder County, Valmont Rd	244818W	BNSF	$380,000
n/a	Larimer County, W Drake Rd	244624R	BNSF	$380,000
n/a	Weld County, SW 1st Street	849354T	GWR	$380,000
n/a	El Paso County, Las Animas E of Conejo St	253097X	UP	$380,000
n/a	Las Animas County, Commercial Street	003343S	BNSF	$380,000
n/a	Boulder County, Mineral Rd	244831K	BNSF	$380,000
n/a	La Plata County, 6th Narrow Gauge Street	253699N	DSNG	$380,000
n/a	El Paso County, Main Street	003528Y	BNSF	$380,000
			Fiscal Year 2022 Total	**$3,040,000**

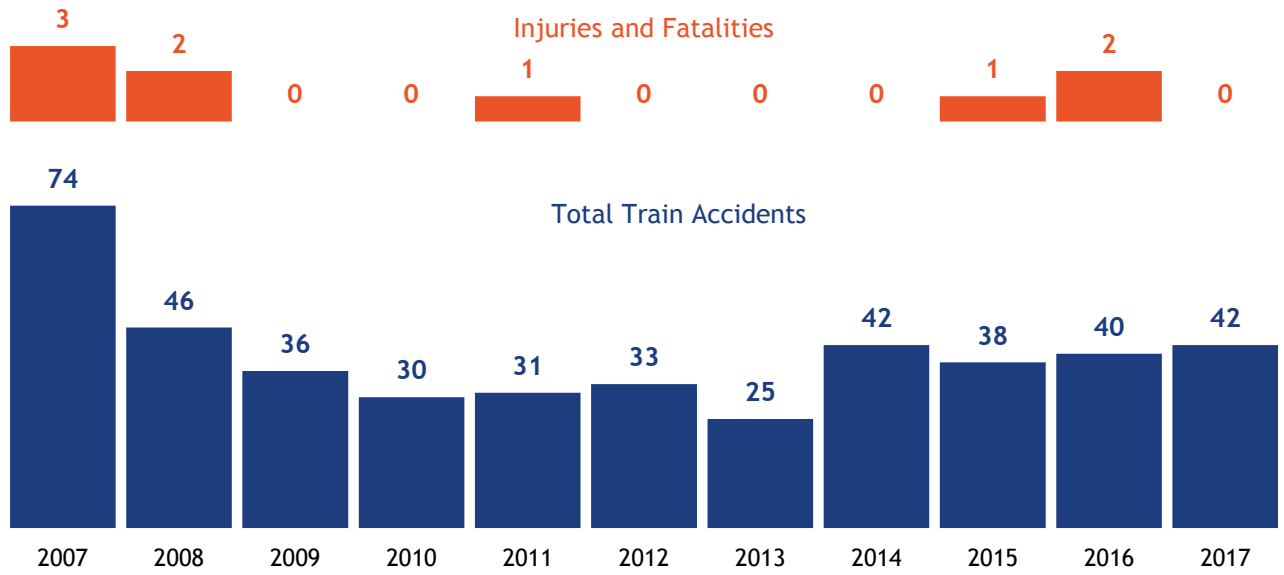
Railroad Safety and Security

Railroads can pose risks to the traveling public, railroad workers, communities, and environment. Train accidents, including derailments, can be potentially serious. Safety accidents involving trains and in rail yards can cause serious injuries or fatalities to workers. Inattentive drivers and trespassers also create risks for railroad operators and can cause serious incidents to occur. Technologies to improve safety, including Positive Train Control (PTC), are increasingly being implemented. Federal, state, local, and private programs and initiatives bring partners and resources together to improve safety and security on Colorado's rail systems.

Freight and Passenger Railroad Incidents and Accidents

Train incidents reported to the FRA include collisions, derailments, or other accidents. Between 2007 and 2017, approximately 41 percent of train incidents were due to human factors, while 34 percent were due to track issues. The following graph and table list total train incidents reported in Colorado. These incidents are primarily located within train yards (47 percent). The vast majority of train accidents involved a derailment (79 percent).

Total Train Incidents, Serious Injuries, and Fatalities in Colorado, 2007 to 2017



Source: Federal Railroad Administration Office of Safety Analysis, Ten Year Accident / Incident Overview Report

Cause, Location, and Type of Train Accidents in Colorado, 2007 to 2017

Accident Detail	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Train Accident Cause												
Track	28	15	12	10	13	10	13	18	9	10	10	**149**
Motive Power / Equipment	7	4	5	7	1	8	1	7	11	0	5	**56**
Signal	0	0	0	0	0	0	0	0	0	1	0	**1**
Miscellaneous	9	7	4	2	1	5	3	4	4	5	8	**52**
Human Factor	30	20	15	11	16	10	8	13	14	23	19	**179**
Total	**74**	**46**	**36**	**30**	**31**	**33**	**25**	**42**	**38**	**40**	**42**	**437**
Train Accident Location												
Main Line	29	15	17	14	8	14	10	16	10	6	14	**153**
Yard Track	27	14	14	15	14	12	22	24	28	32	22	**207**
Train Accident Type												
Collision	0	3	1	1	3	2	1	0	2	2	1	**16**
Derailment	58	31	30	20	25	27	20	37	32	33	32	**344**
Other	16	12	5	9	3	4	4	5	4	4	9	**77**

Source: Federal Railroad Administration Office of Safety Analysis, Ten Year Accident / Incident Overview Report

Freight Rail Transportation of Hazardous Materials

Rail transport of products such as crude oil, chemicals, waste, and other goods is generally safer than moving these hazardous materials by truck. Hazardous materials are transported in specifically designed and regulated tanker cars. Colorado freight rail operators must comply with federal regulations within the FAST Act and rules developed by PHMSA.

> Railroads play a critical role in Colorado's multimodal transportation system and economy by transporting hazardous materials throughout the state.

Federal legislation requires that older and less safe tank cars be phased out and replaced. These deadlines to remove older tank cars from service came after several derailments involving Bakken crude, including derailments in Quebec and North Dakota in 2013. Specifically, the FAST Act mandates a revised phase-out schedule for all DOT-111 tank cars used to transport unrefined petroleum products (e.g., petroleum crude oil), ethanol, and other flammable liquids. As of 2018, DOT-111 cars without a protective steel layer known as a jacket can no longer carry crude oil. By 2029, flammable liquids can be carried in only DOT-117 railcars, which have thicker shells and insulating material.

FRA also developed safety emergency orders in 2014 related to Bakken crude, a subset of all crude by rail. The rule requires each railroad operating more than 1 million gallons, or 35 tank cars, in a state to provide notification regarding the expected movement of such trains. In Colorado, a joint agency authority is responsible for receiving and tracking information about crude shipments. These joint agencies are the Colorado Department of Public Safety and the Colorado Department of Public Health and Environment. These agencies have developed procedures for emergency preparedness for various types of explosives or volatile liquids, such as chlorine, which have also been the subject of similar rail safety concerns in the past.

With growth in the oil and gas industry, Colorado is experiencing an increase in crude oil and petroleum products produced in the state and shipped by rail. Hazardous material movements reached a high in 2014 but have declined since. With increased development in formerly industrial areas, some Denver neighborhoods have rail lines, residential development, and commercial properties all located in close proximity. Most hazmat loads are flammable liquids, including crude oil, ethanol and oil- and gas-related liquids, that present risk when traveling on rail lines in densely populated areas.

The following table reports FRA data on hazardous material incidents in Colorado over the past decade. Colorado has not experienced serious derailments or accidents involving the release of hazardous materials. When accidents do occur, they can pose significant threats to communities and environmentally sensitive areas. Most incidents involving damaged or derailed cars occur in rail yards and terminals. Private railroads are investing to upgrade equipment to meet modern safety standards and implement safety protocols.

Incidents Involving Hazardous Materials in Colorado, 2007-2017

Incident	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Hazmat Cars Damaged or Derailed	12	13	29	11	11	4	3	10	11	6	16	**126**
Cars Releasing Hazmat	1	0	3	0	0	0	0	1	0	0	0	**5**

Source: Federal Railroad Administration Office of Safety Analysis, Ten Year Accident/Incident Overview

The City and County of Denver monitors movements of flammable liquids, crude oil, and related liquids and ethanol. Denver's Office of Emergency Management reports that hazmat shipments by rail in Denver rose from 23,000 carloads in 2011 to over 70,000 carloads in 2015. In 2011, over 15,000 tank cars of crude oil moved through the city. This declined to 9,000 cars of crude oil in 2015. In 2015, the City and County of Denver convened a Railroad Safety Working Group, including City and County of Denver agencies and partners from the freight and passenger rail carriers, federal government, and state government, including CDOT representation. This group reviewed the City's safety and hazard mitigation policies and practices in areas near rail and developed recommendations to improve existing prevention, preparedness, response, and recovery practices.

Rail Transportation Security

The scale and location of Colorado's rail network presents security challenges. Rail lines pass through dense urban areas with high-risk population centers, environmentally sensitive areas, recreational lands and trails, and open rural areas. The U.S. Department of Homeland Security is the primary federal agency responsible for security of national transportation systems. The Colorado Department of Public Safety and the Division of Emergency Management also play critical roles within the state. Private railroads also invest in public safety and security measures, including identifying critical infrastructure assets and developing protection strategies.

The Transportation Technology Center, Inc. (TTCI), located northeast of Pueblo, Colorado, provides a key function related to rail security. TTCI is a 52-square-mile facility owned by FRA, with land leased from the State of Colorado. TTCI is home to the Security and Emergency Response Training Center, Colorado's state training center for domestic preparedness and emergency response training. The Department of Homeland Security and other federal, state, and local agencies use this training facility. There are 48 miles of railroad track available for testing locomotives, rail cars, and track and bridge components. A PTC test bed is currently in operation at the TTCI facility to support the industry in developing, implementing, and maintaining safety technologies. The PTC test site provides a controlled environment for functional, safety, and interoperability testing, as well as performance evaluation and development for current and future PTC systems.

Security concerns include direct threats to infrastructure and assets from natural disasters or harmful acts. Rail tunnels and bridges and key interchanges and/or intermodal terminals and rail yards are vulnerable. Examining the resiliency and redundancy of the rail network is important to ensure that connections to national transportation networks remain open. Network redundancy and protection is particularly important to providing rail access to Colorado's secure military installations through the Department of Defense Strategic Rail Corridor Network (STRACNET).

Trespassers on rail property also present security concerns for railroad operators and present danger of injury or death to trespassers. Trespassing incidents range from intentional theft or destruction of railroad property or equipment to unintentional trespass into railroad right-of-way from recreational users, including people hunting, fishing, cycling, or hiking on public lands adjacent to rail lines.

Trespass Incidents in Colorado

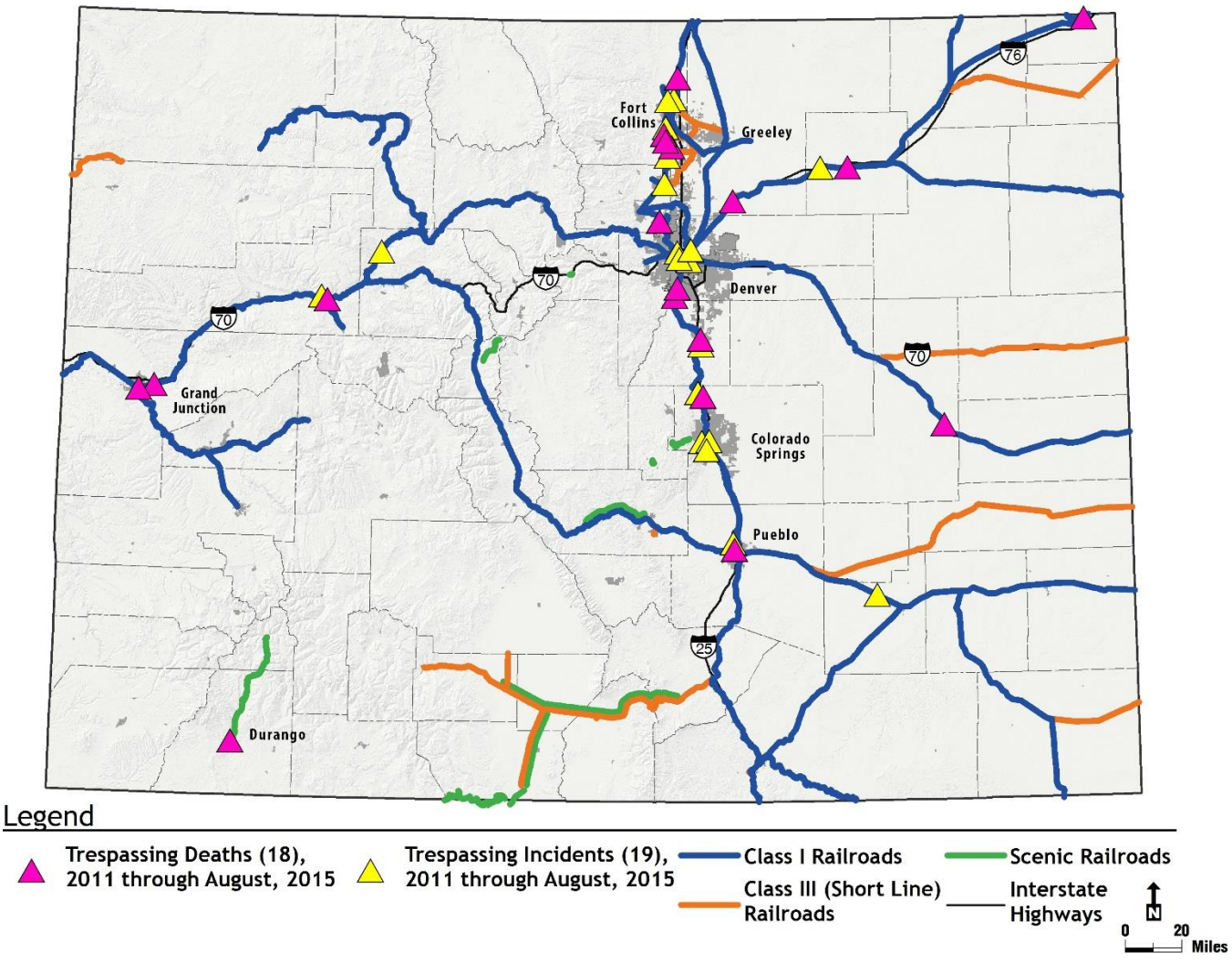
According to the FRA, trespassing along railroad right-of-way is the leading cause of rail-related deaths in the United States. Nationally, more than 400 trespass fatalities and nearly as many injuries occur each year.

In Colorado between 2011 and 2017, there were 70 fatalities or injuries due to trespass incidents, excluding railway-highway crossing incidents involving vehicles. This is an average of 10 each year. Most injuries or fatalities occur in Denver County, followed by El Paso, Larimer, Morgan, and Weld counties.

Freight and passenger rail lines most frequently associated with trespass incidents are those running through populated and developed urban areas. Trespass incidents also occur in rural areas include locations where rail lines cross popular state or Federal public lands and are used to access fishing, hunting, or recreational

areas. The following map identifies the location of trespass incidents and incidents resulting in fatalities across the state between 2011 and 2015.

Railroad Trespass Incidents and Fatalities in Colorado Map, 2011-2015



FRA and railroads provide information, media, public information campaign materials, and support national and state programs to prevent trespass incidents. Operation Lifesaver, Inc. (OLI), a non-profit organization, provides public education programs in all 50 states to prevent collisions, injuries, and fatalities on and around railroad tracks and at railroad-highway grade crossings. Colorado's OLI program offers free safety presentations to any group or organization, maintains partnerships with state and local officials and railroads, and coordinates with the media on strategic outreach efforts.

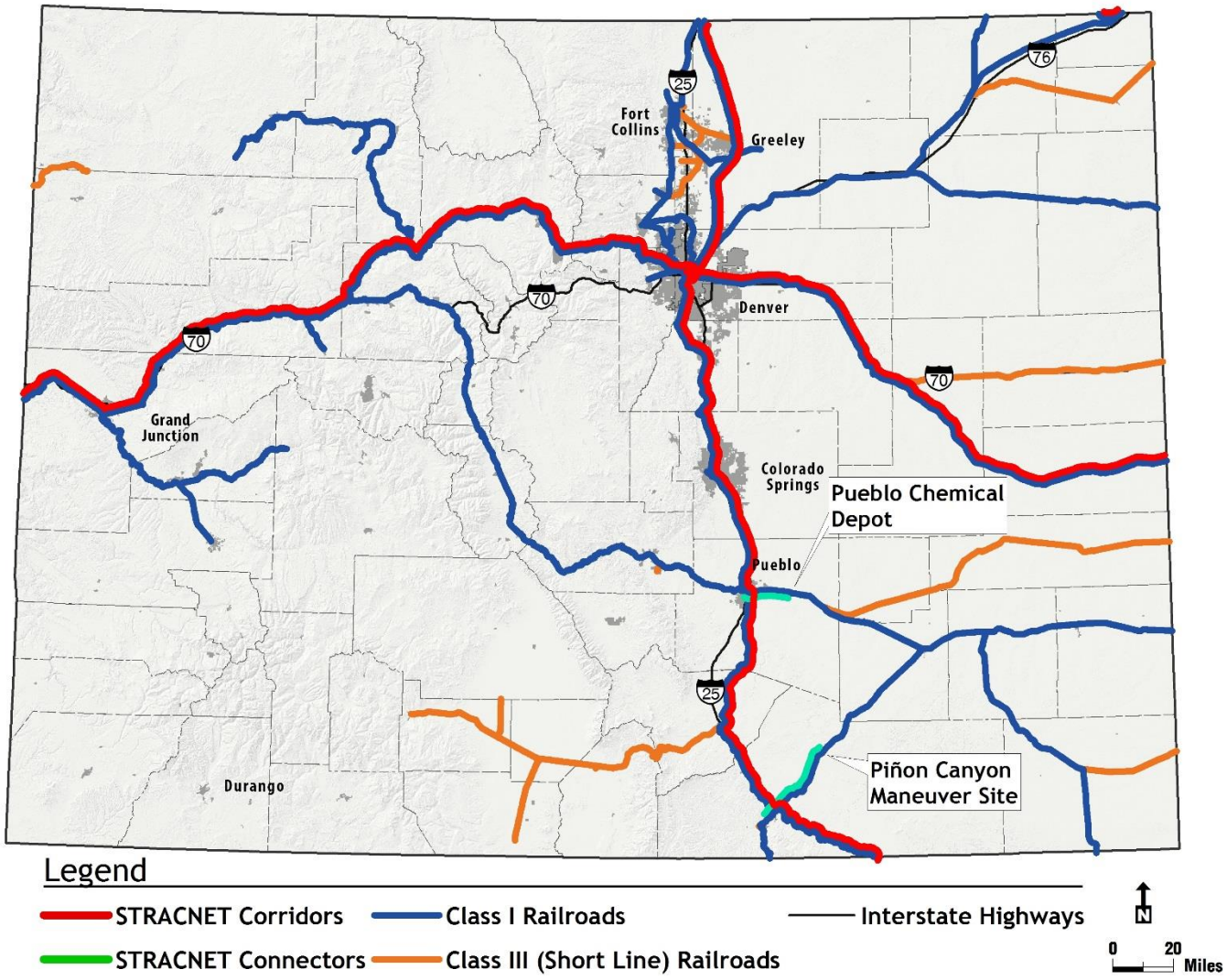
The cities of Fort Collins and Longmont, as well as other local governments, have passed, or are considering, local ordinances that would allow local law enforcement officers to ticket trespassers for crossing railroad tracks outside marked crossings or entering railroad property without permission. Private railroads also conduct active enforcement and issue citations in areas where trespassing is common. For example, BNSF estimates that 100 people per day walk along a section of track and railroad tunnel under Foothills Parkway at 47th Street in Boulder to access multiuse trails. Under Colorado statute, railroads are responsible for constructing and maintaining fencing along rights-of-ways, including fencing to restrict the movement of livestock across tracks.

Strategic Rail Corridor Network

The U.S. Department of Defense Railroads for National Defense Program oversees the nation's STRACNET. This program ensures that national rail and highway infrastructure can support national public emergencies. Across the United States, STRACNET consists of 38,800 miles of rail lines critical to national defense that service over 193 military installations.

The Railroads for National Defense Program ensures the readiness capability of the national railroad network to support defense deployment and peacetime needs. The program works to integrate defense rail needs into public and private sector rail system planning. In Colorado, STRACNET includes 994 miles of track, focused on BNSF's and UP's primary north-south and east-west rail routes. Network connector lines provide service to Department of Defense facilities, including the Pueblo Chemical Depot and the Piñon Canyon Maneuver Site. The following map shows Colorado's STRACNET network.

Colorado Department of Defense STRACNET Rail Network Map, 2017



Passenger Rail Safety

Ensuring the safety and security of rail passengers is the responsibility of rail providers and is a priority for Amtrak, RTD, scenic and historical rail operators, and private freight railroads. There have been few significant safety incidents or fatalities and injuries involving intercity passenger rail in Colorado in the past five years, compared to the preceding five-year period because railroad-highway crossing is improved and safety technologies and procedures upgraded.

The FTA's State Safety Oversight (SSO) Program oversees passenger and worker safety for rail transit systems. FTA provides federal funds for the states to develop and carry out SSO programs. FTA's SSO final rule, effective April 2016, requires a strengthened SSO Program and provides greater authority for SSO Agencies to oversee rail transit agencies. In Colorado, the PUC is the designated SSO Agency. By April 2019, each state with a rail transit system must be federally certified for compliance with the SSO Program rule. As of 2018, Colorado has received certification from the FTA under this program. RTD works with the PUC to develop and implement the SSO Program.

RTD's light rail system has experienced fatalities and injuries from pedestrians and vehicles entering rights-of-way or crossings in front of equipment. RTD monitors each incident and has taken steps to increase safety at crossings and in areas with significant pedestrian street traffic. RTD also secures the light and commuter rail network by using full-time transit police officers, safety technicians, and safety technologies. Amtrak implements a range of security measures to improve passenger rail safety and security including uniformed security teams, checked baggage screening, and identification checks.

Technology innovations show significant promise for improving the safety of rail transportation. The most immediate safety innovation opportunity is a set of technologies collectively known as PTC. In 2008, the U.S. Congress passed the Rail Safety Improvement Act mandating all Class I and passenger railroads, as well as some short line railroads, develop and implement PTC systems. PTC involves specific software to link specially equipped locomotives, wayside signals, and base station communication devices. Together, these technologies have the potential to prevent collisions between trains, mitigate excessive speeds, prevent movements of trains onto restricted sections of track, and control passage of trains through improperly configured switches. PTC is designed to be "interoperable" across passenger, commuter, and freight trains to facilitate communication and operate across all railroad systems. In October 2015, Congress moved the implementation deadline to the end of 2018 with extensions available until December 31, 2020, on a case by-case basis.

Not all of Colorado's Class I and short line railroads and passenger rail providers are required to implement PTC on all lines. RTD operates PTC on the University of Colorado A Line and on the B Line under a waiver from the FRA. RTD is first in the nation to integrate the technology in the actual construction of a rail system. PTC will be standard on new FasTracks commuter rail systems. BNSF and UP state that they will meet the 2018 federal deadline. UP estimates that it will invest $2.9 billion to complete deployment of PTC across its national network; BNSF's estimate is $2.0 billion for its network. PTC is required on portions of both BNSF's and UP's main lines through Colorado. Full implementation is scheduled for completion by fourth quarter 2018. Railroads are required to make periodic progress reports to the FRA.

The following table reports PTC implementation progress as of first quarter of 2018 for railroads operating in Colorado. Except for RTD, which operates only in Colorado, status reports for BNSF, UP, and Amtrak reflect national implementation efforts.

Positive Train Control Implementation by Colorado Railroad Operators, Q1 2018

Positive Train Control (PTC) Components	BNSF Railway	Union Pacific Railroad	Amtrak	Regional Transportation District
Route Miles in PTC Operation	100% (11,570 of 11,570)	65% (11,083 of 17,063)	67% (607 of 900)	0% (*) (0 of 36 miles)
PTC Equipped Locomotives	100% (5,000 of 5,000)	67% (3,717 of 5,515)	84% (373 of 446)	100% (66 of 66)
Track Segments Completed	100% (88 of 88)	97% (177 of 182)	73% (8 of 11)	100% (3 of 3)
Radio Towers Installed	100% (6,414 of 6,414)	100% (842 of 842)	87% (104 of 120)	100% (50 of 50)
Personnel Trained	100% (21,877 of 21,877)	96% (24,776 of 25,767)	100% (2,929 of 2,929)	100% (120 of 120)
PTC Safety Plan Status	Conditionally certified	Conditionally certified	Conditionally certified	Not submitted
Radio Spectrum Available	Available	Available	Acquired	Available

Notes: *Data as reported by FRA. RTD currently operates a total of 29 miles of commuter rail with PTC under a waiver from the FRA.
Source: Federal Railroad Administration, PTC Implementation Status by Railroad. Q1 2018

2.1.8 Economic and Environmental Benefits of Rail Transportation

Colorado's economy moves by rail. Critical regional industries such as agriculture, energy, mining, and manufacturing depend on rail to ship products and receive goods. Passenger rail service, including Amtrak, RTD, and Colorado's scenic and historic railroads, provides significant direct economic benefits in communities with stations. Rail also provides significant environmental benefits compared to moving people by automobiles and products by truck. Improving and expanding rail in Colorado can offset investment and maintenance needs of the highway system, reduce congestion, improve safety, and benefit local economies. This section highlights key aspects of the economic and environmental benefits of freight and passenger rail service.

Rail and the Economy

Railroads are economic drivers in rural communities and major metro areas and attract visitors and businesses from around the country. Freight and passenger rail provide significant direct economic benefits to Colorado. In 2014, freight rail in Colorado moved more than 154 million tons with a revenue value of more than $10.3 billion. Combined, Amtrak, RTD, and scenic and historic rail operators moved an estimated 31.2 million passengers in 2016.

Railroads directly employ thousands of Coloradans, invest hundreds of millions of dollars in state projects, and contribute wage earnings, state and local taxes, and visitor spending to communities. These direct impacts add up and are multiplied through indirect spending and investment. For example, the AAR estimates that for each worker employed by freight railroads, nine other jobs are supported in the economy.

Freight Rail Economic Benefits

Private railroads make significant investments in Colorado, including direct jobs, benefits, in-state spending, and capital investments. EVRAZ Rocky Mountain Steel in Pueblo is the largest producer of rail in North America. When economically feasible, private railroads use the EVRAZ facility to source steel rail for track maintenance and for upgrade purchases. EVRAZ supplied rail for BNSF's Southwest Chief track rehabilitation efforts in 2015. According to data from the U.S. Bureau of Labor Statistics, freight railroads directly employ more than 2,523 Coloradans in various occupations. Combined payroll for UP and BNSF totaled $130.4 million in 2016. These earnings support Colorado workers and families and have induced spending impacts throughout the economy. In 2015, the average U.S. Class I freight rail employee earned wages of $86,300 and fringe benefits of $34,600—well above the average annual Colorado wage of $52,000.

Together, BNSF and UP invested more than $165.9 million in Colorado in 2016. This includes direct in-state spending and capital investments that benefit Colorado workers and companies.

Employment at freight railroads has remained relatively steady over the past decade, despite recent reductions in the Colorado workforce by Class I railroads and Amtrak. In 2017, there were also more than 7,700 retired railroad workers in Colorado drawing more than $159 million in benefits into the state.

Intercity and Commuter Rail Economic Benefits

Amtrak service links Colorado communities within the state and throughout the country, and it provides travel options for visitors from around the world. In 2017, Amtrak directly employed 61 Coloradans. Total wages earned by Amtrak employees living in Colorado was more than $5.4 million. Throughout Colorado, Amtrak supports another 400 indirect jobs through purchases and investment, operations, and tourism activity. Amtrak's combined direct and indirect economic impact in Colorado in 2016 was more than $35 million.

Amtrak directly invests in Colorado through ongoing maintenance and capital expenditures and drives local economies through visitor spending and employee wages.

This includes induced economic activity from capital spending, worker earnings, and tourism. Tourism is a critical driver for many smaller communities with train stations. Amtrak's Southwest Chief service is particularly important to the economies of Lamar, La Junta, and Trinidad. In 2016, 14,700 passengers boarded or alighted at these three stations. A 2014 study by Colorado State University-Pueblo, *The Economic Impact of Amtrak's Southwest Chief Rail Service on the Colorado Economy*, found that visitors generated an additional $2.9 million in economic activity, supported 30 indirect jobs, and contributed an additional $175,000 in state and local tax revenue to the region surrounding existing rail stations in southeast Colorado. Amtrak Southwest Chief service benefits southeastern Colorado communities and presents opportunities to diversify the regional economy through tourism. Estimates of the benefits of expanded Southwest Chief service and a new station in Pueblo suggest that these improvements could generate $3.4 million annually in economic impact to the Pueblo area.

Construction of Colorado's commuter and light rail systems has provided direct infusions of investment and wages into the Colorado economy. RTD's Eagle P3 project, which includes the University of Colorado A Line, the G Line and the B Line, is estimated to have contributed $1.4 billion to the state and local economy as of 2016. The operator of RTD's commuter rail lines anticipates an average workforce of 230 over the next 20 years. The ongoing economic benefits of RTD's FasTracks initiative are significant and include direct spending on short-term construction activity and longer-term private capital investment in transit oriented development (TOD) and economic development opportunities. The City and County of Denver estimates that the combined economic impact of the redevelopment of Denver Union Station is $3.2 billion, including private investment in the

surrounding 20 acres of downtown Denver. Across RTD's entire system, every $1 invested in transit infrastructure provides a $4 return over 20 years.

Scenic and Historic Railroad Economic Benefits

Colorado's eight scenic and historic railroads provide critical links to Colorado's railroading past and attract hundreds of thousands of visitors a year to surrounding communities. In 2017, more than 950,000 passengers rode one of Colorado's eight scenic railroads. Spending from out-of-state tourists and in-state visitors can generate significant economic impact in local sales and lodging tax revenues and boost induced visitor spending and indirect employment in the towns and counties surrounding these historic assets.

The Colorado Tourism Office estimates that scenic railroads attract 10 percent of all visitors in Colorado each year.

According to a recent study of the C&TSRR, rail operations support 147 direct jobs and result in a total annual economic impact of $14.8 million in the surrounding five-county region of Colorado and New Mexico. If the per passenger economic impact of the C&TSRR is expanded to all scenic railroad operations in Colorado, the combined economic impact could be as much as 4,000 indirect jobs and over $421.5 million. This high-level estimate likely understates the economic impact of scenic operations with significant ridership in tourist destinations such as the Broadmoor Pikes Peak Cog Railway, Durango & Silverton Narrow Gauge Railroad, and Georgetown Loop Railroad.

