STATE OF COLORADO

Colorado Rail Safety

REPORT TO THE GOVERNOR OF COLORADO

TO THE COLORADO HOUSE OF REPRESENTATIVES' TRANSPORTATION, HOUSING AND LOCAL GOVERNMENT COMMITTEE AND TO THE COLORADO SENATE'S TRANSPORTATION AND ENERGY COMMITTEE

REQUIRED BY HB24-1030

PRESENTED BY:

COLORADO
Public Utilities Commission
Department of Regulatory Agencies

COLORADO
Department of Public Safety

COLORADO
Department of Transportation

COLORADO
Department of Public Health & Environment

DECEMBER 1, 2024

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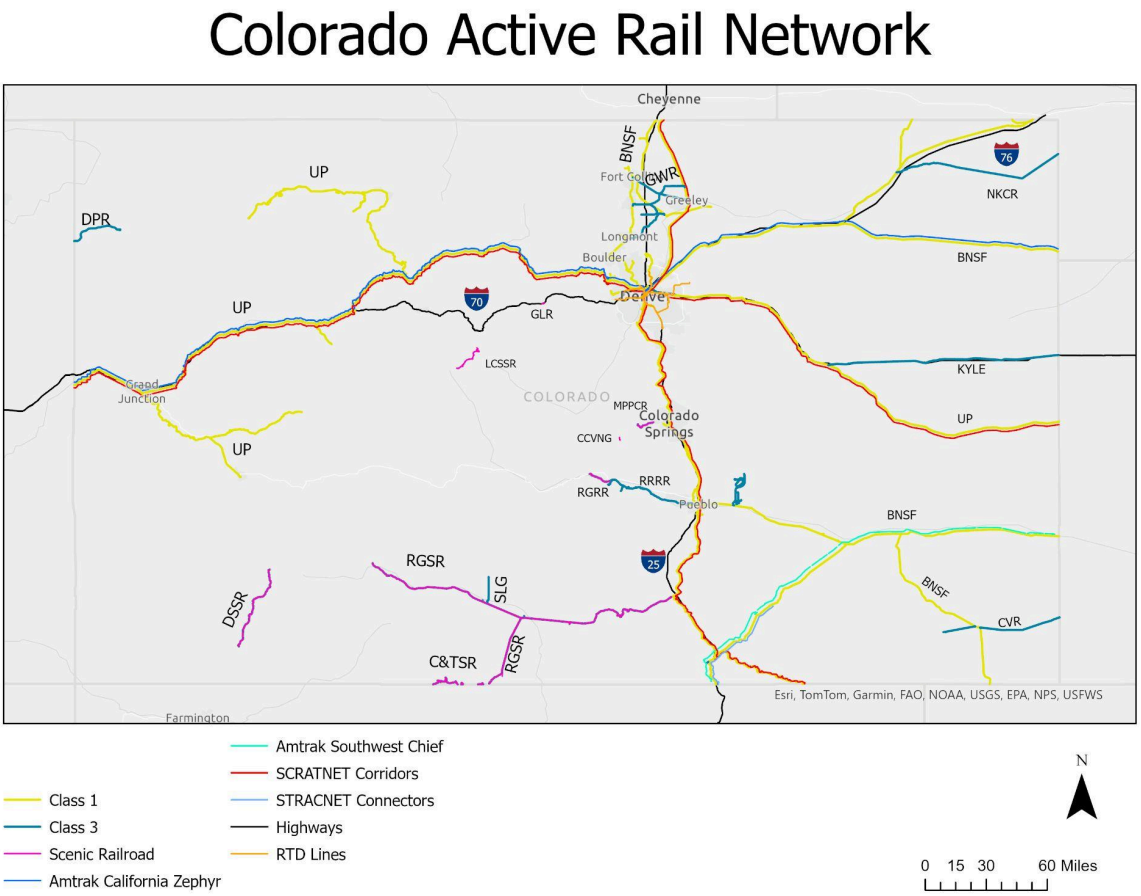
Introduction

This report was developed by Colorado's Public Utilities Commission (PUC), Department of Public Safety (DPS), Department of Public Health and Environment (CDPHE), and Department of Transportation (CDOT) (collectively the Agencies) to meet the requirements of HB24-1030. It has been drafted in close consultation with the Community Rail Safety Advisory Committee and the Rail Industry Safety Advisory Committee. Staff from the Attorney General's Office provided input on relevant sections.

By enacting HB 24-1030 the General Assembly expanded the state's railroad inspection authority and provided through the creation of Office of Rail Safety (ORS) a mechanism to develop and maintain an ongoing level of situational awareness and preparedness to identify, prevent, and respond to risks to the public and to Colorado's fragile environment arising from rail incidents. In drafting this report, the Agencies recognize that rail remains the safest, cleanest and most efficient way to move goods across the state on a per-ton basis and plays an important role in Colorado's economy. An array of rail lines, yards, terminals and crossings throughout the state are an enduring reminder of rail's contribution to the state's 150 year history. As we look to the future of Colorado, a strong passenger and freight rail system will be crucial to our economy, our environment and to how we move across the state. The recommendations in this report are a key first step to ensuring that safety remains at the forefront of this future.