Rail and the Environment

In Colorado, rail carries 20 percent of all freight tonnage moved by air, truck, or train, according to data from FHWA Freight Analysis Framework (FAF). Commuter and light rail carries less than 1 percent of commuters in the Denver metro area, according to data from the American Community Survey. That statistic is for all commuters on all streets and highways over 24 hours. In the most congested corridors and job centers, the story is different. The Downtown Denver Partnership survey of commuters estimates that 40 percent of commuters travel to downtown by transit. The percentage of commuters using rail is likely higher in urban areas within the greater Denver region that are either congested or that provide live-work options with ready access to transit hubs. While the proportion of total products, as measured by tonnage, and total passengers carried by rail is less than highway or private vehicles, rail carries a significant volume and plays a critical role in Colorado's multimodal transportation system.

In 2016, commuter rail ridership totaled 4.3 million passengers and in 2014, freight rail moved 154.8 million tons of goods in the state. Without rail, these millions of passengers and products would likely travel on Colorado's already congested roadways instead. Users of Colorado's highway and roadway network benefit whenever freight or passengers are transported over the state's rail network.

Rail transportation takes pressure and traffic off Colorado's constrained highway network and provides environmental benefits through increased fuel efficiency, lower air pollutants and emissions, and more sustainable land use and development patterns. Freight and passenger rail are energy efficient modes of transport and travel that provide environmental benefits compared to passenger vehicles, commercial trucks, or air travel. On average, a BNSF or a UP train can carry the load of 280 or more trucks and move a ton of freight nearly 500 miles on a gallon of fuel, helping to reduce highway congestion and to ease vehicle emissions. A fully loaded 4-car light rail train carries the equivalent number of commuters as 360 vehicles.

Freight Rail Efficiency

The FRA estimates that freight trains are four times more fuel efficient than trucks. Freight rail locomotives are more fuel-efficient and produce lower emissions than in the past. Rail provides consistent, reliable, and sustainable goods movement across the United States and throughout Colorado.

Freight rail provides greater fuel efficiency compared to trucks. In 2016, the AAR estimated that freight railroads on average move a ton of freight an average of 476 miles on one gallon of fuel. In Colorado, average freight rail efficiency may be less than the national average of 476 miles due to the energy required in mountainous terrain and the slower speeds of main line track in some areas of the state. When compared to moving goods by truck, even with a lower average fuel efficiency, rail is more efficient. Nationally, an average high capacity diesel truck and tractor-trailer can move a ton of freight 134 miles on one gallon of fuel under ideal traffic conditions. Truck fuel efficiency in Colorado may also be lower than national averages due to terrain and congestion.

BNSF estimates that moving the same amount of goods by intermodal train instead of by truck can take the equivalent of 280 trucks off the highway.

Freight rail produces lower emissions. Air pollutants and greenhouse gas emissions are directly related to fuel consumption. Due to average fuel efficiency, moving freight by rail can lower greenhouse gas emissions by 75 percent compared to trucking. AAR estimates that if 10 percent of the freight moved by the nation's largest trucks was shipped by rail instead, total U.S. fuel savings would be about 5 billion gallons per year and annual greenhouse gas emissions would fall approximately 17 million tons.

Freight rail minimizes community and development impacts. Rail equipment and yard operations produce diesel emissions, noise, and safety risks to communities. Compared to using highways and trucks, the community impacts of freight rail are significantly less. Unlike highways, freight rail capacity can be efficiently added by improving infrastructure to allow double-stack container cars and larger and longer trains. In 2015, the Congressional Budget Office estimated that the external costs to society of transporting freight by truck, such as maintenance needs, delays, congestion, safety, and emissions impacts, are eight times higher than by rail.

Passenger Rail Efficiency

Passenger rail in Colorado, including Amtrak and RTD's light and commuter rail services, provides a direct alternative to travel by passenger vehicle. According to the U.S. Department of Energy, intercity passenger trains move 55 passenger miles per the equivalent of a gallon of gas, compared to 38 passenger miles for personal vehicles. Passenger rail provides safe, reliable, efficient, and sustainable travel options for workers, visitors, and business travelers in Colorado.

Passenger rail provides sustainable alternative travel options. With a growing population and economy, congestion across Colorado, particularly in the Front Range region, is expected to worsen. According to DRCOG reports, the percentage of travel time spent in congestion for Denver area travelers is estimated to grow to 28 percent by 2040. Over that time, rail boardings are also expected to more than triple from current levels as more commuters and travelers use rail to get around. A 2015 study from the University of California Berkeley found Caltrain (a commuter rail service in the Bay Area of California, averaging 155 passengers per train) produces less than half as many greenhouse gas emissions and particulate matter pollutants per passenger mile compared with driving a passenger vehicle.

Passenger rail offsets highway needs. Moving people by rail is less land intensive than our road system. Each new line of rail track provides more passenger capacity and uses less land area, now and in the future, than the addition of a highway lane. As with connected and autonomous vehicles, new technology and train control systems enable passenger rail service to be more frequent, faster, and fuel-efficient. Passenger rail that requires extensive new construction in greenfield or previously undeveloped areas, including some alignments considered for Front Range passenger rail service, is associated with negative environmental impacts. The net environmental and societal impacts are considered positive because rail service reduces the impacts of travel by single occupant vehicles, including delay, emissions, safety, and maintenance impacts.

Passenger rail benefits communities and local economies. Rail offers workers alternative transportation and commute options and can reduce the costs of vehicle ownership and commuting. The Texas A&M Transportation Institute produces estimates of the cost of congestion around the country. Denver area drivers spend 49 hours a year stopped in traffic during peak travel times with an annual combined cost of over $2 billion. For daily rail commuters and business travelers, those lost hours and direct costs can be transformed into productive time. TOD around station areas facilitates dense mixed-use, pedestrian-oriented, and more sustainable land use patterns than development served solely by roads. Commercial development and property values increase significantly surrounding new rail stations. The revitalization and expansion of Denver's Union Station is estimated to have supported more than $3.2 billion in combined economic impact, including private real estate investment.

> Every additional train passenger has the potential to reduce vehicles on Colorado's congested highway network.

2.2 FUTURE TRENDS AND CONDITIONS

Colorado's population is growing, resident demographics are shifting, and the state's economy is diversifying. The rate of population growth is expected to slow in the future, but Colorado is predicted to significantly increase in population over the coming decades. Population and economic growth will drive demand for new housing, employment opportunities, and consumer goods. This growth will also add to traffic on already congested roadways and increase demand for alternative goods movement, travel, and commute options. With renewed investment and commitment to expansion, Colorado's freight and passenger rail systems play a critical role in meeting future travel demand.

2.2.1 Demographic and Economic Trends

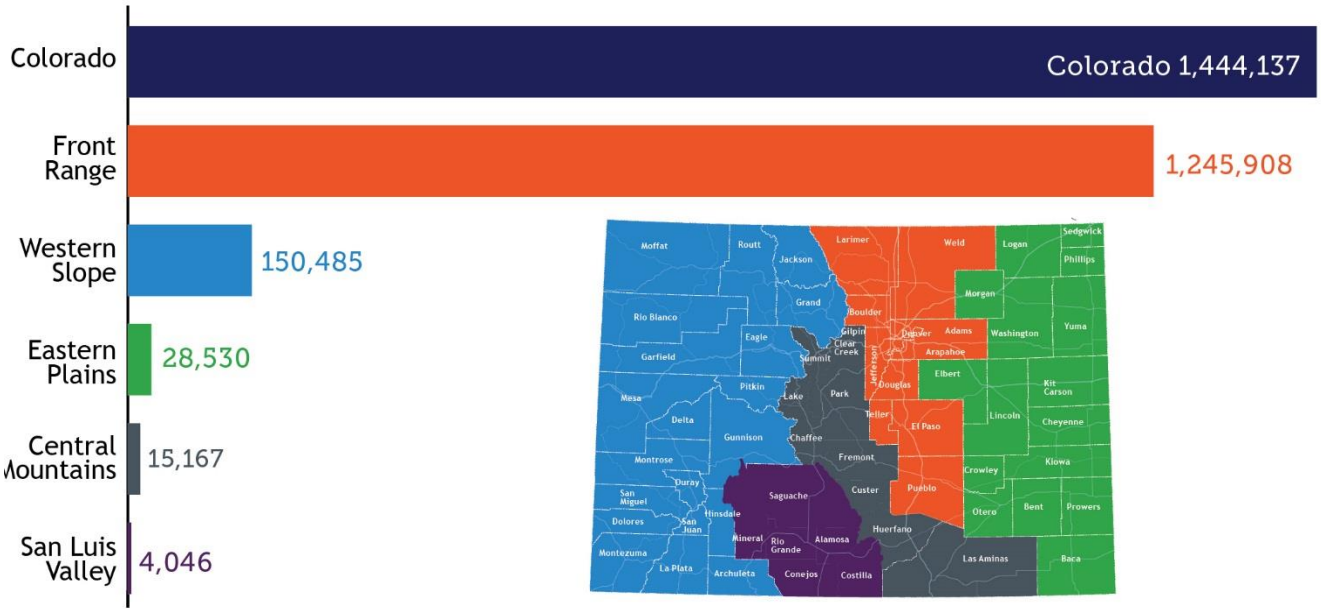
Colorado's population and economy are projected to grow faster over the next decades than the national average. With this growth, the number of commuters, travelers, and visitors, as well as the volume of goods transported along the state's roadways and rail lines, is also anticipated to increase. More people and products moving throughout the state will place new demands on Colorado's entire transportation system and create opportunities to expand freight and passenger rail as a critical component of the state's transportation network.

Population Growth

Colorado currently ranks 21st among all states in terms of total population and 5th in terms of population change since 2010. The State Demography Office of the Colorado Department of Local Affairs projects that Colorado will add 1.4 million new residents through 2030 and reach a total population of 6.9 million, with a total of 7.8 million by 2040. This level of growth is equivalent to adding a city the size of Greeley or Boulder each year or more than 96,000 new residents annually.

Most future population growth is expected to occur in metro areas along the Front Range. Stretching from Pueblo to Fort Collins, over 86 percent of new residents by 2030 will reside in this region. These additional residents will place immense demands on existing road and transit systems and spur development in new areas. Current plans for new master planned residential communities in areas such as Adams, Arapahoe, and Douglas counties include tens of thousands of new homes. Some of these developments are located along freight railroad main lines and will require careful planning to address safety and noise concerns at new railroad-highway crossings and land use compatibility. Other areas of the state, particularly economically distressed communities in the San Luis Valley, are expected to experience relatively low population and job growth. Expansion of Amtrak's Southwest Chief service and preservation of existing Class I and short line rail service in this region present economic opportunities for traditional industries like agriculture and continued economic diversification into growth industries like tourism and manufacturing.

Population Change by Region, 2015 to 2030



Source: Colorado State Demography Office, 2017

Colorado's demographics are shifting as the resident population ages and diversifies. These trends are emerging now and will continue through 2030 and beyond. Before 2000, most of Colorado's population growth was due to natural change in the current resident population. From 2010 through 2030, most of the population growth will be fueled from net in-migration from other states and countries. In 2015, most new Colorado residents came from California, Texas, Florida, Illinois, and Arizona.

Colorado is consistently among the top states for attracting younger residents. Net migration, particularly among younger generations, is key to the state's long-term economic competitiveness. The millennial generation is now the largest in the country and will be responsible for driving growth in jobs, consumer spending, and housing in the future. Many new residents migrating to Colorado come from areas with robust transit systems, intercity commuter rail, and dense urban areas with diverse travel options. To remain competitive, Colorado must also continue to expand travel and transit options, particularly along the Front Range.

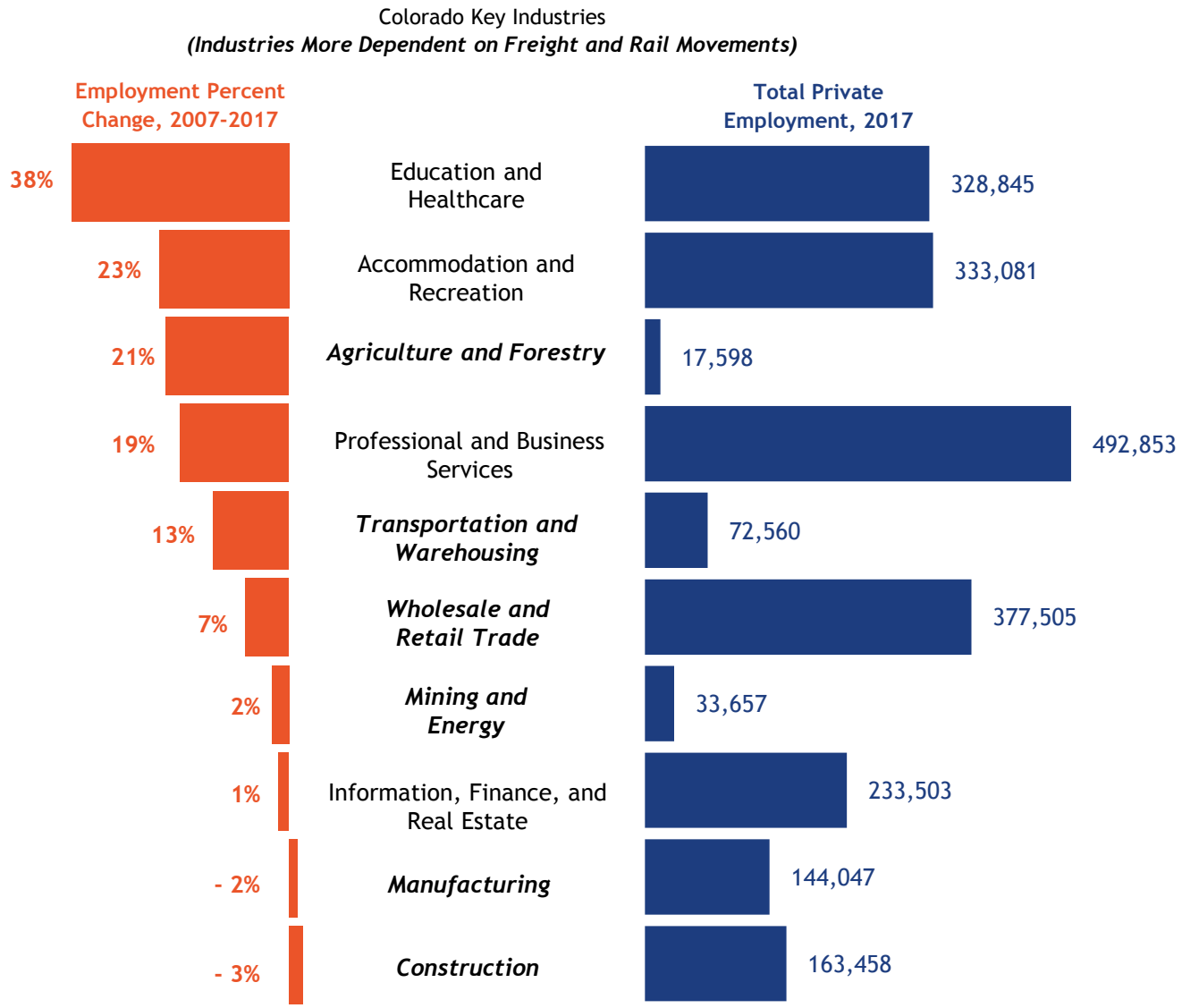
By 2030, nearly one in five Colorado residents will be over the age of 65, a share nearly three times greater than today. The population over age 65 is expected to grow twice as fast as total population through 2030. These shifts are due to the rapid retirement and aging of the baby boomer generation. These residents will place entirely new demands on Colorado's industries and transportation system. Baby boomers are anticipated to drive substantial growth in consumer spending on health care and professional services, and transportation needs will include travel options other than personal vehicles. Transit and intercity passenger rail options will be important to meet the future mobility needs of this generation.

Economic and Industry Growth

Colorado is the economic center and leading state economy in the Mountain West region, with total state gross domestic product (GDP) more than twice as large as Utah, the second most economically productive state in the region. Colorado's GDP, or total economic activity, reached $324.7 billion and ranked 19th in the U.S. in 2017. Between 2007 and 2017, the state's GDP grew by over $96.8 billion. Economic growth is fueled by Colorado's traditional industries like agriculture, energy and mining, natural resources, and tourism, as well as emerging industry clusters in advanced manufacturing, clean energy, aerospace, defense, and outdoor recreation.

Consumer spending has also driven substantial employment growth in education, health care, finance, real estate, and a range of professional services. The chart below highlights the percent change in key industries between 2007 and 2017 on the left and total employment in 2017 on the right. Industries relatively more dependent on freight rail movements are highlighted in italics.

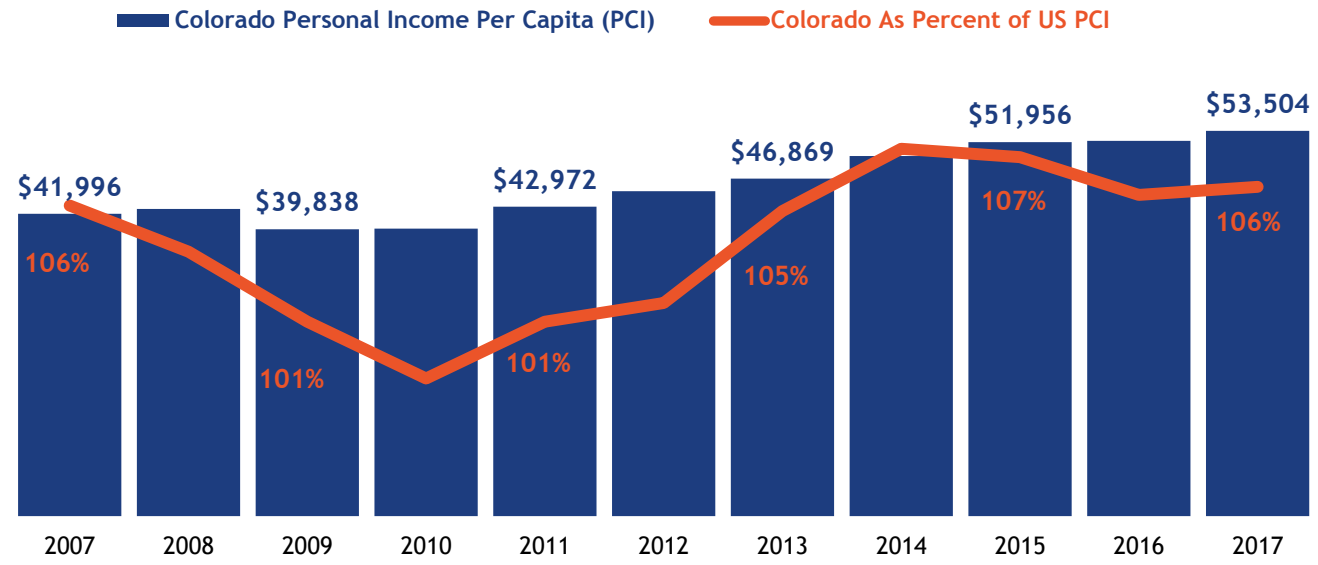
Colorado Key Industries, Percent Change in Employment, 2007-2017



Source: U.S. Bureau of Labor Statistics and Cambridge Systematics

Every industry in Colorado relies on freight and passenger rail to an extent. Freight rail moves a large portion of consumer goods like automobiles and manufactured products, as well as the inputs and outputs of agriculture, mining and energy, construction, and trade industries. Rail moves construction equipment, lumber, stone, coal, wheat, corn, potatoes, and hundreds of other products. Workers in service-related industries, including education, health, and professional services, rely on commuter and light rail service in the Denver metro area to get to and from work. As Colorado's economy continues to expand and as consumer spending power increases, demand for freight and passenger rail will also grow. The following chart shows growth in Colorado's personal income per capita levels from 2007 to 2017 and relatively high income levels compared to the U.S.

Colorado Personal Income per Capita, 2007-2017



Source: U.S. Bureau of Economic Analysis

2.2.2 Freight Rail Demand

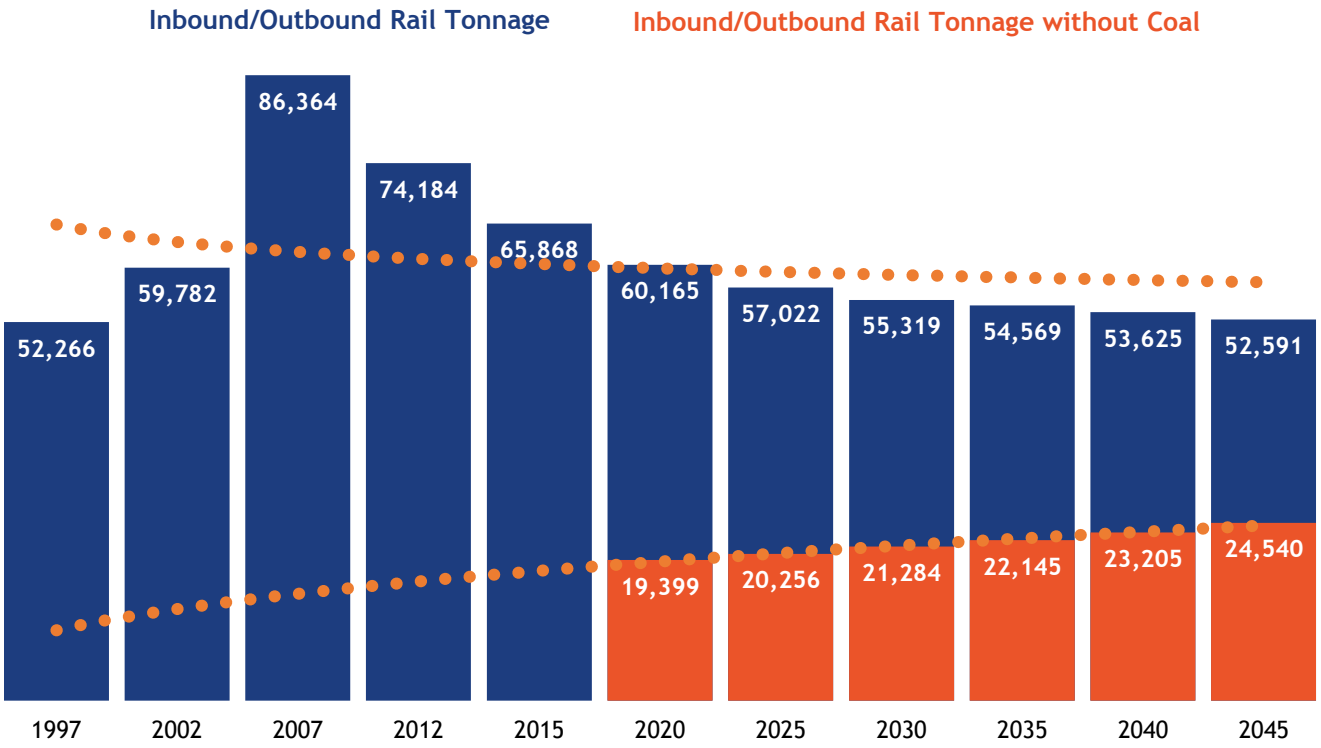
The production and consumption of commodities shipped by rail in Colorado depend on broad macroeconomic conditions. Changes in energy prices can result in significant shifts in demand for crude petroleum, natural gas, and coal. Weather and global food prices can result in large year-to-year changes in Colorado's agricultural crop and livestock production. National and state economic conditions can directly affect the quantities of consumer goods such as automobiles and household products, as well as construction materials and equipment shipped by rail. Long-term forecasts of freight movements are highly uncertain and available data is based largely on historic trends, rather than on forecasted changes in Colorado's industry composition or global and state economic conditions.

This section summarizes available data on freight forecasts from FHWA's FAF. Private railroads produce independent estimates of future freight rail demand, which are used when making capital investments and strategic business decisions. Between 2015 and 2045, the percentage of goods carried solely by rail to, from, and within Colorado is expected to decrease by 39 percent on a tonnage basis, even as overall freight volumes are expected to increase 36 percent during this period. Much of the decline in freight rail tonnage is attributable to continued declines in coal production from Colorado and the long-term decrease in coal as a fuel for electricity generation.

According to historical data, current FAF projections total rail tonnage into and out of Colorado is expected to decline from 65.8 million tons in 2015 to 53.6 million tons in 2040 (-19 percent overall). This reflects the significance of coal traffic in total tonnage carried by freight rail. Excluding coal, however, rail tonnage into and out of Colorado is expected to increase from a baseline of 19.4 million tons in 2015 to 23.2 million tons in 2040. Additional growth in non-coal traffic could come from increased use of short line railroads to move key agricultural and natural resource commodities and to facilitate movements to and from new industrial customers to Class I railroads. Intermodal rail traffic, including shipping containers from international ports, accounts for a relatively small proportion of Colorado rail traffic. With a growing consumer market and millions of new residents by 2040, Class I intermodal service to and from Denver may expand, resulting in additional rail movements not

accounted for in current projections. The following chart shows historic freight tonnage as estimated by FAF for available years and forecasted flows in future years, with and without coal movements.

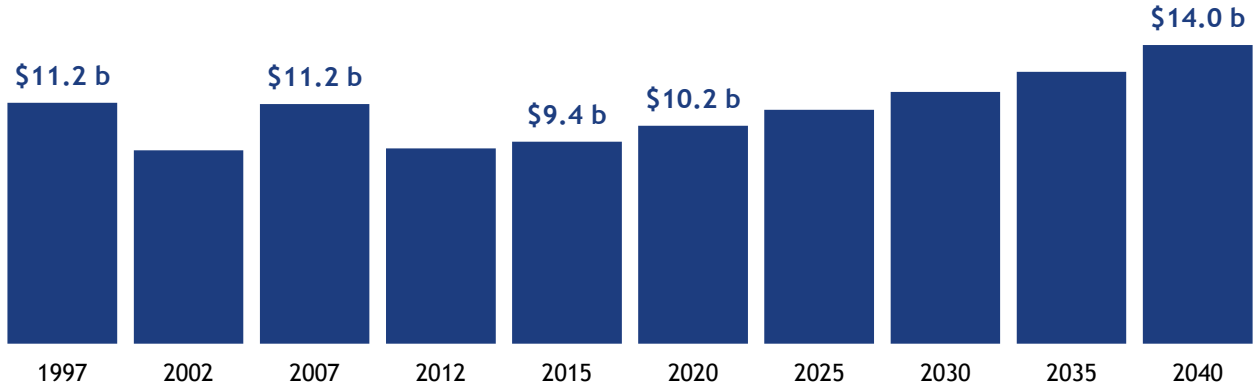
Trends in Freight Rail Tonnage to and from Colorado, 1997 to 2040



Source: Federal Highway Administration, Freight Analysis Framework, 2017

On a value basis, rail shipments are expected to increase by more than $4.5 billion between 2015 and 2040, an increase of 48 percent. The rising value of rail shipped goods reflects changes in commodity mixes and higher value consumer goods to meet the demand from Colorado's growing population. With declines in coal traffic, Colorado's railroads have the capacity to meet future demand. However, preservation of rail corridors, including lines in northwest Colorado that largely depend on coal and mining customers, will be critical to maintaining freight rail capacity in all regions of the state in the future.

Value of Freight Rail Shipments to and from Colorado, 1997 to 2040 (Constant Dollars)



Source: Federal Highway Administration, Freight Analysis Framework, 2017

2.2.3 Passenger Rail Demand

Future demand for passenger rail transportation will be driven by Colorado's growing population, expanding economy, increasing tourist and business travel, and worsening highway congestion.

Current projections indicate that Colorado will experience growth rates above the national average in population, employment, and visitors. Without significant changes from future technology or capacity improvements, the existing highway system cannot accommodate future travel growth. Passenger rail, including intercity and commuter rail service, will enable Colorado to provide travel options to meet future demand.

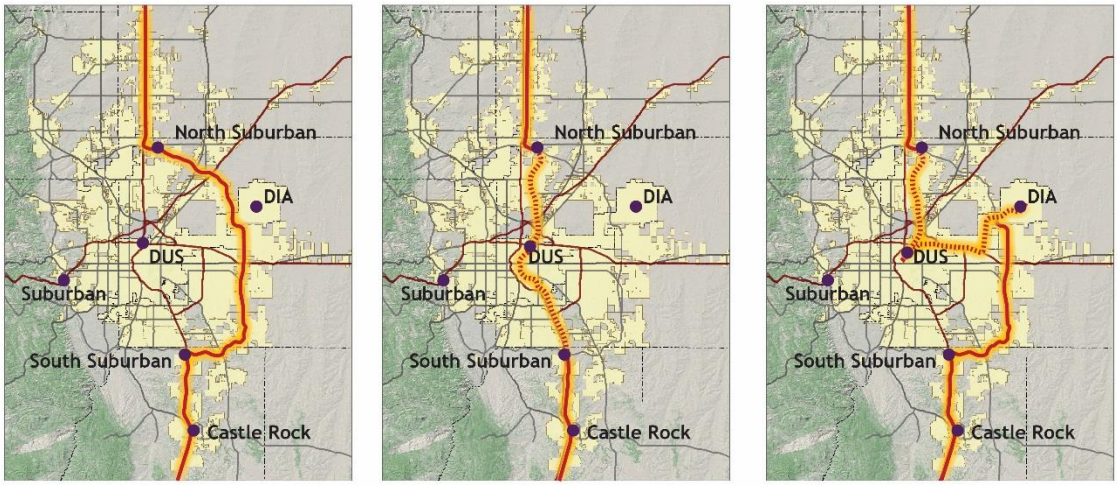
DRCOG produces annual estimates of future transit and rail transit ridership in its regional congestion report. Based on assumptions in the 2040 Regional Transportation Plan and current RTD ridership trends, average weekday rail transit boardings are expected to grow more than 119 percent between 2016 and 2040, or about 3.2 percent per year. By 2040, rail transit boardings could reach over 200,000 on an average weekday. These DRCOG forecasts are based on future forecasts of population and employment in the region. Future rail networks are assumed to include all existing commuter and light rail systems in operation in addition to future fiscally constrained road, transit, and rail corridor improvements. This forecast represents significant growth from current levels. As a share of all transit boardings in the Denver region, rail transit is expected to increase from 22 percent in 2015 to 31 percent in 2040.

Existing Amtrak intercity rail has experienced growth in ridership over the last 10 years. Between 2006 and 2016, Amtrak ridership in Colorado grew 28 percent to reach over 250,000 riders across the state's routes. In 2017, Amtrak boardings and alightings reached 263,021 across all stations and long-distance routes (not including seasonal Winter Park Express riders).

These trends are expected to continue as demand on Amtrak routes is projected to increase. In 2021, Amtrak is projecting ridership of 414,200 passengers along the entire national California Zephyr route and 379,300 passengers along the national Southwest Chief route. If national growth rates are applied to current Colorado ridership levels, Amtrak ridership in the state could reach nearly 270,000 boardings and alightings by 2021. With the continuation of Amtrak's Winter Park Express and potential extension of Southwest Chief service to Pueblo, ridership could grow at even greater rates. This assumes that current service levels continue. With uncertainty surrounding federal financial support for Amtrak long-distance routes and a backlog of maintenance and aging equipment, if service were to be constrained, future ridership may decline.

The Southwest Chief and Front Range Passenger Rail Commission is exploring the feasibility of Front Range Passenger rail service connecting Trinidad to Fort Collins. Discussions among stakeholders including rail organizations and local and regional agencies have also advocated for passenger rail service that could extend as far north as Cheyenne, Wyoming, and as far south as New Mexico. Potential ridership along this entire route has not been studied or estimated. CDOT produced ridership estimates for various alignments and service levels for passenger rail along a portion of the Front Range route in the 2017 ICS Interoperability Report. This study produced estimates of 10.6 million to 13.7 million passengers depending on alignment and technology. The following table presents initial ridership estimates for the segment of the Front Range passenger rail corridor running from Castle Rock to Longmont. Ridership estimates were developed for different market segments, including intra and interregional service, as well as passengers connecting directly to Denver International Airport. Dividing by current annualization factors, that translates to approximately 35,300 to 45,700 passengers per day for the entire Front Range.

Interregional Connectivity Study, Alternative Alignment Preliminary Ridership Estimates, 2017



	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Intraregional	2.8 million	1.8 million	1.5 million
Interregional	10.4 million	9.8 million	8.6 million
Air Connect	0.5 million	n/a	0.5 million
Total	13.6 million	11.6 million	10.6 million

Source: CDOT, Interregional Connectivity Study, Interoperability Evaluation Report, November 2017

2.2.4 Fuel Cost Trends

Changes in fuel prices often result in changes in driver behavior and the cost competitiveness of shipping products by truck, air, or rail. Fuel prices fluctuate with shifts in the global economy and changes in supply and demand in Colorado. In 2017, the price of gasoline per gallon averaged is $2.32 in Colorado, with crude oil prices averaging $46 per barrel. Historically, gasoline prices, on average, are lower in Colorado than the rest of the United States. Should gasoline prices increase dramatically in the near future, commuters and travelers may shift some trips from personal vehicle to transit options, including commuter and light rail. Similarly, increases in diesel prices used by commercial motor vehicle may make it more economical to ship goods to and from Colorado by rail, rather than by truck. The price of diesel used by railroad locomotives has fluctuated over the past five years which impacts the final cost of shipping and receiving goods and products by rail. Colorado is also an energy producing state and rising prices for crude oil, coal, natural gas as well as wind and solar energy products can be expected to increase production within the state and increase demand for rail service to transport energy products. The following table displays trends in key energy commodities used as inputs into rail and highway transportation by travelers, businesses, and transportation providers.

Average Fuel and Energy Prices in Colorado, 2012 - 2017

Primary Fuel	2012	2013	2014	2015	2016	2017
Automotive Gasoline - Regular Grade (dollars per gallon)	$3.49	$3.42	$3.33	$2.33	$2.04	$2.32
Electricity for Transportation Use (cents per kilowatt hour)	$8.77	$10.52	$10.86	$9.88	$8.58	$10.25
Electricity for Industrial Use (cents per kilowatt hour)	$6.44	$6.83	$6.93	$6.65	$6.50	$6.89
No 2 Distillate/Diesel Fuel (dollars per gallon)	$3.06	$3.09	$3.02	$1.78	$1.10	$1.68
Source: U.S. Energy Information Administration, State Energy Profiles						

2.2.5 Rail Congestion Trends

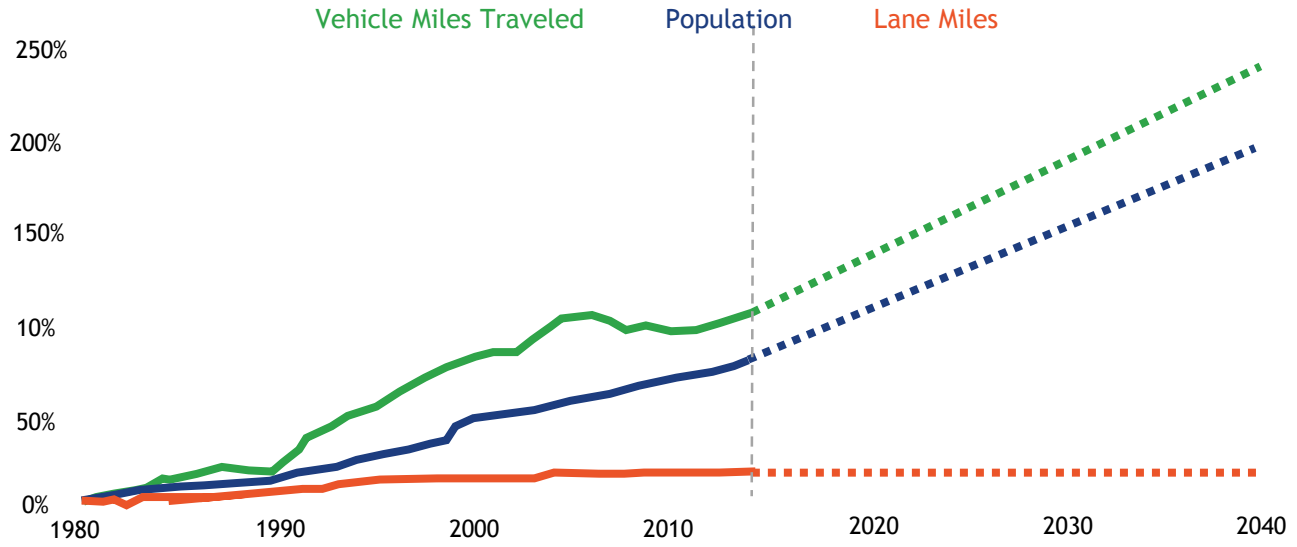
Colorado's two Class I railroads move the majority of goods in, out, through, and within the state along primary freight rail routes. Freight rail traffic originating and terminating in the state has generally remained stable in recent years while traffic moving through Colorado to other destinations has declined. Declining traffic volumes are primarily related to structural changes in the coal industry and a significant decline in coal rail traffic originating in Wyoming. As a result, freight rail operators in Colorado are not experiencing the levels of rail traffic congestion reported in other major rail hubs around the country. Rail lines and facilities generally have sufficient capacity to handle anticipated rail traffic. BNSF and UP have made recent major investments in auto handling intermodal yards in Colorado in recent years, but no other major rail capacity investments have occurred or are planned.

2.2.6 Highway and Airport Congestion Trends

Highway Congestion

Population forecasts suggest that travel demand on Colorado's highways will continue to rise. Vehicle miles traveled (VMT) are an indicator of the total number of vehicles traveling Colorado's public roads and highways. Between 2014 and 2040, VMT is estimated to increase by 45 percent, from 48.1 billion to 69.7 billion. Colorado has limited dollars to invest in new highway capacity and the benefits of new technology such as connected and autonomous vehicles remain uncertain. As a result, VMT increases are likely to result in worsening congestion around the state and particularly along the Front Range. The following chart from CDOT's SWP illustrates forecasted travel growth through 2040, indexed to 1980.

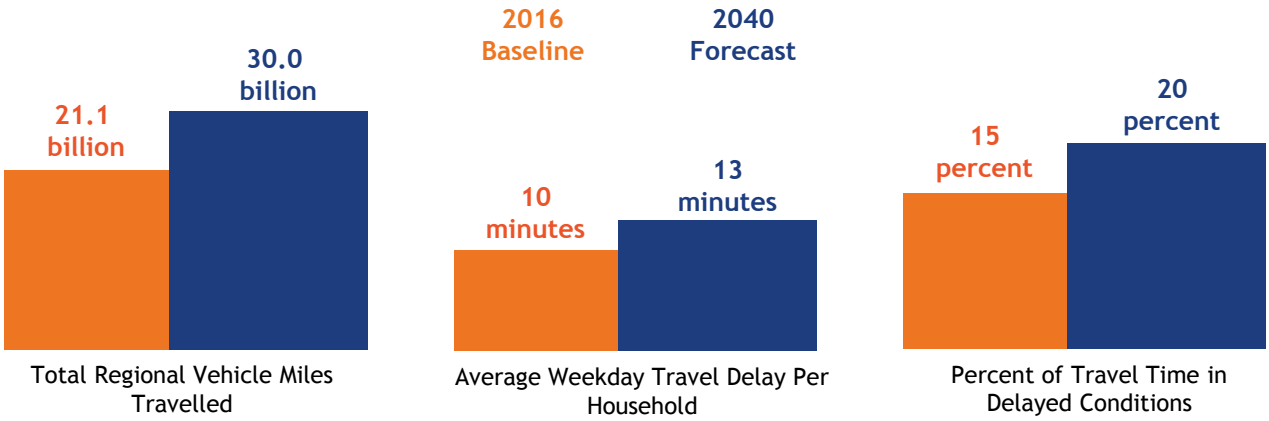
Projected Growth in Vehicle Miles Traveled, Population, and Lane Miles in Colorado, 2040



Source: Colorado Department of Transportation

With most of Colorado's growing population projected to reside along the Front Range, congestion in metropolitan areas will worsen significantly. Estimates from DRCOG's Annual Congestion Report illustrate these impacts. The following chart highlights changes in key travel indicators between 2016 and 2040 for highways and arterials within the Denver metro area. Travel speeds and reliability are expected to decline, while travel time and time spent in delayed conditions are anticipated to increase. By 2040, nearly 40 percent of regional freeways and arterials in the Denver metro area could be considered congested. Growing congestion and declines in the reliability of highway commutes could increase the demand for transit options, including passenger rail along the entire Front Range region.

Current and Future Congestion Travel Indicators for Denver Area Regional Freeways and Arterials



Source: Denver Regional Council of Governments, 2016 Annual Congestion Report

Air Travel Congestion

CDOT's 2011 Aviation System Plan anticipates growth in total enplanements to 35.7 million by 2020 and to 45.4 million by 2030. Most air travel in Colorado is in and out of Denver International Airport (DEN). Denver is the sixth busiest airport in the United States, with the airport serving more than 33.2 million passengers in 2016. By 2040, DEN anticipates serving more than 58.4 million passengers, not including connecting flight passengers. More than 90 percent of all passengers now and in the future are or will be domestic travelers. Unlike many airports around the country, DEN has land available and capacity to add gates, expand terminals, and improve air cargo service. Although, DEN has capacity in the system for additional air cargo traffic, price sensitivity by logistics users has overridden the time savings component, resulting in more than 50 percent of potential air cargo out of DEN being trucked to Chicago, Dallas, or West Coast airport/facilities.

Visitor Travel Trends

Since the national recession of 2009, tourism in Colorado has grown 31 percent, nearly double the national average. In 2016, over 82.4 million people visited Colorado. More than 33.5 million of those visitors were leisure visitors, and 4.2 million business travelers spent at least one night in Colorado. Day travel to and within Colorado has continued to grow and reached 44.7 million trips in 2016. Over 50 percent of all visitor spending in 2016 occurred in the Denver metro area.

Total direct travel spending in Colorado during 2016 was over $19.7 billion. Transportation represents the second largest expenditure by visitors and totaled more than $3.3 billion. Not all transportation spending is related to vehicles. Among overnight visitors, just 3 in 10 non-Colorado residents rented a vehicle while visiting. This suggests that visitors are using alternative transportation options such as taxis, ride-hailing services and shuttles, and local transit and rail options to reach destinations and travel within the state. The State of Colorado does not prepare long-term forecasts of visitors, but if historic growth rates continue significantly, more visitors will travel to Colorado in the future.

2.2.7 Land Use Trends

Land use and development trends follow population growth trends. Increasing population is driving increasingly dense and broad development patterns, particularly within communities along the Front Range. These communities are pursuing different growth strategies. Some municipalities have introduced limits on the number of future housing units and have created urban growth boundaries to encourage high-density land uses and transit-oriented development. Other communities are encouraging traditional low-density development and rapid residential growth patterns. Cities and towns in all areas of the state are experiencing the conversion of former agricultural or ranch lands to residential and even industrial development land uses. Each community in Colorado is unique and it is challenging to generalize land use trends at the state level.

However, in areas where rail lines or rail facilities and yards are in close proximity to growing population centers, several trends and potential conflicts are emerging. For example, rail yards in metropolitan Denver are now flanked by new residential development and create land use conflicts and restrict rail-oriented industrial activities. Plans for major new housing developments along Class I rail lines to the east of Denver and within Weld, Arapahoe, and Larimer counties could also create conflicts and require additional main line rail crossings with associated safety risks. Specific land use decisions are the responsibility of local governments. However, integrating freight and passenger rail considerations into local comprehensive plans and adopting statewide priorities or corridors into these plans will ensure that future opportunities remain available.

2.3 RAIL SERVICE NEEDS AND OPPORTUNITIES

This Rail Plan is a high-level policy document intended to guide collaboration and coordination among decision makers, planning partners, and industry partners, including Colorado's rail operators.

The Rail Plan Working Group and stakeholders engaged throughout this planning process identified key needs, issues, and opportunities that can be addressed on an ongoing basis to improve and expand rail service in the state. This section summarizes key needs and issues and presents Front Range passenger rail as a key opportunity in the state. The priority recommendations detailed in Chapter 5 of this Rail Plan further expand on opportunities and provide implementation actions for CDOT and partners to capitalize on opportunities.

The Rail Plan Working Group identified cross-cutting issues, specific rail needs, and long-term opportunities. Cross-cutting issues affect each of the five goal areas identified in this Rail Plan and reflect where recommendations and actions are most needed. The Rail Plan Working Group identified the following cross-cutting issues:

- **Funding** – The lack of dedicated state funding sources, the limited federal funding for rail improvements, and the scale of funding needed to expand rail of any kind present major barriers to implementation of the goals of this Rail Plan. Colorado's most critical needs include funding for railroad-highway crossing improvements, short line maintenance, capacity upgrades, and future Front Range passenger rail.

  With no dedicated state funding for rail improvements, limited federal funding and competitive grant opportunities, a currently unfunded State Rail Bank, and no public freight rail assistance program in place, Colorado is at a disadvantage compared to neighboring states that actively support rail service. Providing support and funds for rail returns benefits to Colorado's economy and the industries that depend on rail access. The beneficial return on investment and significant leveraged private capital resulting from RTD's FasTracks initiative and the redevelopment of Denver Union Station offer examples of return on public dollars invested in rail.

- **Coordination and joint planning** – Many public and private partners are involved in rail planning efforts for both freight and passenger service expansion, improvement, maintenance, and preservation. Private railroads work directly with local governments, transportation agencies, economic development organizations, and private businesses to coordinate improvements and identify investments. Through statewide, regional, and corridor planning processes, CDOT engages local governments, transit agencies, regional planning organizations, and stakeholders to identify future service needs and improvements.

  Communication and coordination among railroads and planning partners could be improved to preserve future rail opportunities, maintain current infrastructure, and identify state and local opportunities to expand rail access and connectivity. For example, coordination among regional economic development organizations, railroads, and CDOT could enable joint funding of industrial access and connectivity improvements. Regular and recurring consultation between CDOT and freight, passenger, and scenic railroads can help establish relationships, assist, and better integrate planning efforts. Coordination and information sharing between statewide strategic plans and local government and planning partners can support advance planning and corridor preservation for future passenger rail.

- **Public education and communications** – Economic development organizations, local governments, agricultural and natural resource industries, and rural businesses view freight and passenger rail service as critical to economic competitiveness. However, there is a perception that the general public is largely unaware of the importance of rail to the state and regional economies. Education and communication efforts that raise the profile of freight movements and illustrate the benefit of freight rail and passenger services to economic vitality are needed to build support for future action and investments. Without such efforts, the general public is more likely to say, "Get that truck or train out of my way," without realizing

that cost would be added to every consumer product in Colorado if trucks or trains are limited in their movements.

Providing information, data, media, and materials to planning, agency, and industry partners for use in advocacy and outreach efforts is needed to support public education. These efforts are most powerful when public and private partners speak from one voice, have a unified message, and provide consistent information. Experiences in other states with active partnerships, strong FACs, and joint advocacy efforts have led to increased state funding for freight and rail investments and have developed champions among elected officials and decision makers. In turn, truck and rail deliveries are more efficient, and the savings in delivery cost can be passed on to consumers.

- **Land use and development patterns** – Colorado's Front Range is experiencing rapid population growth and increasingly dense land use and development, which is having an impact on facilities and rail movements in urban and suburban areas. Rail yards in Denver are now flanked by residential development and create land use conflicts and restrict rail-oriented industrial activities. Plans for major housing development along Class I rail lines could also create conflicts and require additional main line rail crossings with associated safety risks. Existing rail corridors and assets in other regions of the state may be at risk of abandonment or disuse and could be preserved for future use.

  Specific land use decisions are the responsibility of local governments. However, integrating freight and passenger rail considerations into local comprehensive plans and adopting statewide priorities or corridors into these plans will ensure that future opportunities remain available. Regional joint planning efforts in other states have led to the identification of freight oriented land uses and appropriate planning and zoning overlays. Passenger rail visioning efforts in other states have built broad local support and coordinated advance planning for state-supported intercity rail or new commuter rail corridors.

The Rail Plan Working Group also identified specific issues related to freight and passenger rail. These issues and needs are detailed below. Both cross-cutting and priority issues are addressed through the recommended priority strategies and implementation actions described in Chapter 5 of this Rail Plan.

2.3.1 Freight Rail Priority Issues and Opportunities

The following section summarizes key issues and related opportunities for freight rail in Colorado. These issues will be monitored by CDOT staff, addressed through coordination with rail partners, acted on in implementation efforts, and integrated into future state and regional planning efforts.

Improvements and Planning for Rail-Served Industrial Developments - Rail-served industrial sites and future rail-related development zones present significant opportunities for economic development in Colorado. Regional economic development organizations in some parts of the state report challenges attracting and retaining industrial businesses in need of rail access. Agricultural producers rely on rail access at grain elevators and intermodal facilities. Many former or current grain elevators are underused and could be redeveloped to improve access for existing rail customers and to expand facilities and infrastructure to attract new businesses.

Redeveloping these sites, while preserving rail access, presents a significant opportunity for communities on the Eastern Plains and San Luis Valley. Pueblo and Colorado Springs are home to current and former military installations, defense contractors, and rail infrastructure that could be expanded to serve defense and homeland security industries and entirely new businesses. In particular, the former Pueblo Chemical Depot, or PuebloPlex, offers tremendous opportunity for industrial development with improved rail access. In northern Colorado, rail-served industrial sites have recently been developed, such as the Great Western Industrial Park, and other new sites are being planned such as a BNSF joint development opportunity in Hudson.

The Western Slope sits along the UP main line with access to BNSF and has significant railroad infrastructure and assets. Manufacturing activity is growing in Grand Junction, and potential industrial development sites could be planned and developed to facilitate future growth. With significant growth expected in the Front Range economy and continued growth in consumer spending, new intermodal facilities, distribution and logistics centers, and transload facilities in areas near population centers will be needed.

Private railroads offer economic development and real estate services and actively coordinate with local governments and businesses to identify, develop, and promote industrial properties. UP, BNSF, and short line railroads provide site selection information and resources that are available for Colorado businesses and economic development organizations. To support these efforts, economic development opportunities can be better integrated into transportation planning so that rail-related projects and sites are identified early in the planning and project development processes.

Additionally, providing public assistance or funding support, through a grant or a loan program, would enable local governments to capitalize on redevelopment opportunities and jointly fund needed improvements in partnership with railroads and businesses. Chapter 3 of this Rail Plan discusses freight rail assistance programs. States with active freight rail assistance programs offer subsidized loans or cost-sharing between state and local governments and private railroads to fund economic development related infrastructure or to track improvements. These programs are typically funded with state general fund revenues and, in some cases, through federal funding, including the National Highway Freight Program.

Targeted Freight Intermodal Connectivity Improvements – The National Highway Freight Program, funded through the FAST Act, allows federal funding for improvements within private intermodal facilities and rail yards, as well as highway access improvements to rail-served intermodal facilities. Intermodal facilities play a critical role in Colorado's transportation system, link modes to enable efficient freight handling, and generate value-added economic activity. Currently, CDOT's statewide and regional planning processes have not identified significant needs for access, connectivity, or improvements to intermodal facilities. By strengthening planning processes to engage economic development organizations and private industry, improvements may be identified in the near future and more readily considered for public funding. The CFP identifies future project areas, including rail-served intermodal facilities eligible for funding under dedicated federal freight funds.

Addressing Rail Service Constraints – Private railroad operators own, operate, and maintain Colorado's freight rail system. Railroads invest significant resources into maintaining and improving the state's rail network without public funding support. To remain competitive with trucking and to meet modern track standards, short line railroads need public funding and assistance to upgrade track and infrastructure. The State of Colorado has a clear interest in supporting the continued operation of short lines because they are critical to regional industries and provide economic development opportunities and direct economic benefit to regional economies.

For Colorado to remain competitive and to serve rail customers more efficiently, capacity constraints on existing systems must be identified. Necessary improvements may be funded by private railroads or as possible through partnerships among CDOT, local or regional agencies, and private railroads. For example, vertical clearance of tunnels in Colorado limits the ability of rail to ship double-stacked shipping containers and to efficiently handle intermodal traffic. With a growing consumer market, intermodal rail will be critical to addressing future freight demand. Wyoming and Kansas are investing in major intermodal terminals and inland ports to serve intermodal shipments from West Coast seaports and distribute into Colorado markets. Colorado could capture the value-added economic activity and high-wage logistics jobs associated with terminal activity by mitigating rail capacity constraints, upgrading track conditions, and supporting industrial rail development.

Capacity constraints on Colorado's freight rail system include:

- **Vertical clearance** is the distance between the rail bed and the bottom of overhead structures. To allow unrestricted access for all standard rail car configurations, including double-stacked intermodal cars and tri-level auto carriers, 23 feet 6 inches is needed between the rail bed and the underside of any overhead structure. For lines handling intermodal traffic, AAR recommends vertical clearances of 22 feet 6 inches to accommodate double-stacked domestic containers. For intermodal shipments, double-stack clearance is rapidly becoming the national standard because it greatly improves capacity and thereby reduces the cost to ship goods by rail, making double-stack rail services more competitive with trucks for customers' shipments while taking long haul movements off highways. Most of Colorado's Class I network allows double-stack container configurations. However, the only continuous east-west rail corridor in the state is UP's Moffat Corridor between Denver and Salt Lake City, Utah. Several vertical clearance restrictions on this line prevent the movement of double-stacked cars.

- **Weight limit** is the gross weight of a rail car plus any cargo carried. The current standard is 286,000 pounds (286k lb.), with some portions of track on heavily used corridors now allowing 315k lb. Most of Colorado's Class I rail network can carry 286k lb. cars, with some sections of UP's network able to handle 315k lb. Some sidings and branch lines on both BNSF and UP rail networks are not currently 286k lb. capable. Short line railroads operate on track that is often older and not updated to modern weight capacity standards. A significant portion of Colorado's short line network cannot carry 286k lb. cars. This limits the ability of short lines to interface directly with Class I rail networks for many carload shipments and to serve customers safely, efficiently, and rapidly.

- **Track capacity** provides railroads with operating flexibility and allows a limited number of trains to be handled on a given line. Sidings or passing tracks that allow trains to either overtake or pass one another in an area with only a single main line typically can improve flexibility and capacity. In industrial areas alongside busy main lines, this category includes tracks that are needed to efficiently serve customers without delaying through traffic. Additional tracks or sidings on freight rail corridors may be needed to accommodate interoperability of future passenger rail service with existing freight service. Extended sidings may also be required to accommodate longer freight trains. Because sidings are nearly 2 miles long, these must be carefully located and designed so that something positive for rail does not create a problem for cars and trucks.

- **Terminal and yard capacity** addresses the number of cars that can be processed or stored at a facility. Operational strategies and efficiency at the terminal or yard facilities can have significant impacts on overall line capacity. Some short line railroads in Colorado provide car storage to act as relievers for Class I railroads or rail customers owning or leasing their own railcars. Should rail traffic increase across lines, this storage strategy may not be feasible in the future as the track capacity now used for car storage will be needed for additional train movements.

- **Rail line operating speed** dictates the average speed that trains move on a corridor with potential impacts on capacity and the ability to move higher-value, time-sensitive goods. Several factors influence operating speed, including train makeup, speed limits, track conditions, topography, and signaling. Due to curves, grades, and operations through metro areas, Colorado's major main line and some short line railroads are subject to safe operating speed limitations in some areas. Average operating speeds are a key metric for railroads in the quest to deliver goods on-time to customers.

- **Traffic control and signaling systems** help ensure safe operations and interoperability of passenger and freight train speeds. Traffic control systems efficiently improve capacity use. Federal law requires PTC and other emerging technologies on some, but not all, subdivisions and lines of Colorado's Class I rail lines. Colorado and rail partners are committed to implementing and testing innovative safety technologies on other rail lines across the state.

- **Land use development and encroachment** – As areas surrounding current rail infrastructure are developed for residential, commercial, or other incompatible land uses, the ability of railroads to fully use or expand existing infrastructure and assets may be limited. Mixed-use development near existing rail assets may impose constraints on rail operations related to noise, safety, and hazardous materials. Improved zoning, regional freight land use planning, and continued coordination between local agencies and private railroads can mitigate incompatible development (such as schools, hospitals, dense residential developments, etc.) from occurring along or near rail lines.

Preservation of Freight Corridors and Assets - When a rail line is no longer considered economically viable for a Class I railroad to operate, the result is often the sale or the lease of the line, usually from Class I railroads to short line or regional railroad companies. The only other alternative is to file a formal request for abandonment to the federal STB. Rail corridor abandonments can have significant impacts on the statewide multimodal transportation system and on local and regional economies. With the loss of rail service, freight previously being moved by rail must be moved by truck, causing additional deterioration (i.e., pavement surface condition and/or traffic volumes) of local roadways and state highways. Many businesses, particularly in rural areas, cannot compete without rail access and could be at risk of failure or relocation within or out of the state. Once a railroad corridor is abandoned, it is often cost-prohibitive to return to service and is unlikely to be available for any motorized transportation purpose, particularly if rail tracks are salvaged or right-of way is sold.

The ability to respond quickly to a potential abandonment is an important factor in ensuring corridor preservation. A railroad may file a Notice for Exemption or Petition for exemption with the STB if a track has not been used for two or more years or if the track has so little traffic on it that the carrier could not be making a profit. Following this administrative request, abandonment authorization from the STB can take place in as little as 90 days. The Colorado legislature created the State Rail Bank in 1998 as a vehicle to preserve rail corridors from abandonment. The State Rail Bank is currently unfunded, and the process of acquisition must be coordinated with CDOT, the Colorado Transportation Commission, and the legislature. Concepts and funding options that enable flexibility and rapid response to abandonment and acquisition should be considered.

Additional freight rail assets and infrastructure may also be identified for sale by railroads. These assets represent significant opportunities for the state and could be leveraged and repurposed for economic development, multimodal transportation centers, intermodal yards, or passenger rail stations. In 2015, UP closed the Burnham Yard repair facility in Denver, which is slated for sale in 2018 or soon thereafter. This 70-acre parcel is zoned for industrial development, has significant rail infrastructure, but is near rapidly urbanizing and expanding residential neighborhoods in Denver. RTD is pursuing plans to purchase a portion of the property to support future light rail, but the future of the remainder of the site is uncertain. The State of Colorado could consider identifying and monitoring freight rail assets and infrastructure of strategic value (in addition to rail corridors) and consider the purchase or reuse of these sites for public benefit.

Safety and Security – Freight rail safety and security issues continue as fatalities and serious injuries at railroad-highway crossings and due to trespassing have not substantially declined over the past decade. The State of Colorado and CDOT can consider additional support, funding, or legislative action to promote safety initiatives. Current programs and initiatives where continued support and additional funding or resources are important include security task forces, trespassing legislation, additional funding for rail crossings, and expanded support for Operation Lifesaver and other educational programs. With a rapidly growing and urbanizing population along the Front Range and in surrounding regions, the safety risks at railroad-highway crossings will grow. Major new planned developments along existing rail lines call for additional rail crossings, but financial support for grade-separated crossings is underfunded. The State of Colorado recently funded the PUC's crossing program for the first time in over a decade, but available monies are well below anticipated local needs.

2.3.2 Passenger Rail Priority Issues and Opportunities

The following section summarizes concerns and needs related to identified priority passenger rail issues in Colorado. These issues will be monitored by CDOT staff, addressed through coordination with rail partners, acted on in implementation efforts, and integrated into future state and regional planning efforts.

Planning for Future Rail Corridors – Passenger rail will be a critical component of Colorado's future multimodal transportation system. Current roadway infrastructure and capacity limitations cannot accommodate future growth in travel. Existing roadway rights-of-way may also limit future expansion. The impact and benefits of future vehicle technology, operational strategies, and even new high-speed transportation technologies, such as Hyperloop, remain uncertain as mechanisms for delivering additional personal travel capacity. Passenger rail and related passenger technologies are long-term investments that require long-term planning. Colorado must remain committed and continue to plan for and preserve right-of-way and rail infrastructure capacity in support of future rail service. Without planning and coordination between the state and local governments, passenger rail may not be a future travel option.

This section addresses Colorado's primary opportunity to advance Front Range passenger rail. Other future travel and rail corridors, including the I-70 Mountain Corridor, and development of Front Range rail to Wyoming and/or New Mexico should also be considered. The Southwest Chief and Front Range Passenger Rail Commission has proposed a broad engagement and visioning effort involving Front Range communities, industry, railroads, and planning partners. The State of Colorado and CDOT can support this visioning effort and ongoing efforts to bring passenger rail to Colorado's communities.

CDOT will consider next generation rapid speed travel technology in all forms, assessing policy and regulatory implications, economic and environmental impacts, technology capabilities, and implementation strategies. Two feasibility studies are underway. One is evaluating longer-distance high-speed technology promising speeds double or triple that of high-speed rail, 600 to 700 mph. The other study is focusing on regional high-speed technology more like high speed rail at speeds up to 180 to 220 mph. CDOT will consider how each technology addresses the mobility demands of future population growth; improves mobility and system capacity; enhances economic growth and development through improved connectivity; and offers fast, reliable, and safe transportation for both freight and passengers. Rapid speed travel technologies could expand the potential for entirely new travel corridors in the state and could advance the potential for rapid passenger and freight service. These technologies, as well as the continuing advancement and evolution of passenger rail equipment and operations capabilities, may influence priority future travel corridors throughout Colorado.

> CDOT is currently conducting feasibility studies in partnership with different technologists to assess the feasibility of innovative transportation infrastructure alternatives, currently defined as Rapid Speed Travel Studies.

Planning for Shared Use and Interoperability – Front Range passenger rail alignments may operate over portions of existing freight or commuter rail lines and/or right-of-way, subject to previous agreement with the freight rail operator if a freight rail corridor is planned to be used. Freight railroads must balance the need to preserve service levels and meet the present and future freight capacity needs of customers and communities in considering requests to use existing right-of-way and infrastructure for the passenger travel. BNSF and UP are partners in efforts to advance Front Range passenger rail and to negotiate potential shared use and interoperability of rail services. RTD's existing commuter and light rail system may also connect to future passenger rail service or potentially run on shared tracks or right-of-way. RTD is a critical partner in expanding passenger rail within the RTD service area and supporting service to other regions. Issues related to interoperability will continue to be evaluated as the likely technologies, equipment, signaling systems, and future rail corridor alignments for Front Range rail are further refined.