Colorado's Rail System at a Glance

Figure 1: Colorado's Active Railroad Network



Freight Rail Overview from CDOT's Colorado Freight and Passenger Rail Plan[1]

Colorado's freight rail network directly serves 48 of the state's 64 counties and provides critical connections for local economies. Two Class I freight railroads operate in Colorado: BNSF Railway (BNSF) and Union Pacific (UP). Combined, these railroads

[1] https://www.codot.gov/programs/transitandrail/colorado-freight-and-passenger-rail-plan

operate more than 80 percent of freight track miles and carry the most freight by volume and by value.

Intermodal rail shipments, which involve transporting containerized cargo, account for a growing volume of rail traffic in the U.S. and in Colorado. The top intermodal commodities on Colorado's rail system include miscellaneous mixed shipments, empty semi-trailers, and food products. Primary commodities handled by Colorado's Class I railroads include coal, non-metallic minerals, cement and aggregates, farm and food products, consumer products, automobiles, and metal and timber products. Class I railroads are privately-owned and make significant private investments in Colorado every year to maintain and improve services to their customers. 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 Class II and III regional railroads (also known as short line railroads) provide essential regional connections to Class I railroads and serve customers in 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.

Progress since the passage of HB 24-1030

Given the tight timelines established in HB 24-1030, the Agencies have worked to quickly establish the foundation of the Office of Rail Safety, stand-up the two advisory committees, and build a greater understanding of Colorado's rail system and safety needs facing the state. Listed below are key areas of progress.

Advisory Committees

HB 24-1030 established two advisory committees to assist in the development of this report and to provide ongoing advice to the ORS. Committee members were selected and appointed in August of this year and began meeting that same month. A list of each member and their respective terms is provided below. The industry committee met 12 times, the community committee met 10 times, and the committees met jointly on November 7.

Industry Rail Safety Advisory Committee

For terms expiring July 31, 2025:

Andy Williams - to represent operations of Class I railroad operating freight rail lines

Nathan Anderson - to represent operations of Class I railroad operating freight rail lines

Michael Ogborn - to represent a Class II or Class III railroad in Colorado

For terms expiring July 31, 2026:

Alexander Khaflin - to represent a railroad that operates a passenger rail line

Community Rail Safety Advisory Committee

For terms expiring July 2025:

Ean Tafoya - to serve as a representative of a statewide environmental organization

Elena Santarella - to serve as a member who represents an organization with a mission to collaborate with environmental organizations and union representatives

For terms expiring July 2026:

Jacob Hamiln - to serve as a representative of union workers who work for a Class II or Class III railroad

Tom Baumgarten - to represent first responder organizations **Stewart Visser** - to represent first responder organizations **For terms expiring July 31, 2027:** **Sean Schlessman** - expertise rail safety, rail operations, emergency response, or transp regulation **Scott Bookman** - expertise rail safety, operations, emergency response, or transportation regulation **John Putnam** -expertise rail safety, operations, emergency response, or transportation regulation	**Ric Johnson** - to serve as a member who represents union workers who work for a passenger rail operator **Tanya Acker** - to represent a disproportionately impacted community **For terms expiring July 2027:** **Paul Pearson** - to serve as a member who represents union workers who work for a Class I freight rail line in Colorado **Carl Smith** - to serve as a member who represents union workers who work for a Class I freight rail line in the state

FRA Partnership Agreement

HB 24-1030 directed the PUC to "as soon as practicable" enter an agreement with the Federal Railroad Administration (FRA) on behalf of the State. This agreement allows states to participate in investigative and surveillance activities under the federal railroad safety laws and regulations. The purpose of the national railroad safety program is to promote safety in all areas of railroad operations in order to reduce deaths, injuries and damage to property resulting from railroad accidents. The PUC submitted its proposed *Federal Railroad Safety Program State Participation Agreement* with the FRA on August 1, 2024. A FRA-State Rail Safety Participation Agreement requires that the FRA and State, "will singly and jointly adhere to the principles for the conduct of state participation in investigative, surveillance, and enforcement activities that are enunciated in 49 CFR Part 212 and that they will singly and jointly conduct investigative, surveillance, and enforcement activities within the state, under the Federal Railroad Safety Laws; provided, exercise of investigative, surveillance, and enforcement authority under the agreement by the state shall be

limited to the enforcement activities and disciplines specified. . .” The State Participation Agreement delegates certain FRA specified authority with respect to investigative and surveillance activities in the areas of track, signal and train control, motive power and equipment, operating practices, hazardous materials, and grade crossing and trespass education.

The FRA signed the FRA-State Rail Safety Participation Agreement on November 7, 2024. Because Colorado does not currently participate in the FRA state program, the agreement shows the status of the program as “developmental.” Colorado must submit a Revised Schedule of Participation for acceptance by FRA when there are changes affecting the level of areas of participation in the federal program. If levels or areas of participation change, the schedule is updated to specify: a) The federal laws and regulations for which the State Agency authority is currently conferred; b) A description by title and organizational element(s), of the State Agency administrative officers, offices and subdivisions responsible for authorization and guidance of State program activities; c) Any established arrangements for coverage of inspection territories through routine investigative and surveillance activities (which shall be without prejudice to the right of the State Agency or FRA to conduct otherwise authorized activities throughout the state); and d) The progress status of the program (developmental, active, or inactive).