Targeted Passenger Multimodal Connectivity Improvements – As options for Front Range passenger rail are further evaluated, investments in right-of-way purchases or station area planning may be identified that can or must be made now, even if implementation of rail service remains a long-term solution. For example, regional park and ride facilities or intercity bus stations could be planned and designed to be transformed into regional passenger rail hubs in the future. Existing rail crossings could be eliminated today, and future rail crossings or grade separations at planned developments can be designed to safely accommodate future rail service. These improvements provide stand-alone benefits while also facilitating future passenger rail services. CDOT and planning partners can begin to identify potential improvements and consider funding through current programs and project development processes. Some Amtrak intercity passenger rail stations are not as well integrated and connected to intercity bus or local transit service as they could be. Connectivity improvements, including local transit service, and potential station upgrades and enhancements should also be considered in state and regional planning processes. Seamless connections across the multimodal transportation system are important to making intercity rail an easy and efficient travel options for visitors and residents. Continued support for Southwest Chief track rehabilitation and service extension to Pueblo and Walsenburg is also critical. Southwest Chief service provides critical travel connections and direct economic benefits to communities in southeast Colorado.

Planning and Policy to Preserve Future Capacity – Local governments, businesses, and railroad operators are critical partners in planning for the future of passenger rail along the Front Range. Local land use, development, zoning, and transportation decisions can have significant impacts on the future viability of rail corridor alignments. Decisions made by CDOT, including the design of bridges and overpasses or use of right-of-way, can also help provide future flexibility and rail options or eliminate options. For example, early design decisions for the redevelopment of Denver's Union Station limited the addition of passenger trains into and out of Union Station due to design limits of the number of trains that the station could handle at any one time. CDOT, advocacy groups, and planning partners can share information on future rail alignments, potential station areas, rail infrastructure, and right-of-way needs with local governments and planning partners to better coordinate state and local planning and to avoid future capacity limitations. Preservation of existing rail infrastructure and assets subject to abandonment or sale by state purchase or through public-private partners can also provide flexibility of future uses and leverage key rail infrastructure and development sites.

Addressing Quality of Life Issues - Freight and passenger rail service benefits communities but also presents safety, quality of life, and environmental impacts. Private railroads are implementing new technology to mitigate environmental externalities, such as cleaner and more fuel-efficient locomotives and advanced safety devices on tank cars carrying hazardous materials. Noise and vibration from railroad operations can also affect residential areas in close proximity. In these areas, including mixed-use residential and industrial development in downtown Denver, Fort Collins, Windsor, and other communities, railroads operate under reduced speed and quiet zone regulations.. Local governments may apply to the FRA to seek approval to establish quiet zones and must mitigate against the increased risk at crossings so that the lack of loud horns does not result in an increase in accidents or loss of life.

FRA approved quiet zones allow railroad operators to avoid sounding horns when approaching rail crossings in urban settings.

In 2005, the FRA published a final Train Horn Rule requiring locomotive engineers to begin to sound train horns at least 15 seconds in advance of all public grade crossings. Train horns must be sounded in a standardized pattern of 2 long-1 short-1 long blasts. The pattern must be repeated or prolonged until the lead locomotive or lead cab car occupies the grade crossing. Recognizing the noise and quality of life impacts of this rule to local communities and residents near rail lines, FRA also continued its FRA Quiet Zone program in the final Train Horn Rule. In 2016, as part of continuous review of regulations, FRA invited public comments to modify, streamline, or expand any requirements of its locomotive train horn regulations. Many communities throughout Colorado provided comments as part of this process and expressed concerns with the impacts on economic development and quality of life of residents, the inflexibility of train

horn rules, and the cost of setting up quiet zones and mitigating safety hazards. FRA has not established any new regulations following the comment period.

The following table identifies communities and the number of zones, along with established quiet zones or communities that have applied for or are considering quiet zones.

Status of Quiet Zones in Colorado, 2017

Communities with Established Quiet Zones (Number)	Communities that Submitted Notices of Intent	Communities Considering Quiet Zones
Arvada (3)	Adams County	Berthoud
Broomfield	Arvada (2)	Boulder
Brush	Aurora	Brighton
Commerce City (3)	Castle Rock	Fort Collins*
Douglas County	Colorado Springs	Fountain
El Paso County	Denver	Greeley
Fort Morgan (2)		Longmont
Monument		Louisville
Timnath		Loveland
Westminster		
Windsor (3)		
Winter Park (2)		

*The Federal Railroad Administration denied the City of Fort Collins' 2015 request for a waiver of its train horn rule because it did not meet safety standards that currently require gates.

Recognizing the impacts of commuter train horns on the communities they serve, RTD actively works with local jurisdictions along existing rail lines and future passenger rail corridors to support quiet zone applications and to develop noise mitigation plans along passenger rail corridors. RTD is committed to making crossing improvements to address noise and safety issues. Quiet zones are an example of the more complex and costly safety measures at crossings that the public is demanding. Advanced crossing systems and grade separations are also popular in areas with heavy freight and passenger train volumes. These safety solutions are effective and improve quality of life, but they are also more expensive and often beyond the reach of current federal and state safety funding. To continue to improve quality of life and mitigate risks and impacts, Colorado must make additional resources available through state and local partnerships and/or cost-sharing grants for railroads. CDOT has no role in supporting or approving quiet zone applications to the FRA.

CHAPTER 3 – PROPOSED PASSENGER RAIL IMPROVEMENTS AND INVESTMENTS

3.1 STATE FUNDED COMMUTER RAIL CAPITAL IMPROVEMENT PROJECTS

CDOT provides capital and planning funds to support passenger rail service provided by RTD in the Denver metro area. The following table summarizes investments supported by CDOT over the past five years.

Previously Completed State Funded Commuter and Light Rail Improvement Projects, 2012-2017

Year	Project Description	Funding Source	Grant Award
2012	104th/Colorado Station for North Metro	CDOT, FASTER	$1,100,000
2012	South I-25 RTD Light Rail Shelter	CDOT, FASTER	$500,000
2013	Southeast Corridor Ticket Vending Machines	CDOT, FASTER	$440,000
2014	Central Light Rail Corridor Improvements	CDOT, FASTER	$692,000
2014	Light Rail Manual to Power Emergency Crossover Upgrade Project	CDOT, FASTER	$1,600,000
2015	Speer Crossing Panel Replacement	CDOT, FASTER	$500,000
2015-2016	Light Rail Vehicle Overhaul	CDOT, FASTER	$2,200,000
2017	Light Rail Track and Switch Replacement	CDOT, FASTER	$1,150,000
		TOTAL	**$8,182,000**

Source: Colorado Department of Transportation, Division of Transit and Rail

3.2 INTERCITY PASSENGER RAIL CAPITAL IMPROVEMENT PROJECTS

Amtrak invests across its national network to jointly fund track maintenance and to maintain infrastructure and assets in a state of good repair. A coalition of public and private partners along the Southwest Chief Route submitted a successful TIGER VI grant application in 2014. This Southwest Chief Route Improvement Project was awarded $12.5 million in funding and, with local match, project costs totaled $24.3 million. This project made improvements to existing track, including new rail, turnouts, and grade crossings. The lead applicant was the City of Garden City, Kansas. The State of Colorado supported this grant application but was not a funding partner.

In 2015, a TIGER VII grant application for the Southwest Chief Route Advancement and Improvement Project was awarded to partners. Requested grant funds totaled $14.7 million with additional combined state, local, and private matching funds of $9.3 million. This project enabled Amtrak to continue service along the Southwest Chief route in Colorado by furthering the rehabilitation of the BNSF La Junta Subdivision. The project replaced approximately 39 miles of older track with new continuously welded rail and repaired more than 20 miles of roadbed with new ties and ballast on the Albuquerque Subdivision in New Mexico. Ten local communities and organizations in Colorado provided matching funds to this effort. Portions of the BNSF owned track along the Southwest Chief route still need rehabilitation. The condition of track limits the speed of current passenger service to be within the speed permitted by FRA track safety standards. CDOT is a partner in the successful 2017 grant award from the TIGER IX funding round to complete further maintenance and improvement needs along this rail corridor.

CDOT provides funding and support for intercity passenger service improvements on a limited basis. In the recent past, Colorado applied state funds to leverage additional investment by public and private partners to support improvements to station areas in Winter Park and Trinidad. State funds provided by CDOT were also used within the larger $500 million redevelopment of Denver Union Station. The following tables identifies intercity passenger rail projects funded through CDOT's FASTER and SB-228 funding.

Previously Funded State Supported Intercity Passenger Rail Improvement Projects, 2012-2017

Year	Project Description	Funding Source	Grant Award
2012	Denver Union Station	CDOT, FASTER	$4,000,000
2015	TIGER VII Southwest Chief Matching Funds	CDOT, FASTER	$1,000,000
2016	Winter Park Express Platform Improvements	CDOT, SB-228	$1,500,000
2017	TIGER IX Southwest Chief Matching Funds	CDOT, FASTER	$1,000,000
		Total	**$7,500,000**
Source: Colorado Department of Transportation, Division of Transit and Rail			

Amtrak provides funding for intercity passenger rail service through ongoing capital investment, operating expenditures, and matching funds to leverage additional private and public investment. Amtrak's financial contributions in Colorado include matched grant funds, station improvements, and service operations. Amtrak has supported each TIGER grant application submitted by partners in Colorado and Kansas that helped preserve and improve Southwest Chief service in southeastern Colorado. The following table identifies matching funds provided by Amtrak in support of TIGER grant projects.

Previously Completed Amtrak Intercity Passenger Rail Improvement Projects, 2012-2016

Year	Project Description	Funding Source	Grant Award
2014	TIGER VI Southwest Chief Matching Funds	Amtrak	$4,000,000
2015	TIGER VII Southwest Chief Matching Funds	Amtrak	$3,000,000
2017	TIGER IX Southwest Chief Matching Funds	Amtrak	$3,000,000
		Total	**$10,000,000**
Source: Amtrak			

In 2017, Amtrak supported the successful TIGER IX grant application from Colfax County, New Mexico, to continue rehabilitation of the BNSF-owned rail line that supports Southwest Chief service. Amtrak pledged $3 million in matching funds to support this grant application. Together, Amtrak's commitment of $7 million in support of federal grant opportunities has helped secure this grant funding and leveraged over $41 million in additional public and private investment from Southwest Chief TIGER grant awards.

Amtrak also funds short-term capital improvement to stations in Colorado. These investments include design and construction activities necessary to update stations to ADA standards and to maintain a state of good repair of facilities. Between 2012 and 2016, Amtrak invested more than $575,000 in stations in Colorado. For 2017 and 2018, approximately $5.6 million in improvements will be made to stations in Glenwood Springs, Trinidad, and La Junta. The following table summarizes recent capital investments in station improvements Amtrak made in Colorado.

Previously Completed Amtrak Capital Improvement Projects, 2012-2016

Year	Project Description	Estimated Cost
2012	Glenwood Springs	$196,332
2013	Glenwood Springs	$5,159
2014	Glenwood Springs	$29,001
2015	Denver and Glenwood Springs	$96,195
2016	Fort Morgan, Lamar	$248,656
	Total	**$575,343**
Source: Amtrak		

3.2.1 Passenger Rail Improvements and Investments

RTD, CDOT, Amtrak, and private railroads contribute funding to support passenger services in the state. RTD funds commuter and light rail service through local and federal funds with support from state transit funds administered by CDOT. CDOT provides support to commuter, light, and intercity rail through available flexible transit funds, primarily the FASTER program. Amtrak funds station improvements and upgrades to facilities along existing routes. Private railroads, including BNSF and UP, are also partners in upgrades to intercity passenger rail stations, including recent support for station improvements at Winter Park and Trinidad, as well as corridor-sharing agreements with RTD for new rail transit lines. This section summarizes recent investments in passenger rail services and anticipated future needs over a 20-year horizon.

Proposed Passenger Service Improvements

Colorado's proposed future passenger rail services and corridors are largely still under evaluation and require further planning to develop specific planned improvements. Additional state funding, local or regional dedicated funding, federal grants or competitive funding, and funds from P3s will be required to further improve and expand Colorado's passenger rail networks. This section summarizes currently available information on future improvements for commuter and intercity passenger rail.

Commuter Rail Planned and Proposed Improvements

Future services have been identified through long-range planning by RTD and corridor studies supported by CDOT. Only the FasTracks projects and the commuter rail line between the Denver metro area and Fort Collins evaluated under the North I-25 EIS are considered potential short-range projects. Two RTD commuter rail projects, the G and N Lines, are in final testing and approval and under construction, respectively. The G Line was anticipated to open in 2017 and has been delayed to late 2018. The N Line, originally scheduled for 2018, has been delayed to late 2019 or early 2020. The following table summarizes currently identified future commuter rail services and corridors.

Proposed Passenger Service—Commuter Rail Corridors

Project Source	Project Description	Type	Stations	New Park-n-Rides	Project Length
RTD	Gold Line (G Line) - Union Station to Wheat Ridge, passing through northwest Denver, Adams County, and Arvada	Electric Commuter Rail	8	7	11.2 miles
RTD	North Metro (N Line) - Union Station through Denver, Commerce City, Thornton, Northglenn, and eventually to north Adams County	Electric Commuter Rail	7	6	18.5 miles
CDOT	North I-25 EIS – Fort Collins to Longmont, Erie and connecting to RTD North Metro Rail Line at 162nd Avenue and Colorado Boulevard	Diesel Multi-Unit Commuter Rail	8	8	46.0 miles

Source: Regional Transportation District

Recent studies have reached varying conclusions for the North I-25 Commuter Rail corridor. The North I-25 EIS was completed in 2011 during a period when there were expectations that an "Eastern Bypass" for freight rail might be created. The Eastern Bypass offered the possibility of diverting through-trains from the populated areas between Fort Collins and Denver to the eastern plains of Colorado, allowing more track capacity to become available for passenger use. The concept of the Eastern Bypass is no longer supported by CDOT and expectations for future use of freight rail lines along I-25 have changed since studies were initially completed.

RTD's 2014 NAMS concluded that the projected costs to use the BNSF line and its property between Longmont and Boulder were much higher than initially planned. Consultant estimates, in coordination with BNSF (but not committed or guaranteed by BNSF), placed the right-of-way operating rights at $200 million for RTD, or about $5.0 to $6.0 million per mile. NAMS also provided a cost estimate to build connecting track between Longmont and the 162nd Avenue and Colorado Boulevard rail station at $700 to $800 million, assuming CDOT would bear much of the right-of-way cost. CDOT's study estimated approximately $5.0 million per mile ROW costs between south Fort Collins and Longmont, inclusive of both BNSF ROW easement costs and land needed for stations/parking, equaling $100 million total ROW. The same segment from Longmont to 162nd Avenue/Colorado Boulevard was estimated at $421 million due to more single track being assumed than what was in NAMS. The cost for the entire south Fort Collins to 162nd Avenue/Colorado Boulevard connection was estimated at $1.2

billion. The increase in cost from $684 million (2009$) to $1.2 billion (2014$) was attributed to inflation ($135 million) and to the change in scope ($387 million due to new track rather than use of BNSF track, addition of PTC, and changes in alignment due to land development).

Intercity Passenger Rail Planned Improvements

No major future improvements are planned or needed at this time to continue Amtrak's California Zephyr or Winter Park services. Winter Park Express service will continue for the 2018 season after a successful inaugural season in 2017 that exceeded initial ridership estimates. Amtrak may identify additional operating or service partnerships needed to continue to expand this service, but no capital projects are anticipated in the near or long term.

Continued support for track improvements and the potential extension of Amtrak's Southwest Chief route is critical to supporting communities in southeastern Colorado. Several near- and long-term opportunities exist to support this service. In 2017, communities and partners along the Southwest Chief route submitted a grant application under the TIGER IX funding round. Grant funds requested a total of $18.3 million to be matched with $9.3 million in funds from the states of New Mexico, Colorado, and Kansas; local communities and organizations along the route; and financial support from BNSF and Amtrak.

This current TIGER request for the Amtrak Southwest Chief Route Stabilization Project will continue work completed along the route funded by TIGER grant awards in 2014 and 2015. The project will further rehabilitate the right-of-way along the La Junta Subdivision between Hutchinson, Kansas, and Las Animas, Colorado. If awarded, this grant will enable continued improvements to sections of track most in need of repair, including more than 29 miles of track and 24,000 ties. Without this funding and additional track improvements, Amtrak service could face increased delays. However, with improvements, BNSF has committed to maintain the route to FRA Class IV passenger service standards for 20 years. This commitment is of critical importance to the future of the Southwest Chief route and those communities served.

In addition to needed improvements to existing track and services, future capital funds may be needed to expand service to Pueblo and Walsenburg. The Southwest Chief and Front Range Passenger Rail Commission's recommendations will inform the future planning needs and potential capital expenditures to support route extension. Amtrak and BNSF will be key partners in determining track needs and upgrades necessary to connect to Pueblo. While some initial planning is underway, no specific project information has been developed at this time. The following proposed or initially planned projects are under discussion to support Southwest Chief service over the next 20 years.

Proposed or Planned Future Amtrak Intercity Rail Capital Improvement Projects

Year	Project Description	Funding Source	Grant Award
2018	CDOT Matching Funds, TIGER IX	FASTER	$1,000,000
2018	Trinidad Station Platform, Waiting Shelter	FASTER	$300,000
TBD	Southwest Chief Pueblo Service, Track Improvements	TBD	TBD
TBD	Southwest Chief Walsenburg Service, Improvements	TBD	TBD
Source: Colorado Department of Transportation, Division of Transit and Rail			

Front Range Passenger Rail

Colorado's most immediate opportunity to improve and expand rail mobility is advancing Front Range passenger rail. Front Range population and employment are expected to increase dramatically over the coming decades. Passenger rail service provides a critical travel option for the region's multimodal transportation system to take pressure off already congested roadways. Extending from Trinidad to Fort Collins initially, Front Range passenger rail could take many forms in terms of service levels, frequency, stops, alignments, and technology deployed. Existing rail service within the Denver metro area provides critical links for commuters, visitors, and travelers. Economic development organizations, local governments, and private businesses across the region support the concept of rail and cite existing rail as a key factor in Colorado's recent economic growth and competitiveness.

The Colorado General Assembly reestablished the Southwest Chief and Front Range Passenger Rail Commission in 2017 with bipartisan support. The Commission is charged with facilitating the development of passenger rail by presenting recommendations and future actions to address future governance, organization, funding, resources, planning, and visioning elements.

This section summarizes the Commission's recommendations. The priority strategies identified in this Rail Plan and CDOT's continued implementation efforts will support the work of the Commission and the goal of advancing Front Range passenger rail service.

The Mountain West Region

Opportunities for advancing passenger rail have largely focused on Colorado's Front Range, a region stretching from Fort Collins to Trinidad within the state. Colorado's Front Range region is the economic hub and center of the multistate Mountain West region. While relatively small in population today, the Front Range includes some of the nation's fastest growing metropolitan regions with projected population growth rates of 50 to 70 percent by 2040 for most cities within the region. However, the larger Mountain West region from Albuquerque, New Mexico, to Cheyenne, Wyoming, is home to more than 5.5 million residents and a $229 billion economy. This broader region represents future development patterns and expanding economic connections that will continue to bind metropolitan and surrounding areas even across states. These trends will continue to concentrate production of goods and services, as well as distribution and logistics hubs, within major multistate economic regions. Major transportation corridors, cultural opportunities, and economic and commuting connections already link Wyoming, Colorado, and New Mexico.

By 2030, population in Colorado's Front Range is expected to increase 27 percent with the addition of 1.2 million new residents. Total population in 2030 will reach 5.8 million people across 16 counties. By 2030, Colorado's $285 billion regional economy is expected to add 498,000 new jobs for a total of 2.9 million workers and commuters in the region.

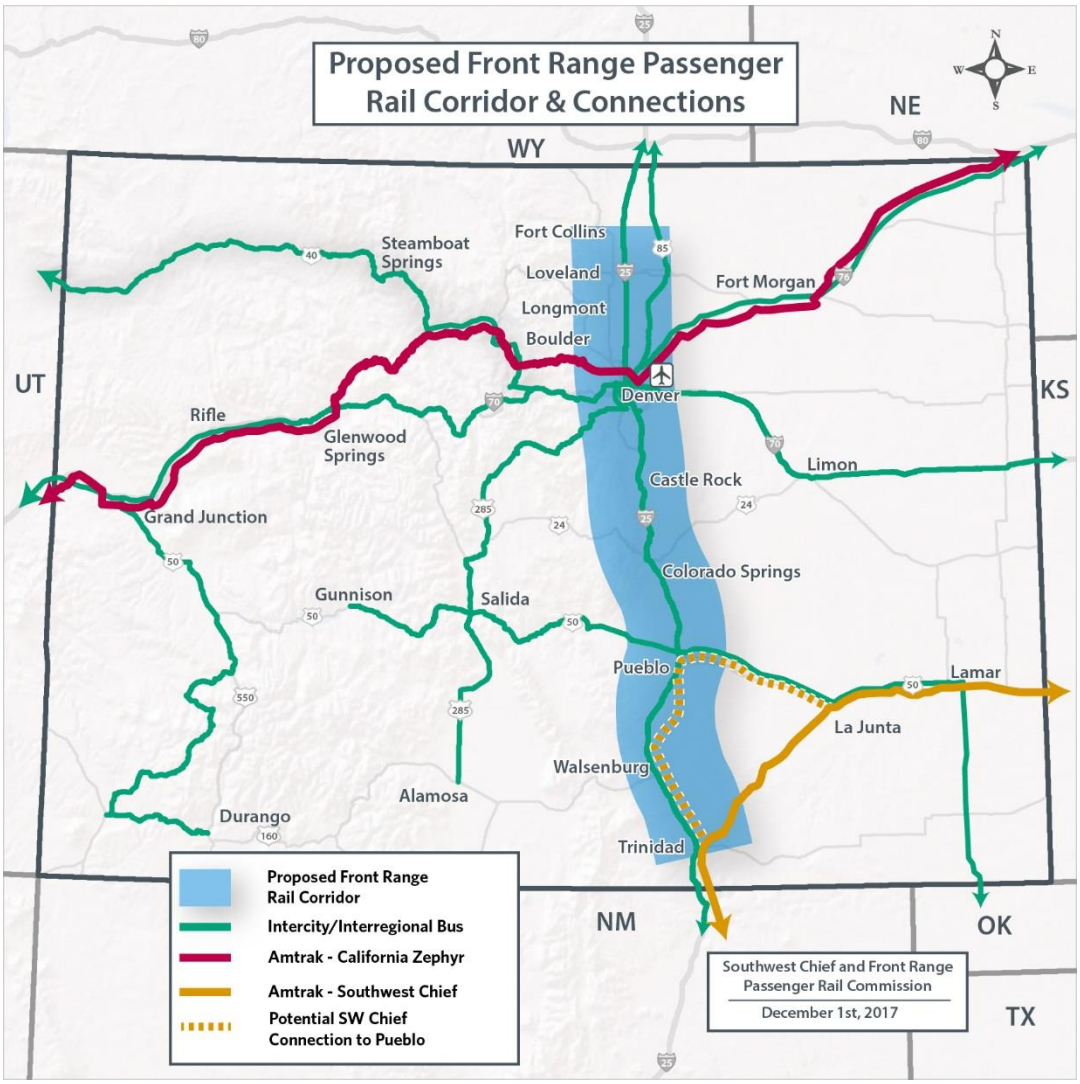
> Today, 82 percent of Colorado's population and 88 percent of the state's economic activity occur in the communities and economic centers of the Front Range.

With current and future growth, travel in and along Colorado's Front Range is increasingly congested and unreliable. Today, three out of four daily commuters travel to work by car as the only passenger. As a result, roads are increasingly congested and the cost of delay and lost productivity to travelers and businesses is rising. Total vehicle miles traveled in the Denver and northern Colorado region is expected to reach 24.6 billion in 2040. In the Denver metro region, continued growth translates into 57 hours of delay per resident each year with nearly one-third of all travel occurring under congested conditions in 2040. While a small percentage of commuters currently use rail transit in the Denver metro area, the ability of passenger rail to accommodate even 10 percent of trips across the Front Range means millions of fewer trips are made on roadways.

Front Range Passenger Rail Service

Colorado's current passenger rail systems include commuter and light rail in the Denver metro area and intercity Amtrak routes, along with the seasonal Winter Park Express "Ski Train." Together these routes carried more than 29 million passenger trips in 2017. Future passenger rail corridors in the state also include the I-70 Mountain Corridor, which has been the subject of advanced guideway studies and plans over the past decades. The Tennessee Pass Freight Rail Line is currently not in service, and some stakeholders have expressed interest in this route as an alternative to I-70 and connections to tourist and resort destinations in the central mountains. But at this time, the line is a UP asset and reserved for future freight use. However, Front Range passenger rail, extending from Trinidad to Fort Collins and possibly beyond, presents the most immediate and feasible passenger rail corridor in the state.

Proposed Front Range Passenger Rail Corridor and Connections, 2017



Source: Southwest Chief and Front Range Passenger Rail Commission

CDOT has supported several studies examining the potential of various passenger rail options, alignments, costs, and service levels along the Front Range. Commuter rail (speeds of 30 to 50 mph), conventional or higher-speed rail (speeds up to 80 mph), and high-speed passenger rail (speeds up to 180 mph) service levels have been considered. Of the potential alignments examined to date, some share existing freight rail or RTD track right-of-way, while other alignments have considered new "greenfield" or interstate-highway alignments. Connections to major hubs, such as Denver International Airport, Denver Union Station, and existing station areas or urban areas along the corridor, have also been studied. No single regionwide preferred alternative or alignment has been developed at this time. The region would benefit from a visioning exercise to identify the most likely future rail scenarios and to chart a path forward. The Southwest Chief and Front Range Passenger Rail Commission will lead a consensus-building effort to develop future scenarios and potential alignments.

Public and business support for Front Range passenger rail is relatively strong and broad across the region. In interviews and surveys of economic development stakeholders conducted for this rail planning effort, several Front Range local governments, businesses, chambers of commerce, and economic development organizations expressed support for rail service. Many have linked the Denver metro area's ability to attract Fortune 500 companies, corporate headquarters, and major employers to the availability of rail and transit options. Many economic development stakeholders also stressed the importance of connectivity to Denver International Airport with employment centers up and down the Front Range to remain globally connected.

ColoRail commissioned a statewide poll in March 2017 of more than 500 recent voters. When asked about expanding public transportation in Colorado, more than 60 percent of respondents preferred expanding commuter rail service compared to commuter bus service. Respondents also indicated favorable support for using a portion of additional transportation spending in the state to support Front Range rail. When asked whether they support or oppose using $50 million annually of a $700 million sales tax increase to build out a passenger rail system, 63 percent of respondents indicated support and 34 percent indicated opposition. The poll was conducted with live-interviewer cell phone and hard line calls and had a margin of error of ±4 percent.

Passenger Rail in the United States

Over the past decades, many metropolitan areas around the country have invested in new commuter rail lines or are exploring high-speed passenger rail. Regional agencies or state authorities generally operate commuter rail. Of the 30 largest commuter rail systems in the country, 11 new systems or lines have opened since 2000 and several more are in planning or construction phases. Utah's Front Runner commuter rail system connecting Ogden, Salt Lake City, and Provo in a 75-mile corridor is an example in a neighboring state. Also, Amtrak operates more than 28 state-supported rail corridors. Section 209 of PRIAA established guidance for state supported corridors. States pay most operating costs and capital maintenance costs for Amtrak equipment to run on these routes. States also benefit from Amtrak's existing dispatching and ticketing services, as well as access rights and capital investments made on these systems. Other models, including P3s, may also be options in the future. In 2018, the Brightline in Florida initiated service as the first privately owned and funded passenger rail operation in the United States in more than a century.

Southwest Chief and Front Range Passenger Rail Commission (SWC&FRPRC)

The SWC&FRPRC is charged with facilitating passenger rail in Colorado, including advancing Front Range rail service and supporting the Southwest Chief service and potential extensions. In late 2017, this group convened a series of meetings and discussions with stakeholders and partners. A set of overarching issues was identified for consideration and that would be addressed through a phased development approach to Front Range passenger rail. Member organizations of the SWC&FRPRC include UP; BNSF; ColoRail; a Passenger Rail Advocate representative, a resident of Huerfano, Las Animas, Otero, or Pueblo counties; the Pueblo Area Council of Governments; the South Central Council of Governments; the Pikes Peak Area Council of Governments; DRCOG; RTD; and the North Front Range MPO. Amtrak and CDOT are non-voting members.

Recommendations to Advance Front Range Passenger Rail

In December 2017, the SWC&FRPRC members produced a series of recommendations, including key issues, tasks, initial costs, and timelines for the Colorado General Assembly. Members identified five key phases for the delivery of Front Range passenger rail:

- Colorado stakeholders and the general public hold different views about what Front Range passenger rail should be and do. As a first step, the SWC&FRPRC recommended conducting comprehensive public and stakeholder engagement along the entire Front Range. **Phase I: Define the Service Vision** will define a mobility vision and a preferred alignment and route, technology, speed, station locations, service levels, and other characteristics. With this foundation, a detailed service plan, including capital and operating costs, can be developed to better estimate the additional funding needed to proceed to implementation.
- **Phase II: Formation of Governing Authority** will focus on determining potential governance structures and forming and approving a funding and/or governance district. Service operators will be identified in this phase and a funding and financing plan prepared. This funding plan will estimate the need for rights-of-way acquisition, capital construction, fleet equipment, and support facilities.
- With regional consensus and a governing authority in place, development of passenger rail service will move into the formal project development process. **Phase III: Federal Project Development Process** will include key activities to complete federal environmental clearance processes, including an EIS along the entire 260-mile corridor. Any other steps necessary to meet federal requirements and state, regional, and local plan coordination will also occur within this phase. Initial design concepts for the corridor will be prepared, including a staged development plan.
- **Phase IV: Final Design & Construction** will focus on final design, construction, and initial operating activities along the 260-mile corridor. Front Range rail is a transformational megaproject and the scope, scale, and impact of this project is reflected by the magnitude of funding needs. Construction cost estimates developed by the SWC&FRPRC are preliminary and do not include ongoing operating and maintenance costs. These operating costs could range from $100 to $500 million per year. Construction and capital costs depend on the service, routes, and technology available but are estimated to range from $27 million per mile (for single track, conventional speed [less than 80 mph top speed], diesel trains, and all-day service) to $80 million per mile (for mostly double track, high speed [up to 180 mph], electric trains, and all-day service).
- **Phase V: Ribbon Cutting** will see Front Range passenger rail become a reality in Colorado. Passenger rail will serve the estimated $285 billion regional economy and 2.9 million workers and commuters along the corridor in 2030/2035.

The following schedule chart was submitted to the General Assembly by the SWC&FRPRC to illustrate the timing and magnitude of estimated costs for each of the Front Range Passenger rail planning phases identified.

Phased Development Timeline and Estimated Funding Needs

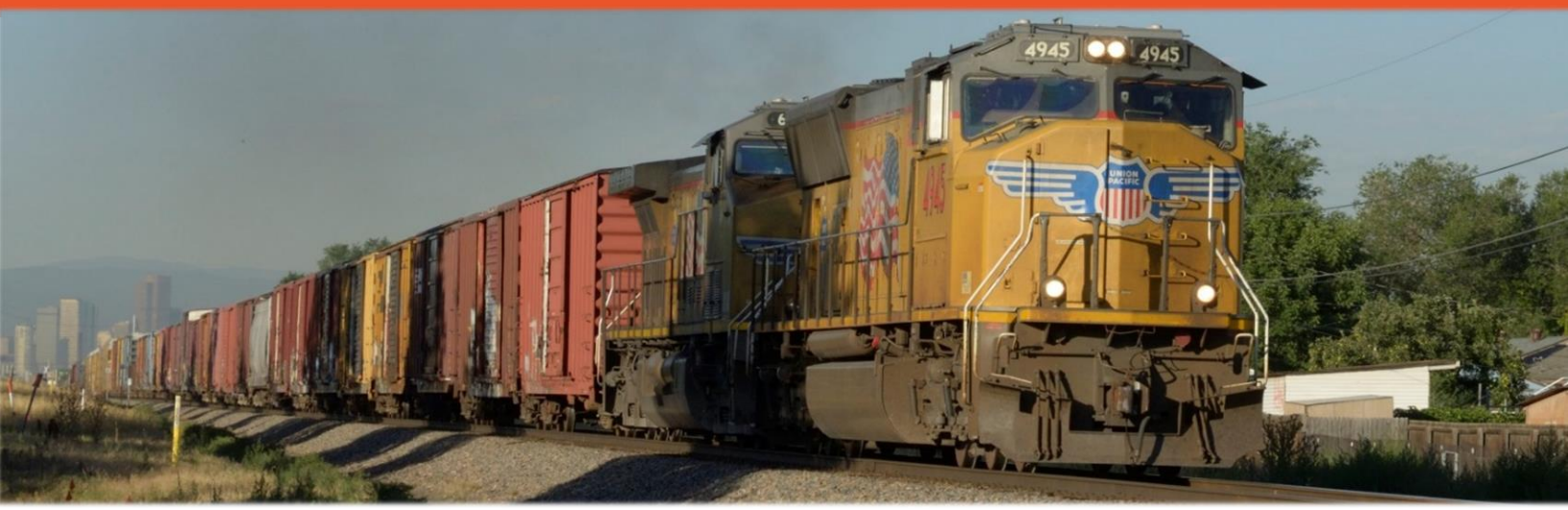
Phase	Timeline - Years from Start															Estimated Cost
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Service Vision																$8.7 M
Governing Authority																$500,000
Development Process																$150 M - $300 M
Final Construction																$TBD
Ribbon Cutting																

Source: Southwest Chief and Front Range Passenger Rail Commission, Report to the Legislature, 2017

Next Steps

Cost estimates and specific improvement projects and investment needs for the entire Front Range passenger rail corridor from Fort Collins to Trinidad have not been fully developed. The 2017 ICS Interoperability Report identified initial capital costs for various alignments and service alternatives for a portion of the entire corridor. Capital costs for the alternatives evaluated in this study ranged from $9.8 billion to $11.5 billion.

For the 2018 legislative session, the SWC&FRPRC estimated initial needs to complete Phase I at $8.7 million over three years ($2.9 million per year). A formal request for funding was made to the General Assembly. This estimate includes staff support for ongoing activities, development of a public engagement and service development plan, and staff and consultant services. The SWC&FRPRC also identified an immediate need to hire an executive director or project manager and support staff or services. The funding request to the General Assembly was awarded in 2018 with an initial budget of $2.5 million to initiate service planning, including visioning and stakeholder engagement.



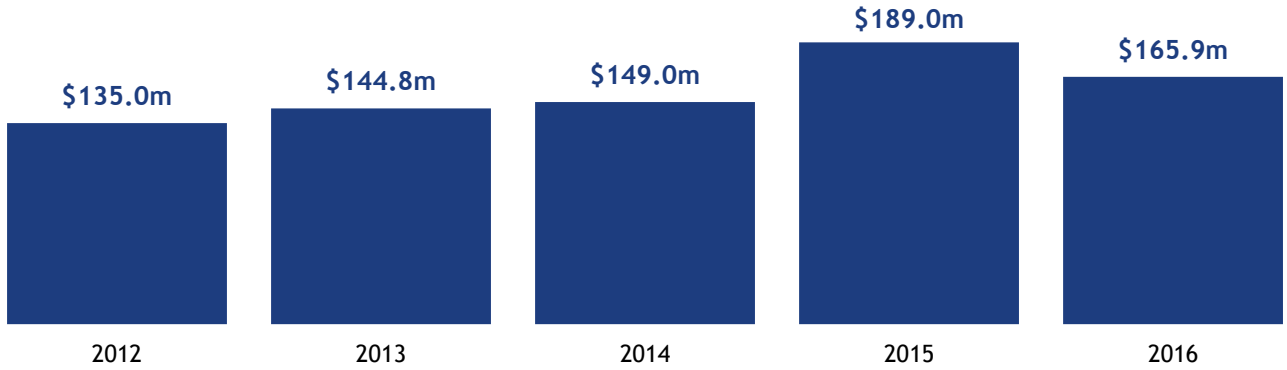
CHAPTER 4 – PROPOSED FREIGHT RAIL IMPROVEMENTS AND INVESTMENTS

Chapter 4 summarizes past investments and improvements by freight rail operators and currently known and anticipated future projects over a 20-year horizon. Information on planned improvements and investments from rail operators, including BNSF, UP, and short line railroads, was requested but was not available. This Rail Plan does not fully capture past and planned freight rail investments. Freight railroads anticipate continuing to invest in maintenance and limited capacity expansion in Colorado over the next 20 years.

4.1 PREVIOUSLY COMPLETED RAIL IMPROVEMENTS

Together, BNSF and UP have invested more than $783.7 million in maintaining and improving rail infrastructure in Colorado between 2012 and 2016.

Class I Railroad Capital Expenditures in Colorado, 2012-2016



Source: Published investment data from BNSF Railway and Union Pacific Railroad

These capital expenditures include track maintenance and repairs, facility upgrades, bridge maintenance, signal upgrades to enable PTC technologies, and other critical improvements. Compared with other major industries in the United States, private railroads invest a significant percentage of revenues to maintain and add capacity to

rail systems. Most investment is dedicated to state of good repair and maintenance improvements, while an average of 15 to 20 percent of capital expenditures are used to enhance capacity.

The projects listed in the following table are provided as examples of previously completed capital expenditure projects by Class I railroads. Private railroads anticipate making similar investments in both type and general level of investment in Colorado in the future. Investment in Colorado's rail systems provides direct economic benefits to the state economy and to regional economies in terms of direct wages, in-state procurement (e.g., ballast, ties, or rail) and contracted services.

Previously Completed Class I Railroad Capital Improvement Projects, 2012-2016

Railroad	Year	Project Description	Estimated Cost
BNSF	2016	Maintenance - 860 miles of track surfacing/undercutting, replacement of 15 miles of rail and 115,000 ties, signal upgrades for PTC, etc.	$95,000,000
BNSF	2015	Siding extensions in Brush, Barr, Keenesburg, and Wiggins. New siding west of Commerce City and track extension in Denver and Sterling terminals. 580 miles of track surfacing and 16 miles of track replacement. Signal upgrades.	$148,000,000
BNSF	2014	Expansion improvements and replacement of track (rail, tie, surfacing) and infrastructure, such as signals and bridges.	$58,000,000
BNSF	2013	Expansion improvements and replacement of track (rail, tie, surfacing) and infrastructure, such as signals and bridges.	$67,000,000
BNSF	2012	Construction of new maintenance of way facility. Signal upgrades to support Positive Train Control systems. 325 miles of track surfacing and 50 miles of track replacement.	$80,000,000
UP	2016	36 miles of track replacement between Greeley and Windsor. Improvements to the line between Castle Rock and Palmer Lake and the track between Pueblo and Trinidad.	$70,900,000
UP	2015	Improvements to the line between Dotsero and near Palisade, including surface renewal at 40 road crossings.	$41,000,000
UP	2014	Improvements to the line between Sterling and Messex. 18 miles of track replacement. Installation of switches and surface renewal at 43 road crossings.	$91,000,000
UP	2013	Improvements to the line between Boyero and Limon. Replacement of 31 miles of rail, switch installation, and surface renewal at 21 road crossings.	$77,800,000
UP	2012	Improvements to the line in Grand Junction, including track stabilization along the Colorado River.	$57,000,000
Sources: BNSF and UP publications			

Detailed information on past capital expenditures and improvements made by short line railroads in Colorado was not available for inclusion in this Rail Plan.

4.2 PROPOSED FREIGHT RAIL IMPROVEMENTS

A high-priority strategy of this Rail Plan is to inventory and assess short line rail needs in Colorado and to explore the creation of a freight rail assistance program.

Private railroads invest significantly in Colorado's rail infrastructure. On average, over the past five years, BNSF and UP have invested approximately $131 million per year in the state. While detailed information on future freight rail improvements was not available from Class I railroads, rail operators are likely to continue to maintain and improve rail track, infrastructure, facilities, and other assets to meet future demand in Colorado.

Specific future rail improvements planned over the next 20 years by short line railroads were not available and are not included in this Rail Plan. Short line railroads operate on relatively small profit margins and reinvest significant amounts of revenue back into maintenance and improvements of rail lines and facilities. Among the short line railroads and holding companies of railroads operating in the state, total operating expenses represented approximately 81 percent of operating revenue, on average. Short line railroads face significant future investments needs and may require public support to upgrade track and infrastructure to safe and modern standards.

Railroads, businesses, or local governments in industrial development areas and economic development zones may identify additional future freight rail needs for new sidings, spurs, facilities, and other capacity expansions. Real estate and industrial development sections of Class I and short line railroads coordinate these needs. For example, BNSF is currently working with local partners to expand and develop the Hudson Logistics Center as a rail-served industrial development in Hudson, Colorado. Industrial development, sidings, and spurs will be built out to accommodate future tenants. Roadway and bridge improvements adjacent to the site and along I-76 and County Road 49 may be necessary to accommodate this growth and allow safe movements of trucks to and from the site.

4.3 RAIL CORRIDOR PRESERVATION NEEDS

In June 2000, the Colorado Transportation Commission first approved a Rail Corridor Preservation Policy, also known as Policy Directive 1607. Based on this Policy Directive, CDOT identified two State Significant Rail Corridors for preservation: the Tennessee Pass Line and the Fort Collins Branch Line. These corridors are noted in an annual report by CDOT to the Transportation Legislative Review Committee. No specific projects are identified and no funds are currently allocated for the preservation of either the Tennessee Pass Line or the Fort Collins Branch Line. The State of Colorado has not currently dedicated funds to acquire portions of Burnham Yard to preserve the potential of this asset. CDOT will continue to monitor activities related to rail corridors and rail assets for the foreseeable future.

4.4 FREIGHT RAIL ASSISTANCE PROGRAM

Upgrading and expanding rail infrastructure is costly. Most improvements to rail-owned infrastructure are entirely privately funded. Together, BNSF and UP have invested more than $783.7 million in maintaining and improving rail infrastructure in Colorado between 2012 and 2016. However, for Class I and short line railroads, maintenance and improvement costs represent significant expenditures.

Total investment needs of short line railroads are estimated in the hundreds of millions of dollars nationally, and railroads in Colorado have significant project needs to repair and modernize assets. Many rail improvements needed to attract or retain businesses or to develop industrial sites into economic hubs need more "seed" funding

and/or low-interest financing to make them happen. Once new sidings, new spurs, or track upgrade projects are completed, the new businesses can produce revenues to pay back the initial investment.

4.4.1 Freight Rail Investment Needs

Short line railroads provide critical connections to Class I railroads for Colorado producers and businesses, particularly in regions dependent on agriculture and natural resource industries. The investment needs of these railroads are challenging for operators to fund with current revenues because operating expenses for many railroads are relatively high. Currently, significant investments need to be made to upgrade track to handle 286k lb. rail cars and to upgrade track, bridges, assets, and equipment.

Relatively little research or peer state comparison data is available on short line or freight rail investment needs. In 2013, FRA estimated that nationally regional and short line railroad need at least $6.9 billion in investment to maintain, modernize, and expand capacity. A 2015 study by the Washington DOT estimated that more than 740 miles (55 percent) of all short line track miles in the state of Washington were not equipped to handle modern rail car weights. Estimates suggest that more than $610 million would be needed in infrastructure investments to upgrade rail track and bridges in Washington State. More than half of this total need is for track replacement to upgrade older track to modern 286k lb. capacity, at an estimated cost of $90 per track foot.

Further research is needed to fully understand the scope of Colorado's freight rail investment needs. With many short line operations running on track first built in the 19th century, the scope and scale of investment needed are likely significant.

4.4.2 Rail Assistance Programs

In nearly every state with a significant number of short line railroads, a public assistance program is available to reduce the cost of making necessary upgrades or expanding access to businesses.

These public assistance programs cover maintenance and upgrades to existing assets. These programs also cover new improvements to expand capacity and access, including new transloads, business sidings or spurs, team tracks, acquisitions, connections with Class I's, and tie in to industrial parks. Assistance programs provide low-interest loans, competitive grants, or tax incentives to defray the cost of upgrades to railroads, businesses, and local governments. The previous Rail Plan identified the development of a rail assistance program as a need and it remains a critical priority for stakeholders.

There are several rail assistance programs across the United States, and Colorado is one of the few states with significant short line rail activity without a funded assistance program. Many of these programs provide grants or subsidized low-interest loans or a combination of both. Funding is available to both public and private sector partners, including privately owned railroads, economic development districts, and local governments. Many programs also include specific economic development goals or are jointly managed with state economic development agencies. A few notable examples from around the country include:

- **The New York State Passenger and Freight Rail Assistance Program** is a multi-year freight and passenger rail funding program passed by the New York State Legislature. Funds are appropriated from general state revenues annually and are available to fund freight and passenger capital improvements. New York also provides an economic development oriented Industrial Access Program. This program is a combination 60 percent grant and 40 percent loan program, up to a maximum of $1 million available for rail improvements.

- **The State of Washington Freight Rail Investment Bank** provides a loan program to support freight rail capital needs. The Freight Rail Investment Bank program is a loan program available to public sector partners. Loans of up to $250,000 are available to fund track expansions. Another program, the Freight Rail Assistance Program, provides grants to both public and private sector partners, including local governments, economic development councils, and privately or publicly owned railroads.
- **The Pennsylvania Rail Freight Assistance Program** provides financial assistance for investment in rail freight infrastructure to support economic development through new or expanded rail freight service. Maximum state funding for a Rail Freight Assistance Program project is 70 percent of the total project cost, not to exceed $700,000. The state's Rail Transportation Assistance Program provides a 70 percent cost share for major projects and requires approval by the Pennsylvania State Legislature. Funds are available to public and private entities to cover maintenance and expansion needs.
- **The Iowa Railroad Revolving Loan and Grant Program** provides assistance to improve rail facilities that support economic development and job growth and provides assistance to railroads for the preservation and improvement of the railroad system. Both grants and low-interest loans are available and are awarded based on competitive applications. Grants are also available to local communities to conduct planning studies for rail development that support industrial and business development.

The State of Colorado provides funding programs and P3 authority to advance transportation investments. CDOT's HPTE was established to facilitate P3s and has helped generate significant private investment in managed lanes and corridors in the state. HPTE has the authority to advance any surface transportation projects, including highways, bridges, and other infrastructure, facility, or equipment used primarily or in large part to transport people. The COSIB is a revolving fund that provides loans to finance public transportation projects. The proposed project must ultimately have revenue sources available to it to repay the loan. Without dedicated revenues, rail projects are not typically successful under the COSIB program.

CDOT remains committed to advancing this key opportunity to design, develop, and implement a rail assistance program to support economic development opportunities and benefit Colorado communities and businesses. Action steps to complete this objective are included in the high priority strategy sections of this Rail Plan and will be further detailed in implementation efforts.

4.4.3 Federal Railroad Rehabilitation and Improvement Financing

The Railroad Rehabilitation and Improvement Financing program was established by the Transportation Equity Act for the 21st Century and amended by the Safe Accountable, Flexible and Efficient Transportation Equity Act: a Legacy for Users. Under this program, the FRA Administrator is authorized to provide direct loans and loan guarantees up to $35 billion to finance the development of railroad infrastructure. Not less than $7 billion is reserved for projects benefiting freight railroads other than Class I carriers (that is, regional railroads and short line railroads).

The funding may be used to: Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, track components, bridges, yards, buildings, and shops; Refinance outstanding debt incurred for the purposes listed above; and Develop or establish new intermodal or railroad facilities. Direct loans can fund up to 100 percent of a railroad project with repayment periods of up to 35 years and interest rates equal to the cost of borrowing to the government. Eligible borrowers include railroads, state and local governments, government-sponsored authorities and corporations, joint ventures that include at least one railroad, and limited option freight shippers who intend to construct a new rail connection. To date, only about $1 billion of the reserved $7 billion has been loaned to regional and short line railroads.

CHAPTER 5 – RAIL SERVICE AND INVESTMENT PROGRAM

Chapter 5 describes Colorado's long-term aspirational vision for the future of freight and passenger rail in Colorado. Dedicated and recurring state funding is not currently dedicated to help address future freight or passenger rail needs documented in this Rail Plan. In 2018, the State Legislature directed $2.5 million to the SWC&FRPRC to begin initial service planning. However, to achieve Colorado's freight and passenger rail vision, continued investment and additional federal, state, local, or private funding sources must be identified and existing resources redirected to address these needs.

To achieve this vision, a series of high-priority objectives and implementation strategies are identified. Action on these key priorities will advance Colorado's rail vision and support progress toward fully integrating freight and passenger rail into the state's multimodal transportation system. This chapter documents Colorado's Rail Service and Investment Program (RSIP) by summarizing future freight and passenger rail needs, as described in Chapters 3 and 4, and lists short and long-term potential improvements.

Potential strategic investments are described as currently envisioned and based on currently available information. These projects are described for major state rail corridors, and are subject to refinement based on future implementation, partnership, and funding opportunities. Cost estimates and timing are provided as currently known. These investments are linked to the goals and objectives of this Rail Plan and correlated to likely program effects and benefits. This chapter also lists proposed studies and other recommendations needed to implement this plan. This chapter fulfills FRA requirements for state rail plans.

5.1 VISION

This Rail Plan establishes an ambitious vision for the future of rail in Colorado. Stakeholders and partners involved in the Rail Plan Working Group developed this shared vision, with consultation from key planning partners and CDOT committees. Colorado's rail vision is to ensure that freight and passenger rail systems are a critical component of the state's multimodal transportation system that enhance mobility and advance economic vitality for all Coloradans. This statement reflects the importance of maintaining and expanding the role of rail in transporting both people and products and focuses on providing mobility, connectivity, and economic opportunity for workers and industries across the state.

To support this vision, the Rail Plan Working Group established goal statements that align with Colorado's SWP, CFP, Statewide Transit Plan, and the guiding principles of DTR. Together, Colorado's vision, goals, high-priority

objectives, and key implementation strategies provide the strategic direction for evaluating future opportunities, acting on recommendations, pursuing improvements and investments, and aligning future decision-making. This strategic framework will guide future implementation activities and planning efforts, not only for CDOT but also for public and private rail partners and stakeholders across the state. The following section provides an overview of Colorado's rail goals, high-priority objectives, and implementation strategies.

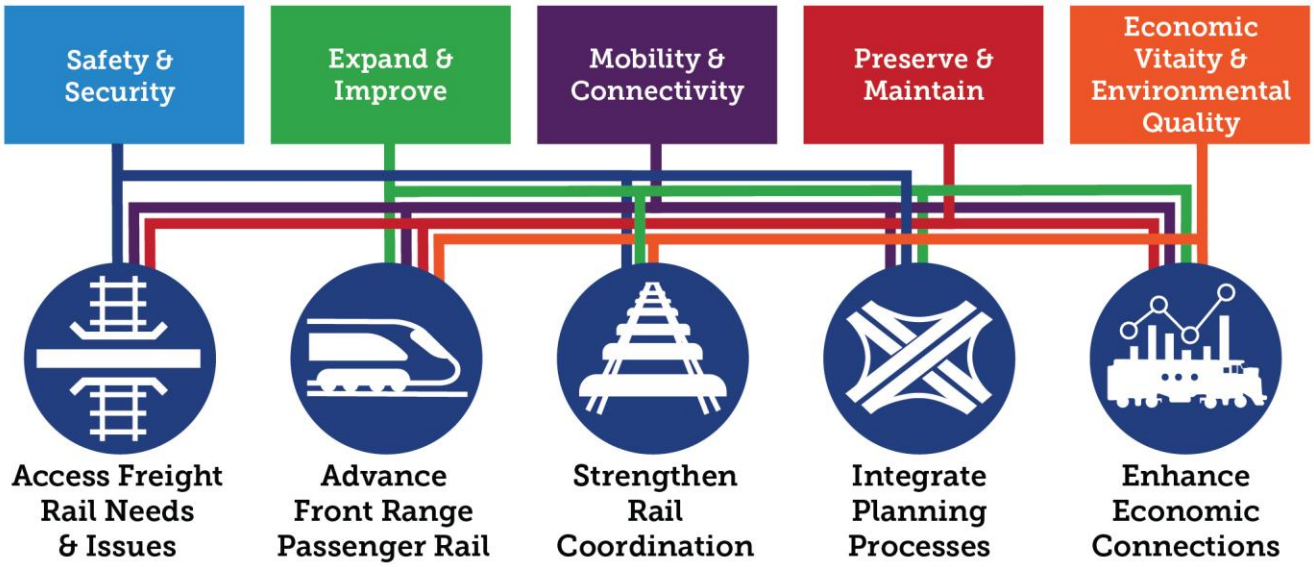
5.1.1 Priority Objectives and Implementation Strategies

This Rail Plan provides strategic direction to CDOT and partners on priority actions that support national and state goals and that will significantly advance Colorado's future rail vision. These objectives are intended to equip CDOT, railroads, rail-reliant businesses, and regional and local planning partners to be responsive and agile in responding to and moving forward on statewide needs.

The Rail Plan Working Group consists of stakeholders from railroads, transit providers, industry associations, universities, advocacy agencies, private businesses, regional organizations, and local governments. These partners are the direct operators, users, and beneficiaries of Colorado's rail systems. Strategic planning efforts by railroads and private sector partners are typically developed quickly and regularly updated to reflect changing market conditions, to adapt to new business needs, and to address emerging challenges and opportunities. At the direction of the Rail Plan Working Group, this Rail Plan was similarly designed to focus on a select number of high-priority objectives and implementation strategies.

These objectives are the focus of implementation efforts over the near term. CDOT DTR, with critical support from partners, will direct implementation by acting as a convener, a facilitator, a researcher, a leader, and an advocate. Support from planning and business partners will be necessary to move forward. These partners are instrumental in forming connections, providing resources, developing information, and acting as champions for rail in Colorado. Action on these priorities will help achieve Colorado's vision to support freight and passenger rail systems as critical components of the state's multimodal transportation system. Each of the five priority objectives identified in this Rail Plan supports shared statewide goals and is linked to multiple rail plan goal areas, as shown in the graphic below.

Colorado State Freight and Passenger Rail Plan Goal Area and Priority Strategies Linkages



Advance Front Range Passenger Rail

Why is this important?

Colorado's population will grow to more than 6.9 million by 2030. Over that time, 80 percent of all new residents—or 1.2 million people—will reside along the Front Range. Colorado's Front Range stretches from Fort Collins to Trinidad and includes the state's largest employment centers and most congested highway corridors. More than 1.9 million workers are employed along the Front Range, and more than 76 percent commute alone by vehicle, often traveling more than 10 miles to get to work. In addition, during 2016, visitors made 45 million day trips to and within the state, and tourists and business travelers made more than 37 million overnight trips. Transportation spending is the second largest expenditure by visitors. Colorado's highway corridors and transit routes are increasingly congested and are not equipped to handle forecasted future growth in traffic and business and visitor travel. Passenger rail service along the Front Range has been a key part of transportation planning conversations for decades and is generally supported by businesses, economic development organizations, local officials, and transportation planners along the corridor. As the Front Range continues to grow, demand for moving business travelers, daily commuters, and visitors from around the globe will only intensify. Maintaining mobility for the Front Range will be a challenge.

What are we doing?

The Southwest Chief and Front Range Passenger Rail Commission was established in 2017 with the purpose of developing draft legislation to facilitate the development of Front Range passenger rail. This group is charged with facilitating the development of passenger rail in Colorado, including continuing Amtrak Southwest Chief route stabilization, expanding Southwest Chief service to Pueblo, exploring the benefits of service to Walsenburg, and supporting Front Range passenger rail service from Fort Collins to Trinidad. The Southwest Chief and Front Range Passenger Rail Commission has the authority to receive and expend funds and will develop recommendations and implementation actions to advance passenger rail service preservation and expansion. Future efforts of this group will focus on identifying necessary public outreach, technical analysis, funding sources, and operating and governance structures to support Front Range passenger rail. CDOT will support these efforts by providing staff, resources, technical input, coordination, and partnerships, as appropriate.

How will we proceed?

- Support the Southwest Chief and Front Range Passenger Rail Commission to advance passenger rail improvements and expansions—including Southwest Chief service to Pueblo and exploration of a Front Range passenger rail Tier 1 EIS or Service Development Plan—aligned with Commission findings and direction.
- Integrate findings of previous passenger and relevant freight rail studies to identify consensus potential future Front Range passenger rail corridors and alignments. Share findings with regional and local planning partners to better integrate planning efforts and avoid preclusion of future use.
- Study and document future capacity considerations and constraints on likely passenger rail corridors to determine the implementation timeframe and to support ongoing coordination with local planning partners.
- Develop and update the priority list of mobility, connectivity, and accessibility improvements needed to improve existing passenger rail service and/or support future passenger rail service. Integrate identified projects into CDOT decision-making and project selection processes (for example, 10 Year Development Program, FASTER statewide funds, etc.).

Strengthen Rail Coordination

Why is this important?

Until relatively recently, CDOT did not have dedicated staff resources or committee structures to effectively engage with public and private rail operators on a regular basis. CDOT's DTR was established in 2009, the TRAC was formed in 2011, the state's first modern rail plan was completed in 2012, and the FAC was reconstituted in 2015. Consultation among CDOT and rail partners was too often reactive, irregular, and focused on immediate needs, rather than on longer term strategic opportunities. Developing ongoing relationships and communications among CDOT, Class I railroads, short line railroads, scenic rail operators, and state and national public rail agencies is key to strengthening rail coordination on a wide range of issues.

What are we doing?

This priority strategy focuses on key actions to establish and maintain regular consultation processes between CDOT and rail operators and to leverage this coordination to identify opportunities for partnerships and joint efforts that address infrastructure, planning, safety, and security needs. Partnerships among state, regional, and local agencies and rail operators have recently resulted in restoring the Winter Park Express "Ski Train" route; successfully competing for federal grants to preserve Amtrak's Southwest Chief service; implementing rail improvements along the US 85 corridor; and expanding the responsibilities of the SWC&FRPRC. Through the development of this Rail Plan, additional opportunities to collaborate with freight and scenic railroads, Amtrak, and industry partners have been identified.

CDOT's DTR and DTD will continue to develop and implement coordination and communication processes with all freight and passenger rail operators in the state, by leveraging existing relationships and committees, including the FAC. Continual planning and ongoing coordination will help advance priority strategies and actions; identify improvement and investment needs early in project scoping processes; explore joint funding and grant opportunities; support programs addressing safety and security issues; and continue to develop partnerships for the future.

How will we proceed?

- Continue to develop CDOT's partnership with public and private rail operators by establishing a regular and recurring consultation process. Consultation will include annual meetings between CDOT and rail operators to identify issues, discuss coordination opportunities, and align improvements and initiatives.
- Support private railroads through technical assistance and other active efforts to ensure the full implementation of PTC or additional safety technologies across the state.
- Coordinate with the Colorado PUC, railroads, and local planning partners to identify and fund crossing improvement needs not eligible for Section 130 funding.
- Continue support and participation of CDOT and local governments in joint public-private task forces, working groups, councils, committees or initiatives that improve the safety and security of railroad lines, infrastructure, and assets.

Integrate Planning Processes

Why is this important?

At the state level, freight and passenger rail is a key consideration in the SWP and state modal plans such as the Statewide Transit Plan and Colorado Freight Plan. State priorities, needs, and alignments for passenger rail have also been developed in several recent plans and studies, including the ICS and corridor level planning and environmental linkage studies. The issues, needs, and priorities identified at the state level are intended to inform regional and local decision-making from planning and project selection through design, engineering, and construction. However, statewide rail priorities may not always be effectively integrated into regional and local plans. Rail issues can still be better incorporated into internal CDOT decision processes. When integration is not effective, new facilities such as overpasses or station areas may not be built to accommodate future rail service; new developments or land use plans might create unintended conflicts with existing freight-oriented industrial areas or rail and intermodal yards; and local planning efforts may not consider critical statewide rail corridors or the strategic plans and long-term needs of private railroads or economic development organization.

What are we doing?

CDOT continues to work to integrate planning processes and to address freight considerations in the SWP, Regional Transportation Plans, and through regional and local planning partnerships. Fully integrating freight and passenger rail considerations into CDOT's planning processes and supporting rail planning within regional and local processes will help ensure that transportation decisions are made with full information and that all partners are working together to achieve Colorado's rail vision. For transportation planning processes within CDOT, new guidelines and process improvements can readily integrate rail needs and opportunities into plans and designs. For regional and local processes, information on best practices and communication of statewide priorities can help ensure that common solutions are considered, including rail corridor preservation strategies. It is critical that state, regional, and local partners work together and align efforts so that development or decisions made now do no harm to existing rail infrastructure or future rail corridors.

How will we proceed?

- Consider guidelines, principles, or policy directives that effectively integrate freight and passenger rail issues and future mobility needs into CDOT planning and program development processes that affect future rail corridors, including PELs, corridor studies, minimum design standards, and other CDOT planning, development, and project selection processes.
- Develop a program for freight-focused academies, workshops, or summits to educate local and regional planning partners and engineering region staff on rail industry activities and needs. This program can improve the identification of multimodal freight and rail projects and connect businesses to CDOT engineering region staff.
- Establish a process (e.g., speaker's bureau) to share information with local planning partners and the public on the development and outcome of freight and passenger rail studies to better align future decisions, including land use, zoning, and development.
- Craft information, policies, or guidelines to better align local decision-making and statewide rail priorities, including preserving, improving, and enhancing freight and passenger rail current capacity and future right-of-way; developing TOD supportive land uses, minimizing development conflicts; and improving safety.

Enhance Economic Connections

Why is this important?

Rail moves Colorado's economy. Freight rail delivers critical materials and products for businesses, while passenger rail connects workers to jobs and brings visitors to communities across the state. To some extent, every business, commuter, resident, and visitor in Colorado depends on the transportation system to move people, products, packages, inventory, supplies, or final goods. Businesses in industries such as agriculture, natural resources, construction, retail, and trade and logistics rely on freight transportation as a core daily business function.

Transportation, including rail access, is also a key factor in the economic development decisions of communities and the relocation and expansion decisions of private businesses. Investments in rail improvements that expand access, provide new connections, or improve service to businesses can have major impacts on business decisions and the competitiveness of Colorado's regional economies. While economic vitality is a critical goal for CDOT, economic development opportunities and impacts can be more fully integrated into transportation planning and decision processes so that they are considered consistently across regions and projects.

What are we doing?

Establishing communication and coordination among local and regional transportation planners, economic developers, and railroads is key to understanding and responding to the needs of local businesses. Several communities could better market their areas and attract employers with rail-served industrial sites or with improved road and rail access to redevelopment sites, including former rail infrastructure. Local and regional transportation plans do not always consider these types of projects and needs. Formalizing communication channels will help identify projects related to economic development, freight, or rail earlier in planning processes and foster ongoing dialogue. As CDOT shifts toward a performance-based planning process and data-driven decision-making, understanding how to incorporate economic factors into decisions will also be critical. Freight data, including exports, commodity flows, and rail movements are increasingly available and provide a robust data source to inform local and regional planning efforts.

How will we proceed?

- Develop ongoing coordination processes and communication channels with state, regional, and local economic development organizations and planning partners, as well as with businesses and freight railroads, to assess needed multimodal freight improvements to existing and future economic or industrial development zones, with a focus on the needs of rail-served sites or improved rail access.
- Support state and regional economic development and education partners in evaluating and responding to freight and logistics workforce needs and labor supply. Consider supporting programs, in partnership with other agencies and businesses, to address regional workforce needs.
- Quantify regional trade relationships and commodity flows and apply findings to customize transportation plans and to implement strategic regional multimodal freight projects, programs, or policies.
- Develop a statewide export, manufacturing, and trade and logistics transportation strategy to support an increase in outbound shipments.

Address Freight Rail Needs and Issues

Why is this important?

Upgrading and expanding rail infrastructure is costly. Most improvements to rail-owned infrastructure are entirely privately funded. However, for short line railroads, maintenance and improvement costs represent significant expenditures. The investment needs of short line railroads are estimated in the hundreds of millions nationally and railroads in Colorado have significant project needs to repair and modernize assets. Additionally, private railroads cannot solely fund rail improvements or investments needed to attract or retain businesses or to develop industrial sites into economic hubs. Local governments or economic development organizations may require public loans or grants to bring new sidings or spurs into economic redevelopment zones or to preserve key rail infrastructure and assets from abandonment.

What are we doing?

In nearly every state with a significant number of short line railroads, a public assistance program is available to reduce the cost of making necessary upgrades or expanding access to businesses. These programs cover maintenance and upgrades to existing assets, as well as new improvements to expand capacity and access, including new transloads, business sidings or spurs, team tracks, acquisitions, connections with Class I's, and tie in to industrial parks. Assistance programs provide low interest loans, competitive grants, or tax incentives to defray the cost of upgrades to railroads, businesses, and local governments. Developing a rail assistance program in Colorado was identified as a need in the previous state rail plan and remains a critical priority of stakeholders.

Funding for rail improvements is limited in Colorado, and there is a need to identify additional existing and potential resources to maintain and improve rail infrastructure. A key strategy within this Rail Plan and the CFP is to better identify and integrate freight-specific projects into current planning, programming, and project selection processes. Considering rail-related projects for funding, including highway connections to rail-served industrial sites or intermodal facilities, is critical. Coordinating resources among state, regional, and local agencies, as well as railroads and economic development organizations, can leverage limited funding to move forward on needed investments.

How will we proceed?

- Develop an inventory of short line rail service constraints (condition, track weight, speed, physical, etc.) and estimate the value of needed improvements.
- Design and develop a freight railroad assistance program (e.g., loans, grants, investment tax credits, or a hybrid program) to fund critical capacity and connectivity needs, track and infrastructure upgrades, and other improvements with a focus on short line railroads.
- Continue coordination with Class I railroads to identify planned or needed improvements and coordinate with engineering regions and local planning partners.
- Identify potential projects that address rail-related infrastructure constraints or rail access and connectivity improvements. Consider and prioritize improvements within CDOT's existing freight project selection processes or regional planning process. Identify and apply available funding sources to rail projects.
- Expand the SB-37 abandonment reporting process to identify additional rail-related infrastructure, land, or assets at risk and coordinate with partners to avoid precluding future or alternative uses.

Implementation Action Plan

For each priority objective identified through this planning effort, Rail Plan Working Group members identified critical next steps, potential partners, and implementation pathways, and prioritized the timing of action steps. The action plan presented in this section summarizes future implementation efforts. CDOT will continue to refine and update these strategies in consultation with rail operators, industry partners, regional and local planning partners, and in coordination with FAC, TRAC, and STAC. Identified actions will help establish the connections, networks, and partnerships necessary to coordinate efforts, to identify rail improvement needs earlier in planning processes, and to generate momentum and establish the business case for investing in rail.

Colorado's Rail Plan focuses on actionable steps to raise the profile of freight and passenger rail issues across the state and to better integrate and coordinate activities at the state, regional, and local levels.

The following action plans for each priority objective will be further refined in implementation planning efforts. Timing indicates the first year in which an action of this Rail Plan can reasonably be initiated. Many actions are continuing and will be supported beyond the planning horizon of this Rail Plan. CDOT's likely role is identified, though every action will require commitment and coordination with many partners. Next steps include key strategies, actions, studies, or resources needed to move forward.

Advance Front Range Passenger Rail

Action Step	Timing	CDOT Role	Potential Partners	Next Steps
Support the Southwest Chief and Front Range Passenger Rail Commission	2018-2019	Support	▪ SWC&FRPRC Member Organizations ColoRail and Advocacy organizations	▪ Support identified needs and actions of the SWC&FRPRC ▪ Support funding of the SWC&FRPRC work, including in-kind staff resources
Integrate findings of relevant studies to identify consensus potential future Front Range passenger rail alignments	2019	Lead or Support	▪ Rail Operators ▪ MPOs and TPRs ▪ Local Governments	▪ Leverage ongoing planning processes to identify future rail corridors ▪ Provide staff and/or consultant support
Document future capacity considerations and constraints on potential passenger rail corridors	2020	Lead	▪ Colorado Rail Operators ▪ RTD and Transfort ▪ MPOs and TPRs ▪ Local Governments	▪ Coordinate with rail operators and planning partners ▪ Communicate study findings to planning partners ▪ Provide staff and/or consultant support
Develop and maintain a priority list of mobility, connectivity, and accessibility improvements needed to improve existing passenger rail service and/or support future service	2021	Lead with Support	▪ Colorado Rail Operators ▪ MPOs and TPRs ▪ CDOT Engineering Regions ▪ Local Governments	▪ Coordinate within CDOT to incorporate rail into planning and project development processes ▪ Develop the process to generate and update project lists for consideration within current CDOT funding programs

Strengthen Rail Coordination

Action Step	Timing	CDOT Role	Potential Partners	Next Steps
Continue to develop partnerships and consultation with public and private rail operators	2019	Lead	▪ Colorado Rail Operators ▪ FRA	▪ Expand role and representation of rail operators on FAC ▪ Continue to develop connections and coordination opportunities with passenger rail operators ▪ Benchmark best practices identified by other states
Support efforts to ensure full implementation of Positive Train Control	2020	Support	▪ Colorado Rail Operators ▪ Federal Agencies (FRA, FTA, FHWA) ▪ PUC ▪ Amtrak	▪ Provide support for necessary funding, state actions, or regulations
Coordinate with partners to identify and fund safety, security, and crossing needs	2020	Support	▪ PUC ▪ Local Governments ▪ MPOs and TPRs ▪ Colorado Rail Operators	▪ Develop process to coordinate with PUC ▪ Identify additional funding sources or grant opportunities ▪ Provide CDOT information and/or expertise in support of environmental "clearance" activities that railroads may pursue to obtain funding.
Support and participate in joint efforts to improve safety and security	2020	Support	▪ Colorado Rail Operators ▪ Federal Agencies ▪ PUC ▪ MPOs and Local Governments	▪ Track projects, initiatives, working groups, etc., for involvement by CDOT and Region staff ▪ Continue to support Operation Lifesaver

Integrate Planning Processes

Action Step	Timing	CDOT Role	Potential Partners	Next Steps
Consider guidelines or directives that integrate freight and passenger rail issues and needs into CDOT planning processes	2019	Lead with Support	▪ CDOT Engineering Regions ▪ MPOs and TPRs	▪ Coordinate within CDOT to integrate rail planning needs within corridor studies, TPR plans, PELs, etc.
Develop a program for freight-focused workshops or summits to connect local and regional planning partners with industry	2020	Support	▪ Rail Operators ▪ CDOT Engineering Regions ▪ MPOs and TPRs ▪ FAC	▪ Work with industry and regional and local planning partners to initiate program ▪ Provide staff and/or consultant resourcesa
Establish a process to share information with local planning partners and the public on outcomes of freight and passenger rail studies	2020	Support	▪ ColoRail ▪ MPOs and TPRs ▪ Civic Organizations and Industry Associations	▪ Leverage Colorado Delivers brand communications efforts ▪ Develop shareable information, data, presentations, etc., for use by planning partners and stakeholder groups
Craft information, policies, or guidelines to better align local decision-making and statewide rail priorities	2021	Support	▪ MPOs and TPRs ▪ Local Governments ▪ Rail Operators ▪ Civic Organizations and Industry Associations ▪ OEDIT ▪ DOLA	▪ Develop and share national best practices on integrated planning for freight and transit needs ▪ Develop a process to integrate rail considerations into regional and local planning efforts

Enhance Economic Connections

Action Step	Timing	CDOT Role	Potential Partners	Next Steps
Develop ongoing coordination processes and communication channels with economic organizations and planning partners	2019	Lead with Support	▪ OEDIT Regions ▪ MPOs and TPRs ▪ Local Governments and Economic Development Organizations ▪ Rail Operators	▪ CDOT staff and resource capacity to develop and continue process ▪ Education and networking for regional and local planning partners ▪ Make available information on site selection, planned developments and economic opportunity areas
Quantify regional trade relationships and commodity flows and apply findings to customize transportation plans	2020	Lead	▪ MPOs and TPRs ▪ CDOT Engineering Regions	▪ Distribute data on freight flows to local and regional planning partners ▪ Integrate economic considerations into TPR plans
Support state and regional economic development and education partners in evaluating and responding to freight and logistics workforce needs and labor supply	2021	Support	▪ Colorado Workforce Boards ▪ Local Governments ▪ Industry Associations	▪ FAC to develop letter of support for regional workforce boards to better engage on freight and logistics industry workforce needs
Develop a statewide export, manufacturing, and trade and logistics transportation strategy	2022	Support	▪ OEDIT	▪ Joint or pooled research and strategic plan

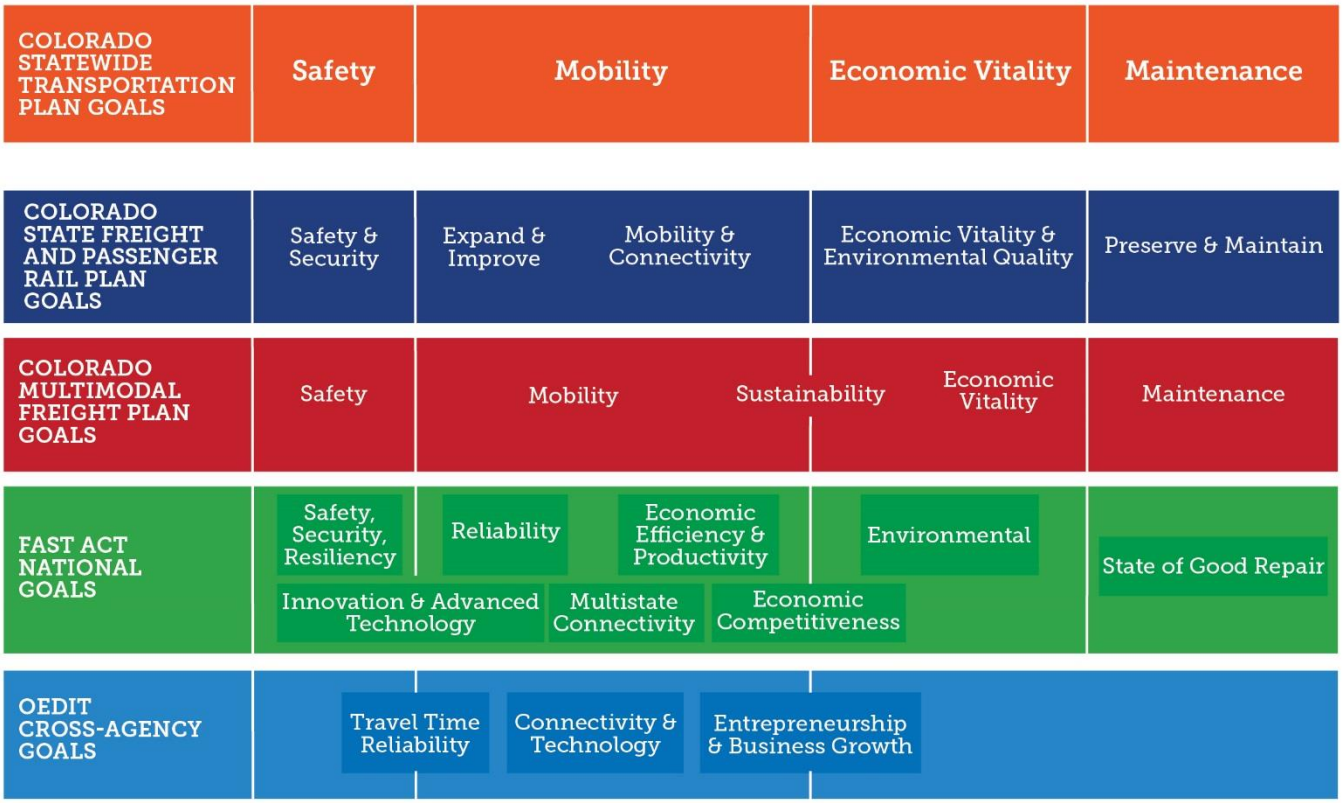
Address Freight Rail Needs and Issues

Action Step	Timing	CDOT Role	Potential Partners	Next Steps
Develop an inventory of short line rail service constraints	2019	Support	▪ Colorado Short Line Rail Operators ▪ ASLRRA ▪ MPOs and TPRs ▪ Universities	▪ Coordinate with short line rail operators ▪ Explore alternative funding or research opportunities with national associations, universities, or other partners
Design and develop a freight railroad assistance program	2020	Lead	▪ Colorado Freight Rail Operators ▪ OEDIT ▪ State Legislature	▪ Study and adapt best practices from other state programs ▪ Build support with Colorado Transportation Commission and State Legislature
Continue coordination with Class I railroads to identify planned or needed improvements	2020	Lead with Support	▪ Colorado Freight Rail Operators ▪ MPOs and TPRs ▪ Local Governments	▪ Proactively engage freight railroads and economic development organizations, communities, and industry customers served by railroads
Identify potential projects that address rail-related infrastructure constraints or rail access and connectivity improvements	2021	Lead with Support	▪ Colorado Freight Rail Operators ▪ CDOT Engineering Regions	▪ Integrate rail projects into CDOT internal planning and project development and selection processes, including competitive grant requests
Expand the SB-37 abandonment reporting process to identify additional rail-related infrastructure at risk	2021	Lead	▪ Colorado Freight Rail Operators ▪ FRA	▪ Distribute findings to regional and local planning partners ▪ Explore additional funding for preservation needs

5.2 PROGRAM COORDINATION

As described in Chapters 1 and 2, and consistent with Colorado's coordinated and cooperative rail planning efforts, implementation of the goals and priority objectives will be coordinated across CDOT and with external partners. The vision and goals of this Rail Plan were developed in coordination with the CFP and support goals established in the SWP, FAST Act, and cross-agency goals of the Colorado OEDIT. This cross-agency strategic goal alignment is shown in the figure that follows.

Alignment of Goals Areas across State and Federal Strategic Plans



Colorado's rail planning partners will continue to work across agency, jurisdictional, regional, and statewide boundaries and to coordinate efforts. This commitment is illustrated by the diverse set of private, local, state, and national partners that have supported TIGER grant efforts to improve passenger service along the Southwest Chief corridor. These recent grant initiatives have included DOTs from Colorado, Kansas, and New Mexico along with BNSF, Amtrak, local communities across the three states, and private and civic organizations.

CDOT DTR will also continue to integrate freight and passenger rail considerations into statewide transportation planning efforts and into statewide and regional transit development and corridor plans. For example, potential freight rail and passenger rail needs and investments will be included in CDOT's SWP and Statewide Transit Plan. Action on key objectives and implementation strategies will also help support greater consideration of intercity or commuter passenger rail options within CDOT corridor planning efforts or major long-term investment priorities listed in the Transit Development Program or 10-Year Development Program. Rail oriented projects will be considered for funding under eligible programs, including the state FASTER fund source or the Federal National Highway Freight Program.

5.3 STATE RAIL AGENCY AUTHORITY

Created by state legislation in 2009, DTR is responsible for planning, developing, operating, and integrating transit and rail into the statewide transportation system. DTR works with other CDOT divisions, regional transit agencies, Amtrak, private rail operators, transit and rail advocacy organizations. and other stakeholders to coordinate passenger rail planning and improvements. DTR currently has the authority under state statute to design, build, finance, operate, maintain, and contract for transit services, including passenger rail and advanced guideway system services. DTR currently exercises this authority to finance and operate intercity and rural regional bus service. New passenger rail service within Colorado could be governed by DTR without requiring policy or legislative changes. Future implementation of passenger rail in the state is more likely to be governed by regional transportation authorities. CDOT DTD, including representation of freight rail issues through the Freight Advisory Council, leads freight rail planning coordination.

5.4 PROGRAM EFFECTS

As described in Chapter 2, rail investments and activity generate significant benefits to communities and regions and improve the competitiveness of the state economy. Public and private benefits of rail investments are well documented in national literature available from sources such as the Transportation Research Board, AAR, American Short Line and Regional Railroad Association, and individual state transportation and rail agencies.

Due to uncertainty surrounding the scope and scale of future rail improvements, this Rail Plan does not quantify specific benefits of new investments. For each major proposed improvement and investment described in subsection of this chapter, potential benefits and impacts are noted as program effects. Program effects consider the likelihood and magnitude of future rail investments for the following areas:

- **Statewide multimodal transportation system, including transportation system capacity, congestion, safety, and resiliency across all modes** – In 2016, commuter rail ridership totaled 4.3 million passengers and light rail provided 25.5 million passenger trips. In 2014, freight rail moved 154.8 million tons of goods in the state. Without rail, millions of passengers and products would travel on Colorado's already congested roadways. Colorado highways users benefit whenever freight or passengers are transported over the state's rail network instead of over the highway system. Direct benefits to highway system users include travel time savings, reduced maintenance and vehicle ownership costs, and offset safety costs from reductions in accidents and incidents.

- **Economic and employment impacts, including public and private direct and indirect benefits, including macroeconomic impacts on state and regional economies. Economic benefits are usually categorized into direct and indirect impacts** - Direct benefits are those that are directly associated with investments including planning, construction, and ongoing expenditures. In Colorado, investment by private railroads results in significant direct economic benefits across the state every year, including purchases of rail, ties, ballast, bridge repairs or replacements, and services provided by Colorado-based companies. Through FasTracks, RTD's planning and construction of commuter and light rail lines has resulted in direct economic benefits in the tens of millions of dollars.

  Indirect benefits and costs refer to the broader economic effects that investments bring to regional economies. For example, new passenger rail service may expand tourism activity and visitor spending. The economic impact of visitors to Colorado is substantial and particularly important for rural communities across the state. Efficient and cost-effective freight rail service can have a significant impact on employment and output of Colorado's traditional agricultural and natural resources industries, as well as on emerging advanced industries. For private businesses, freight rail service and efficient transport costs affect productivity and profitability of both railroads and freight-dependent businesses.

- **Environmental mitigating impacts, including the potential to divert truck or personal vehicle traffic from roadways to freight or passenger rail and the associated benefits to air quality, greenhouse gas emissions, and overall transportation energy use** – Rail transportation takes pressure and traffic off Colorado's constrained highway network and provides environmental benefits through increased fuel efficiency, lower air pollutants and emissions, and more sustainable land use and development patterns. Freight and passenger rail are energy efficient modes of transport and travel that provide environmental benefits compared to passenger vehicles, commercial trucks, or air travel. On average, a Class I train can carry the load of 280 or more trucks and move a ton a freight nearly 500 miles on a gallon of fuel, helping to reduce highway congestion and to ease vehicle emissions. A fully utilized 4-car light rail passenger train carries the equivalent number of commuters as 360 personal vehicles.

- **Rail corridor capacity and congestion, including potential benefits to alleviating congestion or potential impacts of reducing capacity for freight or passenger rail service** – Rail capacity can be improved by upgrading existing infrastructure, including track and bridges. For example, upgrading track to 286k lb. standards can result in operational improvements by enabling higher speeds and heavier trains. Freight rail improvements or expansions for yard infrastructure or sidings also improve main line track capacity and transloading operation efficiencies. These investments are typically privately funded and produce efficiency and operational benefits for private businesses and railroad operators. System and operational improvements, including grade-separated crossings, PTC, or other signaling and safety systems, can increase capacity and throughput along passenger and freight rail lines. These overall program effects benefit Colorado's economy and communities. For improvements and investments included in the short-term and long-term RSIP, potential program effects are noted in the following table.

Potential Program Effects for Passenger Rail Projects Included in Short-Term RSIP

Project Description	State Rail Plan Goals					Program Effects			
	Safety and Security	Expansion and Improvement	Mobility and Connectivity	Preservation and Maintenance	Economic and Environmental	Statewide Transportation System	Economic and Employment	Environmental Mitigation	Corridor Capacity and Congestion
Passenger Rail, Short-Term Investments (4 Years)									
Amtrak Station Platform Waiting Shelter at Trinidad, Colorado	✓		✓	✓		✓			
Amtrak Southwest Chief Route Stabilization Project, TIGER IX Grant Award	✓		✓		✓	✓	✓	✓	✓
RTD, North Metro Commuter Rail – Denver Union Station to 124th/Eastlake		✓	✓				✓		✓
RTD, Downtown Track and Switch Replacement	✓			✓					✓
RTD, Rail Replacement at Central Corridor	✓			✓					✓

Potential Program Effects for Passenger Rail Projects Included in Long-Term RSIP

Project Description	State Rail Plan Goals					Program Effects			
	Safety and Security	Expansion and Improvement	Mobility and Connectivity	Preservation and Maintenance	Economic and Environmental	Statewide Transportation System	Economic and Employment	Environmental Mitigation	Corridor Capacity and Congestion
Passenger Rail, Long-Term Investments (20 Years)									
Front Range Passenger Rail: Phase 3 - Federal Project Development Process (NEPA) and 30% Design		✓	✓		✓	✓	✓	✓	✓
Front Range Passenger Rail: Phase 4 – Final Design and Construction		✓	✓		✓	✓	✓	✓	✓
Southwest Chief Route Stabilization, Track & Signal Improvements, Positive Train Control	✓		✓	✓		✓			✓
Southwest Chief La Junta to Pueblo, Track and Siding Improvements, Positive Train Control, and Service Extensions	✓	✓	✓			✓	✓	✓	
RTD, Satellite Light Rail and Commuter Rail Maintenance Facilities	✓			✓					
RTD, North I-25 Commuter Rail - Fort Collins to 162nd & Colorado Station		✓	✓		✓	✓	✓	✓	✓
RTD, Northwest Commuter Rail – Westminster to Longmont		✓	✓		✓	✓	✓	✓	✓
North Metro Commuter Rail - 124th/Eastlake to 162nd/Colorado		✓	✓			✓	✓	✓	
Advanced Guideway System Feasibility and Advance Planning: Denver International Airport to Eagle County Airport		✓	✓		✓	✓	✓	✓	✓

Potential Program Effects for Freight Rail Projects Included in RSIP

Project Description	State Rail Plan Goals					Program Effects			
	Safety and Security	Expansion and Improvement	Mobility and Connectivity	Preservation and Maintenance	Economic and Environmental	Statewide Transportation System	Economic and Employment	Environmental Mitigation	Corridor Capacity and Congestion
Freight Rail, Short-Term (4 Years) and Long-Term (20 Years) Investments									
Section 130 Highway-Rail Grade Crossing Improvements	✓		✓	✓		✓			✓
Grade Separation and Highway Improvements at Hudson, Colorado,	✓			✓		✓			✓
Grade Crossing Improvements or Eliminations along US 85	✓			✓		✓			✓

5.5 PASSENGER ELEMENT

5.5.1 Passenger Rail Capital Projects

This subsection summarizes potential passenger rail improvements, outlines capital and operating financing assumptions, and summarizes key benefits for the passenger rail component of this Rail Plan. More detailed information on project costs, funding sources, and timing is provided for short-term projects and information is summarized for long-term projects.

Potential passenger rail investments described in Chapter 3 and summarized in this chapter were drawn from existing studies, reports, and initiatives on rail service needs and development. Chapter 1 describes these sources in detail for each significant rail corridor, which also includes long-range plans from MPOs, long-range state transit development programs, and short-term budgets and strategic plans from RTD. Major program recommendations and potential investments, including further studies, planning efforts, or capital improvements, from these studies were assessed for consistency with Rail Plan goals and other readiness considerations. Assessment factors include:

- **Statewide goals -** including: safety and security; expansion and improvement; mobility and connectivity; preservation and maintenance; and economic and environmental considerations.
- **Readiness considerations - i**ncluding: order of magnitude cost estimates; availability of funding sources; feasibility of completion; planning or construction readiness; and availability of information.

Based on this qualitative assessment, passenger rail improvements and needs identified in Chapter 3 were prioritized into the following three categories:

- **Near-term needs** - These capital projects or necessary planning studies may currently be underway or have significantly advanced in state or regional planning processes. These projects are likely to be initiated within the next four years and are included in the short-term RSIP.

- **Future needs** - These capital projects or longer-term planning efforts respond to anticipated future needs. These efforts are drawn from previous planning studies, generally have stakeholder support, and respond to identified needs. These projects can be expected to be initiated over the next 20 years and are included in the long-term RSIP.
- **Need to be determined** - These potential projects represent conceptual ideas drawn from previous planning processes or stakeholder input. Information on needs or potential capital investments for these efforts are not identified at this point. In addition, these concepts represent ideas that may have been proposed by stakeholders, but that may not respond to passenger and freight rail needs identified over the next 20 years. Potential project concepts are included in the long-term RSIP to better position Colorado to respond to future opportunities.

The improvements shown in later subsections of this chapter reflect only those improvements and investments committed or proposed over the 4-year and 20-year horizons.

5.5.2 Capital Financing Plan

Colorado's approach to financing the RSIP relies on the need to supplement limited state and federal rail funding with various financing mechanisms, funding and revenue sources, and cost-sharing partnerships. The vision and improvements described in this Rail Plan represent a long-term development program for rail in the state. Developing capital and operating financing plans is also a long-term goal that can be achieved over time, as projects come online and as current or potential new operating revenue sources become available. State, local, and private funding commitments to planning, capital investment, and operating support for passenger rail have already been demonstrated in Colorado. Coalitions of public and private partners have developed partnerships to support the return of the Winter Park Express route and to secure grant funding for needed maintenance to the Southwest Chief route. These examples show that diverse funding sources can be leveraged to support priority investments.

The state and federal funding sources identified in Chapter 2 will be leveraged to support proposed improvements and investments identified in this Rail Plan. CDOT and DTR have limited funds available through the FASTER transit grants fund that can be used to support smaller-scale cost-sharing match agreements, planning initiatives, and capital improvements for passenger rail. The Colorado Legislature has periodically authorized transfers of General Funds to support increased investment by CDOT. A portion of these transfers is available to support transit development, with services prioritized by DTR. These funds must support transit services of all kinds across the state and are not typically dedicated to a single initiative, such as the significant investment required to expand passenger rail service along the Front Range.

Colorado's HPTE was created to fund surface transportation programs through innovative financing mechanisms, including P3s, bonding, and other arrangements. For major projects, including development of Front Range passenger rail, innovative financing and private partnerships warrant consideration. CDOT will also continue to evaluate and pursue federal discretionary funding and grant programs to advance planning and service development for future passenger rail efforts.

5.5.3 Operating Financing Plan

To finance ongoing operations and maintenance of passenger rail services in Colorado, a range of financing tools will be needed. No state agency transportation funds are currently dedicated to supporting operating costs for passenger rail services. State appropriated FASTER transit grant funds do not currently support operations or maintenance costs for regional and local transit services. RTD's operating costs for commuter and light rail service in the Denver region are primarily funded through sales-tax revenues and passenger fares.

RTD is an example of a special district and regional transportation authority that is empowered with taxing and bonding authority to fund transit services. Colorado statutes allow the creation of mass transit districts and regional transportation authorities. These authorities are empowered to develop and operate transit systems and may construct and maintain roadways. Allowable revenues generated by districts include tolls, sales and use taxes, motor vehicle registration fees, and lodging fees. A broad regional transportation authority could be created, subject to voter approval, to provide ongoing operating support for expanded passenger rail services within Colorado, including Front Range passenger rail.

Amtrak's Section 209 state-supported intercity rail program enables participating states to contract with Amtrak to operate intercity passenger rail services on routes less than 750 miles in length. According to a 2016 report by the Government Accountability Office, most states use state general fund monies to reimburse Amtrak for operating costs of these state-supported corridors. Of the 18 states surveyed in this report, the average state share of operating costs for Amtrak provided services was 76 percent, with the remaining costs covered by Amtrak. The Colorado General Assembly must authorize general fund revenues to support passenger rail service, and these funds are subject to the annual budget process.

Future operating funding will almost certainly include both public and private sources. Private funding to support the ongoing costs of intercity passenger rail service could include advertisement, sponsorship, or cost-sharing arrangements. There are examples of these arrangements within Colorado. In 2015, RTD sold the naming rights for the commuter rail A-Line to the University of Colorado for $5 million over five years. This transaction occurred through RTD's corporate sponsorship and brand program. RTD's Board determines how funds raised by this program are used, but they are considered a flexible source of revenue. Similarly, Amtrak Winter Park Express service to Winter Park Resort relies on private funding sources, including funds raised through sponsorship of service and amenities as well as advertising. These private sources are relatively small compared to the long-term operating needs of Front Range passenger rail service but demonstrate that both public and private funds can be used to support passenger rail.

5.5.4 Public and Private Economic Benefits

Public and private economic benefits that are anticipated from proposed rail investments identified in Colorado's RSIP include improving mobility, connectivity, and safety for both rail and roadway users. Freight and passenger rail improvements are also aimed at generating economic activity, both direct and indirect impacts, and mitigating environmental costs resulting from transportation.

In 2016, Amtrak estimated a combined economic impact of more than $35 million on the Colorado economy. This total impact includes more than $20 million in direct employment earnings and direct construction and service spending. Amtrak also generated indirect economic impacts of $1.2 million in visitor spending and $13 million in local government revenues. Estimates of the health and safety benefits of Amtrak service in Colorado also include a monetized reduction in emissions of $376,000 and more than $3 million in cost savings from reduced safety risks resulting from passengers traveling by train instead of vehicles. Should Colorado move forward with Front Range passenger rail service, the economic impacts of current Amtrak service serve as a guide to potential total statewide benefits.

CDOT produced ridership estimates for various alignments and service levels for passenger rail along a portion of the Front Range route in the 2017 ICS Interoperability Report. This study produced estimates of 10.6 million to 13.7 million passengers depending on alignment and technology. These estimates cover a portion of the entire proposed Front Range passenger rail system from Fort Collins to Trinidad. These initial ridership estimates are more than 40 times greater than those of current Amtrak ridership levels. Actual public and private economic benefits of passenger rail investments should be studied in more detail, including benefit-cost analysis, as more detailed information on improvements becomes available.

5.6 FREIGHT ELEMENTS

5.6.1 Financing Plan

Freight railroads anticipate continuing to invest in maintenance and limited capacity expansion in Colorado over the next 20 years. Private railroads fund infrastructure improvements and maintenance needs in Colorado through revenue from rail operations. Class I railroads anticipate making future investments in capacity and maintenance in Colorado similar to past improvements and based on overall freight demand and business strategy. Short line railroads operate on relatively small profit margins and reinvest significant amounts of revenue back into maintenance and improvements of rail lines and facilities. These railroads face significant future investment needs and may require public support to upgrade track and infrastructure to safe and modern standards. A high-priority strategy of this Rail Plan is intended to inventory and assess short line rail needs in Colorado and to explore the creation of a freight rail assistance program. No public funding is currently available in Colorado to directly support freight rail investments. CDOT and partners support the use of National Highway Freight Program funding for eligible freight rail or private intermodal terminal projects in the state. CDOT continues to work directly with railroads to identify potential projects for joint funding, including making highway improvements that support efficient and safe rail operations.

5.6.2 Public and Private Economic Effects

Freight and passenger rail provide significant direct economic benefits to Colorado. In 2014, freight rail in Colorado moved more than 154 million tons, with a revenue value of over $10.3 billion. Railroads directly employ thousands of Coloradans, invest hundreds of millions of dollars in projects in the state, and contribute wage earnings, state and local taxes, and visitor spending to communities. These direct impacts add up and are multiplied through indirect spending and investment. For example, the AAR estimates that for each worker employed by freight railroads, nine other jobs are supported in the economy.

Together BNSF and UP invested more than $165.9 million in Colorado in 2016. Class I railroad investment includes direct in-state spending and capital investments that benefit Colorado workers and companies. EVRAZ Rocky Mountain Steel in Pueblo is the largest producer of rail in North America. When economically feasible, private railroads use the EVRAZ facility to source steel rail for track maintenance and upgrade purchases. Combined payroll for UP and BNSF totaled $130.4 million in 2016. These earnings support Colorado workers and families and have induced spending impacts throughout the economy. Additional investment and improvements by Colorado's private railroads produce significant public and private benefits to Colorado workers, regional industries, and the statewide economy. Should public funding be made available to support freight rail infrastructure projects, long-term economic development benefits can make significant contributions to regional and state economies.

5.7 RAIL STUDIES AND REPORTS

To support Colorado's vision for freight and passenger rail and to continue to advance coordinated rail planning or early concepts, a variety of rail-related studies and reports have been identified over the next 4 years. Stakeholders determined the need for these planning efforts through the Rail Plan development process while other studies continue earlier rail planning work supported by CDOT and regional partners.

To advance freight rail planning efforts and to better identify potential future capital projects, several rail studies are needed in Colorado. An inventory and assessment of freight rail infrastructure constraints and capital needs, with a focus on short line railroad infrastructure, is necessary to assess statewide investment needs. This study can provide the foundation for additional reports on national best practices and potential governance

structures to create a Freight Rail Assistance program in Colorado. Additional research and support may be needed to identify a strategic implementation plan to better integrate freight rail considerations into state, regional, and local transportation and economic development planning processes.

Passenger rail corridors under active consideration and advance planning in Colorado include the Amtrak Southwest Chief Route, future Front Range Passenger Rail, and potential extensions of commuter rail service along key corridors in the Denver region. Each corridor is in a different stage of planning and pre-construction activities. Studies and reports needed include further conceptual analysis or consensus building efforts, service development and planning studies, or detailed feasibility studies and assessments. The RSIP includes longer-term planning efforts in coordination with potential capital investment projects. The following table lists currently identified short-term rail studies and reports.

Short-Term (1-4 Year) Rail Studies and Reports

Study	Description	Estimated Timing	Estimated Cost	Potential Funding Sources
Front Range Passenger Rail: Phase 1A Vision	Initial vision and stakeholder engagement for Front Range passenger rail	2018-2020	$2,500,000	State General Funds
Front Range Passenger Rail: Phase 1B Plan	Initial service development plan for Front Range passenger rail	2018-2022	$6,200,000	State General Funds
Front Range Passenger Rail: Phase 2 Study	Study of potential governing authority for Front Range passenger rail	2020-2022	$500,000	State General Funds
Pueblo Extension Study	Integrated vision and service planning for Southwest Chief service between La Junta and Pueblo	TBD	Unknown	FASTER Local Private or Community Funds
Freight Rail Assistance Program Report	Feasibility report for the creation of a freight rail assistance program	2019	Unknown	FASTER NHFP
Short Line Railroad Needs Study	Survey and assessment of short line infrastructure needs	2020	Unknown	FASTER NHFP
Freight Rail Mobility Needs Report	Inventory freight rail capacity and infrastructure constraints	2021	Unknown	FASTER NHFP
Rapid Travel Feasibility Studies	Feasibility studies for a Rocky Mountain Hyperloop considering Arrivo and Hyperloop One concepts	2018-2020	Unknown	CDOT
South I-25 PEL*	Planning and environmental linkages (PEL) study to identify solutions to connect Colorado Springs and South Denver	2017-2019	Not available	CDOT
SH 119 BRT Study*	Evaluation of the viability of bus rapid transit along State Highway 119 between Boulder and Longmont	2017-2019	Not available	RTD CDOT Local

* = These studies are underway and while not solely focused on rail, they either contain rail elements, may impact or be impacted by railroad operations or are linked to the provision of future rail service. As such, serious consideration must be given to rail during development of these studies.

5.8 PASSENGER AND FREIGHT RAIL CAPITAL PROGRAM

The following tables summarizes currently identified passenger rail projects for the short-term (1 to 4 years) and long-term (20-year) RSIP.

Passenger Rail Service and Improvement Program, Short-Term Projects

Project Description	Estimated Timing	Estimated Cost	Potential Funding Sources
Amtrak Station Platform Waiting Shelter at Trinidad, Colorado	2018	$300,000	FASTER
Amtrak Southwest Chief Route Stabilization Project, TIGER IX Grant Award	2018-2019	$26,715,115	USDOT; NM, CO, and KS State DOTs; BNSF; Local Funding
RTD, North Metro Commuter Rail - 124th/Eastlake to 162nd/Colorado	2020	$836,900,000	RTD
RTD, Downtown Track and Switch Replacement	2021	$8,000,000	RTD
RTD, Rail Replacement at Central Corridor	2019-2023	$7,500,000	RTD

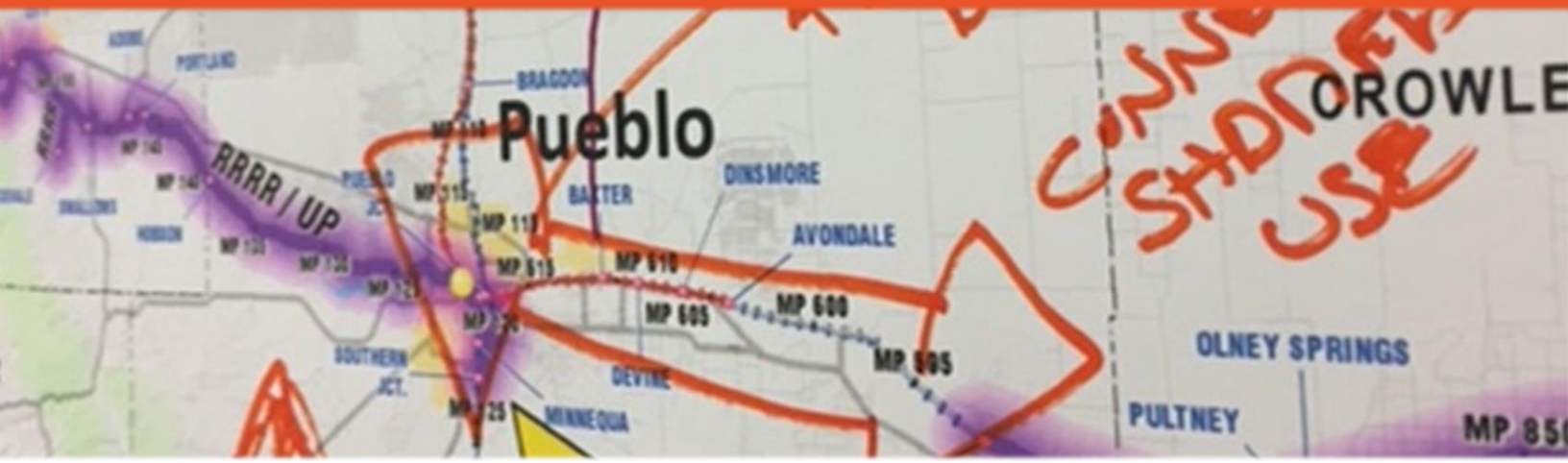
Passenger Rail Service and Improvement Program, Long-Term Projects

Project Description	Estimated Timing	Estimated Cost	Potential Funding Sources
Front Range Passenger Rail: Phase 3 - Federal Project Development Process (NEPA) and 30% Design	2022-2024	$150,000,000 - $300,000,000	State General Fund
Front Range Passenger Rail: Phase 4 – Final Design and Construction	2025+	Unknown	State General Fund
Southwest Chief Route Stabilization, Track & Signal Improvements, Positive Train Control	Unknown	$50,000,000	Unknown
Southwest Chief La Junta to Pueblo, Track and Siding Improvements, Positive Train Control, and Service Extensions	Unknown	Unknown	Unknown
RTD, Satellite Light Rail and Commuter Rail Maintenance Facilities	Unknown	Unknown	RTD
RTD, North I-25 Commuter Rail - Fort Collins to 162nd & Colorado Station	Unknown	$1,350,000,000	RTD
RTD, Northwest Commuter Rail – Westminster to Longmont	Unknown	$1,600,000,000	RTD
RTD, North Metro Commuter Rail - 124th/Eastlake to 162nd/Colorado	Unknown	$290M	RTD
Advanced Guideway System Feasibility and Advance Planning: Denver International Airport to Eagle County Airport	Unknown	Unknown	Unknown

The following tables summarizes currently identified freight rail projects for the short-term (1 to 4 years). There are currently no long-term freight rail investments or projects publicly identified by freight railroads in Colorado.

Freight Rail Service and Improvement Program, Short-Term Projects

Project Description	Potential Fund Sources	Total Funding	Estimated Completion
Section 130 Highway-Rail Grade Crossing Improvements	FHWA	$19,400,000	2018-2021
Grade Separation and Highway Improvements at Hudson, Colorado,	BNSF	Unknown	Unknown
Grade Crossing Improvements or Eliminations along US 85	UP	Unknown	Unknown



CHAPTER 6 – COORDINATION AND REVIEW

Chapter 6 describes how CDOT reached key stakeholders, who was represented, what issues were raised, how recommendations were incorporated, and how review and comments were coordinated. Input and ideas from freight and passenger rail operators, regional and local transportation planning partners, rail advocacy organizations, universities, businesses and economic development representatives, and the traveling public shaped this Rail Plan. DTR is committed to a collaborative process of rail planning in the state with the continued direct involvement of rail operators, agency partners, and the public in crafting future rail plans and coordinating rail opportunities. Engagement, outreach, and coordination activities will continue as this Rail Plan is implemented and as future rail plans and projects are advanced.

6.1 APPROACH TO PUBLIC AND AGENCY PARTICIPATION

Development of this Rail Plan was informed through outreach and engagement to members of the traveling public, freight and passenger rail operators, businesses and economic development organizations, and local and regional planning partners, including MPOs. Outreach efforts included targeted stakeholder interviews; surveys of industry and economic development organizations, as well as the general public; and information posted on CDOT's website. This Rail Plan has also been informed, since the previously approved Rail Plan in 2012, through ongoing planning and engineering efforts, each of which has had its own more geographically focused efforts.

This 2018 Rail Plan focused on engaging private sector businesses and economic development organizations to gather information to help CDOT better illustrate connections between economic competitiveness and freight and passenger rail service. Outreach objectives included soliciting input on issues and needs, investment

priorities, future demand, and comments on key plan elements. A secondary objective was to establish and strengthen relationships among CDOT and rail operators, businesses, industry associations, and advocacy organizations. A summary of interview and survey processes is provided below. Key findings and outcomes from this outreach are provided later in this chapter.

Stakeholder Interviews

Through the coordinated planning process for both this Rail Plan and the CFP, CDOT reached key stakeholders through one-on-one interviews. Interviewees were selected to represent a cross section of freight and rail-reliant industry clusters, different geographic regions, and various freight and passenger rail services operating in Colorado. Interviews focused on identifying the perspectives, needs, and issues of Class I railroads, short line railroads, passenger rail service operators, scenic and tourist railroads, and rail-reliant businesses. Efforts were made to reach every railroad in Colorado. Two of 8 scenic operators and 8 of 12 short line operators were available for interviews. These discussions provided valuable insight to help CDOT better understand how freight and passenger rail services contribute to Colorado's economic vitality and support community livability. Interview findings are detailed in later sections of this chapter and were incorporated into strategy and plan development.

The following rail stakeholders were reached through direct interviews:

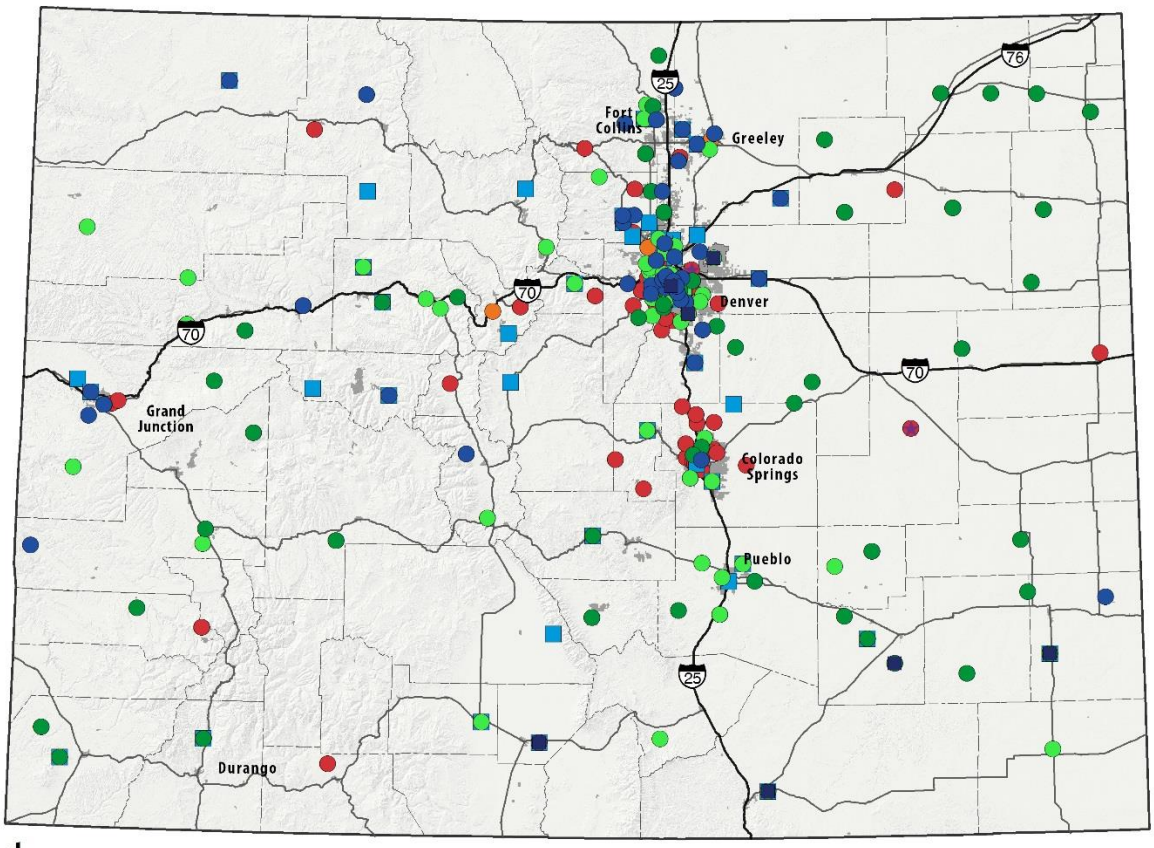
- Adams County Economic Development
- Albertsons Companies
- Amtrak
- BNSF Railway
- Cimarron Valley Railroad
- Colorado Department of Agriculture
- Colorado Farm Bureau
- Colorado Mining Association
- Colorado Rail Passenger Association
- Colorado Tourism Office
- Denver International Airport
- Denver Rock Island Railroad
- Iowa Pacific/San Luis & Rio Grande Railroad
- Kansas & Oklahoma Railroad
- KYLE Railroad
- Leadville Colorado & Southern Railroad
- MillerCoors
- Oliver Manufacturing
- OmniTRAX
- Regional Transportation District
- Rock & Rail Railroad
- San Luis & Rio Grande Railroad
- San Luis Central Railroad
- Union Pacific Railroad
- Upstate Colorado

Stakeholder Surveys

CDOT developed a series of web-based surveys to gather input from various stakeholders across the state. These surveys addressed both multimodal freight issues and freight rail and passenger rail issues, needs, and priorities. Surveys were sponsored in partnership with statewide organizations and sent to member mailing lists and included in newsletters.

Survey efforts gathered responses from more than 705 respondents across Colorado. Respondents included businesses; regional, local, and private economic development agencies; chambers of commerce; state agencies; city and county governments; elected officials; and CDOT advisory committee members. The following map shows the distribution of survey responses across the state. Most respondents represented communities and businesses along the Front Range with additional respondents in nearly every region of the state. Survey responses are detailed in later sections of this chapter and were incorporated into strategy and plan development. Complete survey response detail is available in the appendix to this Rail Plan.

Stakeholder Representation in CDOT Survey Efforts by Geography and Affiliation Map



Legend

- Agricultural Business
- Business
- Economic Development Organization
- Elected Official
- Non Profit or Advocacy
- Regional or Local Government
- Transportation Planning
- Travelling Public

N

0 20 Miles

Outreach survey efforts included:

- Sponsored by the Economic Development Council of Colorado and the Colorado OEDIT, CDOT engaged economic development agencies and businesses in transportation planning. Questions focused on identifying links between transportation and the economy, establishing investment priorities, highlighting issues and needs, identifying challenges and opportunities, and gauging future demand for freight and rail services.
- Working with the Colorado Farm Bureau, CDOT distributed surveys to county farm bureaus and agricultural businesses across the state. Questions were intended to identify priority issues and needs of the agricultural industry and to identify specific transportation-related challenges and opportunities for businesses, including rail services and costs.
- In partnership with the Colorado Mining Association, CDOT solicited responses from rail-reliant natural resource businesses, including mineral and aggregate products, manufacturers, utility providers, and engineering firms. Survey questions primarily focused on identifying priority issues for the natural resources industry, describing trends and changes in the transport of products throughout Colorado, and identifying the costs of transportation and logistics to these businesses.

- An online survey was distributed to CDOT's public email list-serve of more than 30,000 email addresses and was posted on social media. This survey asked general questions about perceptions of rail traffic, public prioritization of goal areas, and use of passenger rail services in the past year.

6.2 MULTISTATE COORDINATION

Since the 2012 Rail Plan, Colorado has coordinated with neighboring states on studies, grant applications, and multistate planning initiatives described in detail in Chapter 1. For this Rail Plan, recent freight and rail plans, relevant rail service plans, and grant activities were reviewed. Key issues and opportunities for future coordination and consultation include the following:

- **New Mexico** – New Mexico DOT (NMDOT), KDOT and CDOT have coordinated on and contributed to three successful USDOT TIGER discretionary grants for the stabilization of Amtrak's Southwest Chief long-distance passenger service route through Kansas, Colorado, and New Mexico. Each state pledged $1 million to the 2017 TIGER IX award to continue rehabilitation of the route.

  In 2009, NMDOT applied to the FRA for High Speed Intercity Passenger Rail planning funds for a feasibility study on development of a passenger rail line connecting Denver, Colorado, through Albuquerque and Las Cruces, New Mexico, and on to El Paso, Texas. While this application was unsuccessful, there is ongoing interest in developing this route. CDOT will keep NMDOT apprised of the activities of the SWC&FRPRC.

  Colorado and New Mexico, as joint owners through the bi-state Cumbres and Toltec Scenic Railroad Commission, will continue support and coordination for the C&TSR, including joint funding and service enhancement opportunities.

- **Wyoming** – Amtrak discontinued operating the California Zephyr and the Pioneer long-distance routes in Wyoming in 1983 and 1997, respectively. Since that time, there have been several studies to restart or to initiate new passenger rail service in Wyoming. These studies include the 2009 Pioneer Route Passenger Rail Study to evaluate reinstating Amtrak's Pioneer service and the 2008 Commuter Rail Study to explore the feasibility of establishing commuter rail service over the BNSF network between Fort Collins, Colorado, and Casper, Wyoming. A third study, the 2010 High-Speed Rail Feasibility Study, conducted by the Rocky Mountain Rail Authority in Colorado, also included an extension to Cheyenne in its I-25 north corridor. These studies did not advance passenger rail service in Wyoming, yet the feasibility of reestablishing passenger services remains a priority for the state as identified in the 2015 Wyoming Statewide Rail Plan. This service could include intercity passenger rail service connecting to Amtrak California Zephyr in Denver or intercity or commuter rail service between Cheyenne and the major metropolitan areas along Colorado's Front Range.

  In 2017, a Wyoming contingency, including representatives from the State Senate, the DOT, the City of Cheyenne, Laramie County, and the Cheyenne Chamber of Commerce, attended a meeting of the SWC&FRPRC. The purpose of this coordination was to express support for and interest in participating in efforts to facilitate Front Range passenger rail. The SWC&FRPRC passed a motion to include Cheyenne, Wyoming, as a non-voting member.

- **Kansas** – KDOT and CDOT have contributed to three successful USDOT TIGER discretionary grants for the stabilization of Amtrak's Southwest Chief long-distance passenger service route through Kansas, Colorado, and New Mexico. CDOT also supported KDOT's 2017 federal INFRA grant application to strengthen and upgrade 207 bridges along the Goodland, Phillipsburg, Belleville, Yuma, and Concordia subdivisions of the KYLE Railroad. Colorado will continue to coordinate with KDOT and short line railroads

with multistate operations, including potential joint funding of federal grant opportunities to address short line needs.

- **Nebraska** – No significant freight or passenger rail issues or shared opportunities have been identified to date. CDOT will coordinate efforts with the Nebraska DOT and short line railroads with multistate operations on emergent issues and/or opportunities.
- **Oklahoma** – No significant freight or passenger rail issues or shared opportunities have been identified to date. CDOT will coordinate efforts with the Oklahoma DOT and short line railroads with multistate operations on emergent issues and/or opportunities.
- **Utah** – No significant freight or passenger rail issues or shared opportunities have been identified to date. CDOT will coordinate efforts with the Utah DOT and short line railroads with multistate operations on emergent issues and/or opportunities.

CDOT's DTR will continue to coordinate with neighboring states as joint funding and shared improvement opportunities arise.

6.3 INVOLVEMENT IN PREPARATION AND REVIEW

To guide development of this Rail Plan, CDOT involved freight and passenger rail operators, business and industry representatives, local governments, regional planning organizations, state agency partners, elected officials as key members of advisory committees, and a Rail Plan Working Group. Together, these stakeholders provided critical information, recommendations, and review and comment that helped shape this Rail Plan and position Colorado to proactively address freight and passenger rail issues and priorities. The following committees provided critical guidance and input throughout the development of this Rail Plan.

- **Statewide Transportation Advisory Committee** - members include elected officials and regional planning staff from each TPR and Colorado's two tribal governments. Committee members also participated on the JPAC for this coordinated freight and rail planning effort. Briefings provided a forum for discussing regional rail transportation issues and provided feedback and guidance to CDOT on key recommendations and investment decisions within this Rail Plan.
- **Transit and Rail Advisory Committee -** representatives include public and private transit providers, railroads, and local agencies. This committee received quarterly updates on Rail Plan progress throughout plan development. Several members participated on the Rail Plan Working Group, which provided a forum for discussing state and regional freight and passenger rail issues and guided development of the recommendations within this Rail Plan.
- **Colorado Freight Advisory Council -** members include over two dozen public and private sector representatives from key industries, associations, transport modes, and planning partners. This committee provided a forum for discussing state and regional freight rail related issues and for guiding development of key strategies and recommendations included within this Rail Plan, as well as recommendations included within the parallel CFP.

In addition to the standing committees described previously, a JPAC composed of public and private representatives was formed specifically to guide the development of this Rail Plan and the CFP. The JPAC provided crucial guidance, oversight, and direction to the development of this Rail Plan. JPAC members provided unique perspectives on goods movement, urban and rural community livability, economic development, manufacturing and retail, shippers and carriers, logistics and supply chain management, and multimodal freight and rail systems in Colorado. The JPAC met quarterly throughout this planning effort and was instrumental in developing guiding principles, vetting vision and goal statements, considering future trends, approving implementation actions of the plan, and providing direction on future education and communications efforts.

JPAC members included representatives from the following organizations and agencies:

- Albertsons Companies
- BNSF Railway
- Celadon Trucking, Inc.
- Colorado Rail Passenger Association
- Colorado Office of Economic Development and International Trade
- Denver International Airport
- Denver Regional Council of Governments
- Federal Highway Administration
- Federal Railroad Administration
- MillerCoors
- New Belgium Brewing Company
- North Front Range MPO
- Ports to Plains Alliance
- Western Colorado Transportation Planning Region

A Rail Plan Working Group also met monthly throughout this planning effort to provide critical oversight, to develop vision and goal statements, and to inform the strategic direction of this Rail Plan. This group was directly involved in reviewing key findings and outreach results, identifying and prioritizing needs and issues, developing priority strategies and recommendations, establishing implementation actions, and incorporating public, agency, and private stakeholder input and comments. Rail Plan Working Group members included representatives from the following organizations and agencies:

- American Short Line & Regional Railroad Association
- Amtrak
- BNSF Railway
- Colorado Public Utilities Commission
- Colorado Rail Passenger Association
- Denver Regional Council of Governments
- I-70 Corridor Coalition
- Iowa Pacific Holdings
- North Front Range MPO
- Pikes Peak Area Council of Governments
- Pueblo Area Council of Governments
- Regional Transportation District
- Statewide Transportation Advisory Committee
- Union Pacific Railroad
- University of Denver

6.4 KEY THEMES AND ISSUES

This section summarizes key issues and common themes identified through interviews and surveys of private industry, economic development agencies, rail operators, and other public and private partners engaged through this planning effort. Through online surveys, CDOT received more than 9,000 words of comments. The most commonly cited word was “rail,” including both freight and passenger rail concerns, issues, and needs. This indicates a strong interest from planning partners, economic development organizations, agricultural and natural resource providers, and businesses across the state in rail challenges and opportunities.

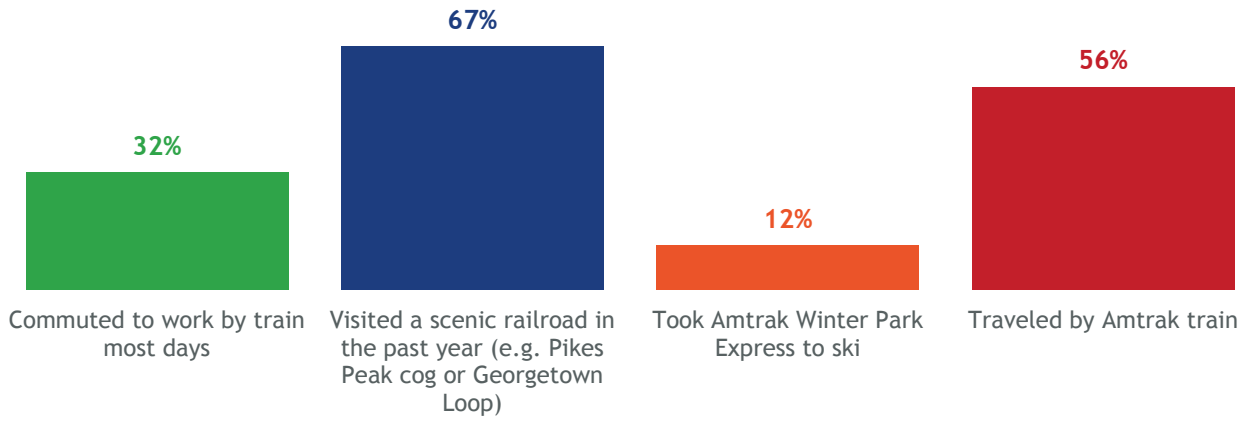
Input on rail issues included both support and opposition to the concept of developing Front Range passenger rail service. Businesses and economic development agency comments provided significant anecdotal support for the business attraction and location benefits of commuter and light rail service. Comments from economic development and industry stakeholders also suggest significant interest in maintaining and expanding rail service to agricultural and natural resource production regions, particularly in areas of the state currently underserved by Class I or short line railroads. Economic development organizations cited freight rail services and rail-served facilities across Colorado as critical to attracting and retaining industrial and manufacturing companies.

The following key themes summarize input received through the development of this Rail Plan. Issues and comments were addressed through discussion and consideration by the Rail Plan Working Group and are integrated into the final recommendations, strategies, and implementation actions described in this Rail Plan.

Ridership and Interest in Passenger Rail Remains High

In a survey released to a public email list-serve maintained by CDOT, nearly 40 percent of the 247 Colorado residents responding indicated that they had ridden some type of passenger rail service in the past year. Scenic railroads were the most commonly cited service ridden in the past year, followed closely by Amtrak.

In the past year, have you ridden a passenger train in Colorado? Select all that apply.



Source: Colorado Department of Transportation, State Freight and Passenger Rail Plan survey responses, 2017

Comments from surveys of economic development stakeholders across the Front Range showed significant support for commuter and light rail service particularly related to economic development opportunities centered on rail station areas. Respondents provided anecdotal support of the importance of commuter and light rail service in attracting employers to employment centers served by rail, including recent relocations of major employers such as Nationwide, Western Union, and Charles Schwab to the Denver Tech Center.

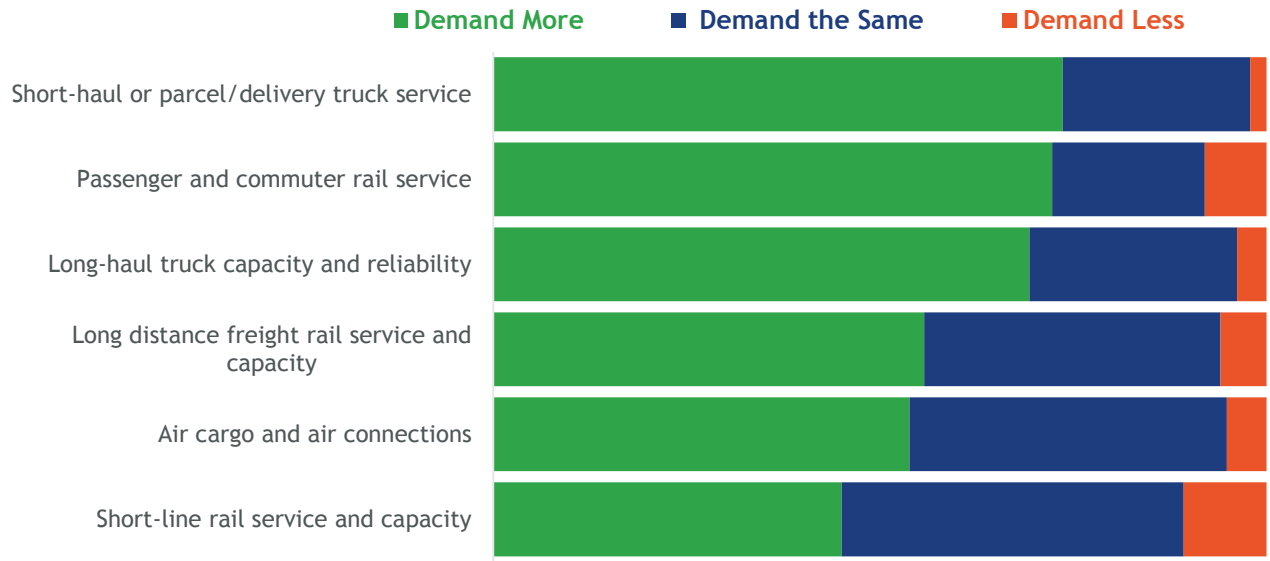
"Passenger rail in downtown Colorado Springs to connect to Union Station in Denver would create a powerhouse of a labor shed for the Front Range."	*"Our community is underserved with transit and has no access to passenger rail. Growing population and industries here will need those services to link Northern Colorado and the Denver Metro Region."*	*"Rail is most important to our city because of passenger rail, rather than freight. We are currently seeing a great deal of activity in and around our new commuter rail station."*

Continuing to expand current commuter and light rail service in the Denver metro area, specifically to connect northern and northwest communities, was also frequently mentioned. High speed passenger rail service remains contentious in Colorado. Support for Front Range service, as well as for I-70 Mountain Corridor service, was expressed through public comments. Many stakeholder and public comments voiced opposition to funding passenger rail service in the state.

Strong Future Demand for Rail Service

Surveys of economic development, agricultural, and natural resource stakeholders asked respondents to indicate potential future demand for various multimodal freight infrastructure. Overall, many respondents suggested that businesses and communities would demand more passenger and commuter rail service over the coming decades. This response was driven by the large number of respondents to the economic development survey advocating for passenger rail. Survey respondents also indicated that business demand for long-distance freight rail service provided by Class I railroads was likely to grow or at least stay the same. Most respondents indicated that short line rail service was likely to remain stable or that demand could decrease in the future.

Over the coming decades, do you think businesses in your region will demand more from Colorado's freight and rail infrastructure, demand less, or about the same?



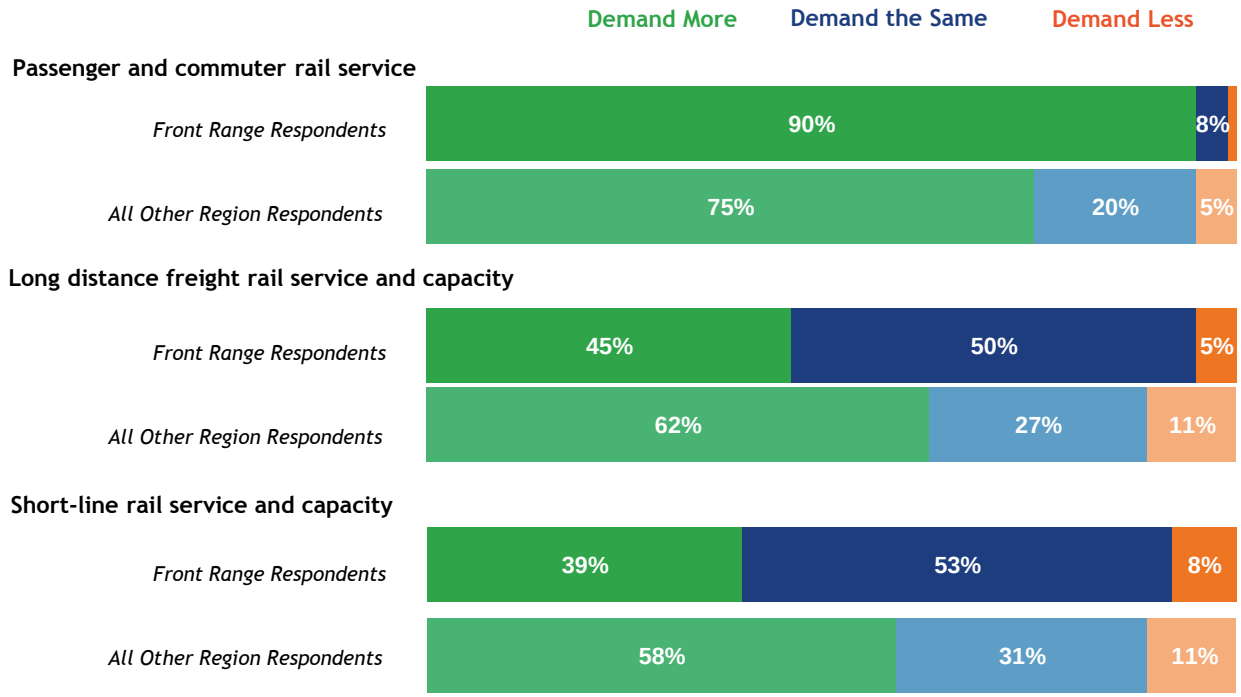
Source: Colorado Department of Transportation, State Freight and Passenger Rail Plan survey responses, 2017

Most respondents across all surveys came from economic development organizations located in Front Range communities. As a result, the responses shown on the previous chart were skewed toward respondents in Colorado's urban corridor. Cross tabulations of survey respondents from the Front Range compared to all other regions in Colorado show differences in perceived future infrastructure demand and needs.

While passenger and commuter rail are still anticipated to be in demand both in the Front Range and elsewhere in Colorado, support dips in other regions. Freight rail and short line rail estimates of future demand are more significant in other regions of Colorado and highlight the importance of these assets and future service levels to Colorado's rural areas and regional economies.

The following graphic compares survey responses suggesting greater future demand for freight and passenger rail in the Front Range and all other regions of the state.

Over the coming decades, do you think businesses in your region will demand more from Colorado's freight and rail infrastructure, demand less, or about the same?



Source: Colorado Department of Transportation, State Freight and Passenger Rail Plan survey responses, 2017

Scenic and Historic Railroads Are Critical to Local Economies

According to Colorado OEDIT estimates, 10 percent of tourists in Colorado visit one of the state's eight scenic railroads each year. Ridership of individual scenic rail operators ranges from 30,000 to 130,000 or more annually. Visitors generate significant local economic impact in sales and lodging tax revenues and boost indirect spending in the towns and counties surrounding these historic assets. According to a recent study of the C&TSRR, rail operations support 147 direct jobs and result in a total annual economic impact of $14.8 million in the surrounding five-county region of Colorado and New Mexico. The Durango & Silverton Narrow Gauge Railroad produced $140 million in benefits to the region's economy, according to a Fort Lewis College study. Most visitors to the Rio Grande Scenic Railroad come from outside the immediate region with significant visitation from Oklahoma, Texas, and New Mexico. According to an Adams State College study, Rio Grande operations and visitation contribute more than $3.4 million to the San Luis Valley economy annually.

Interviews with managers of two scenic rail operations indicated concerns with regulatory requirements imposed by the FRA and restrictions associated with state historic preservation grants. Most scenic rail operations in Colorado are privately owned, operated, and maintained. Private rail operators view those operations supported with state or local funds as unfair competition. A common concern raised in interviews with two scenic operators was the lack of tourist wayfinding and signage on state highways and interstates.

Scenic railroads require significant annual investments to maintain a state of good repair. Deterioration of track conditions and delayed maintenance of equipment and rolling stock can pose safety risks, result in delays and slower operating speeds, and affect customer satisfaction. Grants from History Colorado for preservation and maintenance are available; however, many private rail operators do not pursue these grants because of regulatory requirements and restrictions on use associated with historical preservation standards.

The DTR will establish a recurring consultation process to better coordinate with scenic rail operators, including more regular communication, and to provide connections to other CDOT divisions and regions to address local needs and highway connectivity and wayfinding.

Short Line Rail Operators in Need of Capital Upgrades

Interviews with Colorado short line railroads identified issues related to capacity, condition, and competitiveness. Most significantly, short lines in Colorado report the need for upgrades to track, facilities, bridges, and equipment to remain competitive with other transport modes and to better serve customers.

To connect to Class I rail lines, to meet modern rail car standards, and to deliver reliable and efficient service, most short line railroad track and structures should meet 286k lb. axle gross weight standards. Colorado's short line railroads operate on various track conditions, ranging from new or upgraded former Class I track to much lighter and older tracks, some more than 100 years old. Track with lower gross weight capabilities requires trains to operate at reduced speeds sometimes as low as 5 to 10 mph. Because upgrading track and replacing ties are costly, short line operators may pursue financial assistance from federal agencies or other sources to complete upgrades. For several short lines operating in Colorado, no portions of track meet 286k lb. axle weight standards, while for others all track has been upgraded. Some short lines lease track owned by Class I railroads but maintained by the short line. Because maintenance on these sections is sometimes deferred, tracks are in poor condition. For short line operators with unstable revenue and tight operating margins, deferred investment in track is often common and some operators have not been able to reinvest in track for 10 or more years. Maintenance needs can risk derailments and force short line operators to run at reduced speeds.

In 2013, the FRA estimated that nationally $6.9 billion was needed over the following five years to maintain, modernize, and expand capacity for Class II and III railroads. The rail industry is extremely capital intensive and requires significant and ongoing investment in track, facilities, structures, and equipment. Most capital needs are met without the need for public assistance. However, smaller short line rail operators welcome assistance programs to offset costs and to preserve service levels. Colorado's short line operators support some form of state assistance, including tax incentives, revolving loans, or grant programs to ensure that current and future capital investment needs can be met.

Freight Rail Service and Access Need to Support Business Development

Survey comments provided by Colorado economic development organizations, chambers of commerce, and other business stakeholders reinforced the importance of rail-served development sites and rail access in attracting and retaining major industrial employers. For Front Range communities, access to Class I railroad service, either directly or via short line connecting railroads, is perceived as critical for manufacturers such as Vestas, Smuckers, EVRAZ Rocky Mountain Steel, and other companies that have recently relocated or expanded in Colorado.

> ***"Roughly a third of the prospects we've spoken with have asked about rail access, which is difficult and very expensive to get, despite two rail lines converging here."***
>
> ***"Over the years we have had business prospects that have needed rail service. We could meet all other criteria, but not rail. We've never landed a prospect that needed rail."***
>
> ***"We have three industrial parks which all need improved transportation planning, especially rail."***

Economic development organizations, particularly in southern Colorado, suggest that rail-served industrial parks play a role in business location decisions and the lack of access to sites in Pueblo and Colorado Springs detracts from economic development opportunities. For economic development organizations and businesses in other regions of the state, freight rail oriented development is viewed as an opportunity to expand business development efforts and to develop efficient alternatives for trucking-dependent businesses. Maintaining service

levels to areas of the state that are experiencing declines in rail traffic due to fewer coal movements is also important to businesses that use those rail lines.

CDOT's DTR and DTD will work to establish connections among regional economic development stakeholders, CDOT's planning and engineering regions, businesses, and freight railroads. Coordination of planning activities and communication of needs may help identify needed projects and improvements earlier in decision-making processes and can help develop needed connections to industrial parks and development zones.

Agricultural Producers Benefit from Improved Rail Service

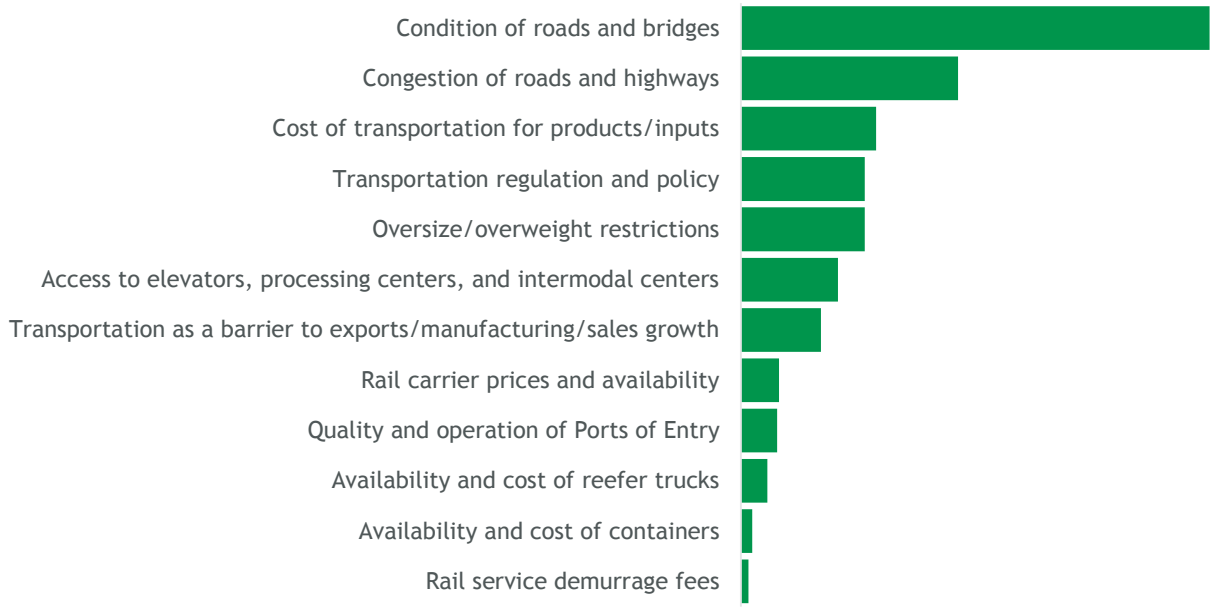
Every Colorado county produces agricultural crop and livestock products, and many producers depend on rail connections to ship inputs such as fertilizer and export grain and wheat. A survey of county farm bureau and agricultural businesses suggests that while highway access, condition, and congestion remain top issues, many producers are concerned about declining rail service, increasing costs, and lack of rail access in some regions. Common issues raised include the reliability and cost of services offered by freight railroads and the discontinuation of rail service to grain elevators and yards.

"We could bring more inputs in by rail and send more grain out if we had a good rail system."

"Rail unloading sites are very difficult to find. There is limited rail service for hauling wheat, corn, and other commodities."

"Grain elevators need more rail access to open up new markets for producers."

What are some of the critical issues and needs you hear from agricultural producers and businesses in your community?



Source: Colorado Department of Transportation, State Freight and Passenger Rail Plan survey responses, 2017

Mining and Natural Resource Businesses View Costs of Rail Service as a Barrier

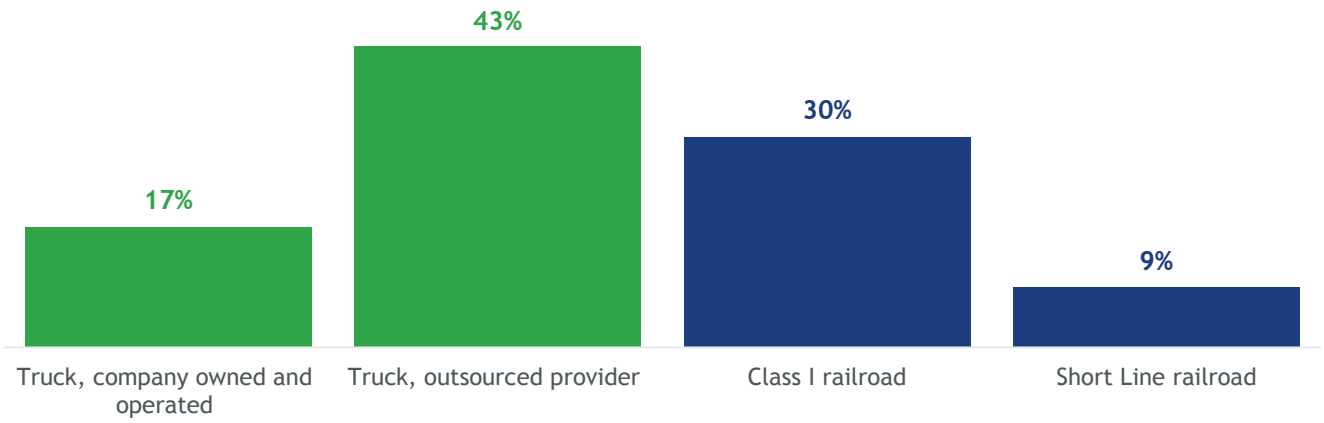
CDOT surveyed a small number of Colorado-based mining, energy, and natural resource businesses with the assistance of the Colorado Mining Association. Extraction and utility industries rely on rail transport to move minerals, aggregates, and metal products out of the state and to move coal within, out, and into Colorado. Survey comments suggest that some producers, particularly coal, view the cost of rail service as a barrier to producing and exporting products. Global and national forces and the increase in natural gas consumption for electrical generation have affected coal production in Colorado. Data from the Energy Information Administration show that rail transportation prices for Uintah Basin coal increased from 2008 to 2014 before declining sharply in 2015.

"Dependence on rail transport is problematic for the development and expansion of new projects because of costs, inflexibility, and availability of cars."

"Rail costs are the major inhibitor for the ability of Colorado coal to be marketed outside of the region."

"Any freight moving around the Denver region is delayed due to congestion on all routes. Rail might be a better option if cost was not such a factor."

What mode of transportation do you primarily rely on to move natural resource products in, out, or within Colorado?



Source: Colorado Department of Transportation, State Freight and Passenger Rail Plan survey responses, 2017

6.5 STAKEHOLDER RECOMMENDATIONS

This section describes the issues and needs raised by Rail Plan Working Group members and through stakeholder outreach activities during the development of this Rail Plan. The Rail Plan Working Group identified a list of critical issues and needs affecting passenger and freight rail operators and services in Colorado. This list was refined through meetings of the Rail Plan Working Group and engagement of stakeholders and partners through Committee meetings and survey outreach.

Critical Rail Issues and Needs Identified by Stakeholders

Goal Area	Critical Rail Issues and Needs	
Safety and Security	▪ Land use, development, and zoning ▪ At-grade crossings	▪ Trespassing and theft ▪ Safety mitigation ▪ Common carrier obligations
Expansion and Improvement	▪ Future corridors and planning ▪ Rail served developable land/zones ▪ Local, state, and federal coordination	▪ Capacity/physical constraints ▪ Policy, partners, and education ▪ Funding and financing
Mobility and Connectivity	▪ Passenger multimodal connectivity ▪ Transit oriented development ▪ Shared use/interoperability	▪ Freight intermodal connectivity ▪ Access to rail-served facilities ▪ Funding and financing
Maintenance and Preservation	▪ Preservation of future capacity ▪ Funding limitations ▪ Federal budget priorities	▪ Abandonment and alternative uses ▪ Encroachment and land use
Economic Vitality and Environmental Quality	▪ Economic competitiveness ▪ Future population growth ▪ Industry/export specific needs ▪ Tourism and scenic railroads	▪ Land use compatibility and access ▪ Community impacts ▪ Environmental ▪ Quality of life

A survey of Rail Plan Working Group members and meeting discussions helped identify priority issues among the list of issues and needs. This exercise resulted in the identification of many consensus priority issues. In rank order, the top issues and needs identified by Rail Plan Working Group members included:

1. **Planning for Future Rail Corridors**
2. **Addressing At-Grade Crossings**
3. **Planning and Policy to Preserve Future Capacity**
4. **Planning for Shared Use/Interoperability**
5. **Educating Public and Decision-Makers**
6. **Setting State Rail Policy**
7. **Coordinating Land Use, Development, and Zoning**
8. **Addressing Rail Service Constraints (e.g., condition, speed, weight, physical, etc.)**
9. **Addressing Quality of Life Issues (e.g., noise, vibration, etc.)**
10. **Supporting Transit Oriented Development**
11. **Targeted Passenger Multimodal Connectivity Improvements**
12. **Improving Rail Access and Rail-Served Industrial Sites**
13. **Planning for Rail-Served Developable Land/Zones**
14. **Targeting Freight Intermodal Connectivity Improvements**

The Rail Plan Working Group developed recommendations to address identified issues and needs through the development of recommended priority strategies and implementation actions described in Chapter 5 of this Rail Plan.

6.6 COORDINATED RAIL PLANNING

This Rail Plan was developed in parallel with the CFP, recognizing that freight rail is a common element of both plans and that improvements, policies, and plans must be coordinated across modes. Planning efforts were coordinated with the DTD's Multimodal Planning Branch and with CDOT Engineering Regions, TPRs, and regional planning partners including MPOs. State agencies including the Colorado PUC, Colorado OEDIT, Colorado Tourism Office, and Colorado Department of Agriculture were key partners in developing and guiding this planning effort. The DTR also coordinates passenger rail planning activities with local governments, rail operators, and other local and regional planning partners through ongoing consultation and planning studies.

In 2017, the State Legislature expanded the SWC&FRPRC to preserve existing Amtrak Southwest Chief rail line service; to consider extending service to Pueblo and/or Walsenburg; and to facilitate the future of Front Range passenger rail. SWC&FRPRC members include representatives from UP, BNSF, Amtrak, ColoRail, RTD, DRCOG, North Front Range MPO, Pueblo County, City of Colorado Springs, City of La Junta, City of Trinidad, and City of Pueblo. This body will coordinate planning and grant activities related to the Southwest Chief service expansion and possible Front Range passenger rail service.

6.6.1 Rail Plan Implementation

This Rail Plan is a flexible document that provides future guidance, direction, and action steps for CDOT, public and private partners, and CDOT committees and commissions. Implementation efforts will focus on key plan elements, including continuous planning; forming and strengthening partnerships; launching education and communications initiatives; and progress on priority strategies.

Continual Planning Efforts

The SWP, Statewide Transit Plan, CFP implementation, and other project prioritization and coordination efforts within CDOT provide ongoing opportunities to further integrate freight and passenger rail considerations into statewide plans and to further implement communications efforts. CDOT's DTR will work with internal partners at CDOT to ensure that freight and passenger rail are integrated as key elements of future statewide plans and project development processes. The vision and priorities established in this Rail Plan will inform continuous planning efforts and carry forward the direction and guidance of the stakeholders and partners engaged in this plan development process. CDOT will continue to coordinate with private industry and private and public railroad operators to ensure that long-term strategic plans are coordinated and that short-term needs and issues are addressed.

Partnerships

CDOT recognizes that private industry and public planning partners are critical to implementing the priority strategies and recommendations identified in this Rail Plan. Most rail infrastructure in the state is privately owned, maintained, and improved. CDOT alone does not have the resources or the capacity to act on all recommendations and priority strategies. For some strategy action steps, CDOT may be the lead implementer, while on others CDOT may provide convening or facilitation support to lead partners. Establishing new connections and joint efforts with private and public partners is essential to funding, organizing, championing, and maintaining progress.

There are many examples of successful partnerships around the country to address critical freight and passenger rail issues. In Florida, the DOT and state Chamber of Commerce jointly funded research to develop a statewide trade, transportation, and logistics strategic plan. This research ultimately led to attention from the Governor, Legislature, and agency partners and resulted in the allocation of new state funding for needed transportation investments in critical trade infrastructure. Other efforts have brought state, regional, and local agency and transportation planning partners together to launch collaborative efforts to identify freight oriented land uses and develop cohesive regional strategies to address freight and rail issues. State programs that provide financial assistance and support to local communities, businesses, and railroads are in many cases jointly administered by a DOT and Department of Economic Development. State supported passenger rail service in other states provides best practices and examples of partnerships, joint ownership and operating agreements, and pooled funding among state agencies, local agencies or governments, Amtrak, and private railroads. Colorado's Winter Park Express service relies on the support and contributions of private sector partners who underwrite direct costs, provide advertising support, or supply in-kind contributions to maintain this service.

To implement priority rail strategies, partnerships with private railroads, regional agencies, local governments, economic development organizations, industry associations, advocacy organizations, and businesses are essential. Developing agreements for shared use, right-of-way, and operations of future passenger rail service with BNSF and UP is necessary and provides an opportunity to advance innovative P3s and agreements. Private railroads are also critical funding partners in federal grants to restore Southwest Chief service, to improve crossing safety and address security concerns, to implement PTC, and to develop infrastructure and connections to businesses and economic development sites.

The strategy action plan in the previous section identifies potential partners in implementation efforts including organizations such as ColoRail, Ports to Plains Alliance, Colorado Municipal League, Colorado Counties, Inc., Colorado OEDIT, American Short Line & Regional Railroad Association, and others. These civic and industry groups will continue to be engaged to develop and distribute information on rail planning efforts, to coordinate rail planning with local plans and economic development strategic plans, and to identify national best practices for application in Colorado. Transit agencies, MPOs, local governments, transportation planning regions, economic development organizations, chambers of commerce, and private businesses will continue to be vital partners in making Colorado's rail vision a reality and acting on the coordination and economic strategic priorities.

Building on these examples and other national best practices, CDOT will work with industry partners, individual businesses, state and regional agencies, and other partners to identify opportunities for cooperation and collaboration. The TRAC and the FAC will provide direction, guidance, connections, and support for partnerships and will help establish priorities and identify actions to implement the high-priority strategies identified in this Rail Plan.

Critical next steps and future actions for CDOT include:

- Operationalize the priority strategy action plan to further identify needed resources, staff support, partners, and implementation pathways.
- Coordinate with TRAC, STAC, FAC, and SWC&FRPRC to set direction on annual priorities and connections to ongoing planning and coordination efforts.
- Supporting the work of the SWC&FRPRC to advance Front Range passenger rail and complete the Southwest Chief upgrade and connections, including providing staff support, resources, or financial and grant preparation support.

Education and Communications

Through conversations with industry stakeholders, public outreach, and discussion with CDOT committees and Rail Plan Working Group members, the need for enhanced education and communications is clear. There is a perception that the traveling public, elected officials, and decision makers are not fully aware of how critical the state's freight and passenger rail transportation systems are to Colorado's economic competitiveness and quality of life or how rail plays a role in CDOT's multimodal approach to meeting future mobility needs.

To inform and educate the public and to build support for future freight and rail transportation investments, this Rail Plan and parallel CFP establish a shared strategy for future education and communications efforts by CDOT and partners. This overarching implementation strategy will make information available on what products move and how, how transportation infrastructure affects business costs and industry competitiveness, how transportation connections support economic development opportunities, how many jobs and businesses rely on freight and passenger rail transport, and how the ability of Colorado's freight systems to move goods and people reliably, efficiently, and safely affects daily lives. Audiences for these messages include members of the traveling public; state, regional, and local agency partners; elected officials and decision makers at all levels; and industry and advocacy organizations.

Education and messaging efforts will be unified under the universal brand – *Colorado Delivers*. JPAC members developed this brand as a single statement that resonates across audiences and reinforces the vision and goals of this Rail Plan.

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Creating a unified brand is important to link the communications efforts of multiple partners and to build consistent visibility and recognition over time. Similar efforts to brand Colorado-grown produce and foods and to recognize products made in Colorado have been successful in influencing consumer choices and have been adopted by retailers and manufacturers within their own marketing materials. The *Colorado Delivers* brand is consistent with the State of Colorado brand guidelines and the logos and visuals used by state agencies, including CDOT. However, this brand will be open source and available for use and promotion by business partners, industry associations, and state and regional agencies and planning partners.

The initial rollout of this brand and communications campaign will focus on goods movement and economic development, working with industry and agency partners.

CDOT will support and promote the *Colorado Delivers* brand and will substantially rely on the efforts of partner organizations and businesses to further the visibility and use of the brand in messaging and marketing. By establishing the brand and making online media, marketing materials, tools, information, and shareable media available to partners, the *Colorado Delivers* brand can reach many audiences, serve many purposes, and work for many partners.

With the development of taglines and additional collateral, the brand can effectively be used to message and communicate the importance and needs of commuting options, passenger rail, essential goods and services, and

other critical public functions. For example, *Colorado Delivers* could also be leveraged to support efforts to increase the visibility of Bustang and Outrider service or to bolster awareness of the traveling public and decision makers of the importance of passenger rail transportation.

Videos, infographics, and other visual media produced for this effort can be shared and used by industry associations, including the Colorado Motor Carriers Association, Colorado Farm Bureau, Ports to Plains Alliance, ColoRail, and other organizations. Stickers and decals will be provided to businesses, associations, and state agencies for use on trucks and trains. Manufacturers may choose to use the logo on products made and distributed in Colorado. Infographics, brochures, and other publications can adopt the brand to unify the information and messages being delivered at conferences, meetings, and publications. The potential applications of the *Colorado Delivers* brand are wide ranging. With support from partners and CDOT, the brand and overarching message can reach broad audiences and gain visibility.

CDOT will provide initial support for the *Colorado Delivers* campaign and will work with industry and agency partners on initial rollout. This effort is intended to be open-source and industry-led in the future without substantial ongoing support from CDOT. Critical next steps and future actions for CDOT include:

- Develop *Colorado Delivers* website with information, logos, collateral, and media available for download and distribution.
- Provide media and collateral, such as bumper stickers and infographics, to partners.
- Work with partner organizations, associations, agencies, and businesses to deploy the *Colorado Delivers* brand in engaging and innovative ways.
- Integrate *Colorado Delivers* brand and messaging into future CDOT communications and planning efforts.

APPENDIX

This Rail Plan includes several supporting documents, published separately as compilations of relevant information generated during the plan development process. Appendices include:

- Glossary of common terms and acronyms
- Freight rail carrier profiles
- Rail Plan meeting presentations
- Summary survey responses

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