Report Requirements

HB 24-1030 requires the Agencies to provide an assessment of nine different areas that would increase safety for rail operations in the State. As required by the HB 24-1030, the Agencies sought input and recommendations from the Community Rail Safety Advisory Committee and the Industry Rail Safety Advisory Committee. Each Committee's recommendations are included for each section of the report. Sections are listed in the same order as Section 40-20-311(13)(a)(I-IX) of the final bill.

Section I - Staff and Equipment Assessment

An assessment of the staffing levels and equipment necessary to ensure railroads' compliance with federal and state rules and regulations and minimize rail safety risks for railroads, facilities, workers, and communities that include rail lines.

The response to this section is primarily focused on identifying the number of inspectors (and associated equipment) necessary to administer a state rail inspection program per the state's FRA agreement as this program will be the core of the Office of Rail Safety (ORS).

FRA organizes its inspection activities into six railroad safety disciplines (Table 1). By entering into an agreement with FRA, Colorado commits to align with these disciplines and hire and train to perform independent inspections in these areas in partnership with FRA's regional inspectors. The FRA does not require states to cover all six disciplines or specify how many inspectors must be hired within each discipline. Rather, the state may select only those disciplines relevant and important to the state's rail safety program and staff these disciplines as appropriate to the state. However, as described in Table 1 on the next page, the Agencies did seek FRA's input given their knowledge of Colorado's rail system.

Table 1: FRA Railroad Safety Disciplines

Discipline	Focus
Crossings, Track and Structure	Responsible for conducting independent inspections of track structures for the purpose of determining compliance with FRA's Track Safety Standards which prescribe the minimum safety requirements.
Signal and Train Control Inspector/Highway-Rail Grade Crossing	Responsible for inspections of all types of signal and train control systems, including highway-rail grade crossing warning systems.
Motive Power and Equipment	Responsible for inspections of railroad equipment including Safety Glazing, Locomotive Safety, Safety Appliance and Power Brake Standards.
Operating Practices	Responsible for determining compliance with all sections of the federal operating practices regulations including the Hours of Service Act.
Hazardous Materials	Responsible for inspections to determine compliance with all pertinent sections of the federal hazardous materials regulations.
Grade Crossing Safety and Trespass Outreach	Responsible for participating in safety diagnostics involving quiet zones under the train horn rule and emergency notification systems, for reviewing high risk corridors, and for ensuring that the requirements for contacting a railroad through the 1-800 # posted on blue Emergency Notification Sign are met. Also provide education and outreach to communities and work to solve trespass issues.

As Colorado is new to the State Rail Safety Participation Program, the Agencies do not have a baseline to determine how many inspectors are needed in each discipline. Thus, to develop the recommendations described in this section, PUC staff interviewed twenty-eight states that currently have a State Rail Safety Participation Program. The following questions were asked:

1. How long has your state program been operating?
2. How many people are in your program?
3. Which disciplines does your state program cover?
4. How did your state determine the number of people needed in each discipline?
5. Where did you find, or how did you recruit inspectors for your program?

6. Does your state have a job classification that the rail inspectors fall under and what is the classification?

The PUC also sought input from FRA's regional inspectors assigned to Colorado. Their recommendations are described below.

Key Findings (State Programs):

Inspector staffing varies widely across states; ranging from 1 to 46 inspectors. The number of inspectors per state and which disciplines are covered are influenced by the funding available for the state program and the specific disciplines that the state chooses to cover. The grade crossing and trespass outreach inspector category is new, so no other state rail safety programs have designated these new inspectors. Of the 28 states, Arizona, Minnesota, Missouri, and Tennessee are similar in size and track miles to Colorado. Those states are staffed with between five and ten inspectors in three to five disciplines.

Interviewed states provided the following suggestions for Colorado:

- Consider inspector home base location for coverage areas;
- Have vehicles and needed equipment in place to avoid onboarding downtime;
- Establish pay ranges that are similar to FRA inspector pay ranges to reduce potential turnover of inspectors moving to FRA once state training is finished and inspector certification is achieved[2]; and
- Have FRA review/support/approve potential inspector candidates and determine if they would enter training as an apprentice or as closer to being a certified inspector.

Appendix Section C includes more information on the results of the state survey.

[2] Sixteen states have specific railroad inspector classifications for their inspectors, which can allow for higher pay scales for these inspectors. Nine states use current state classifications including utility inspectors, transportation engineers, transportation specialists,and senior engineering specialists.

Key Findings (FRA):

FRA District Specialists were asked for their opinions on the number of state inspectors that would be needed in Colorado to strengthen FRA inspector forces and increase safety for Class 1 and passenger railroad operations. The FRA staff recommend that Colorado hire between 8-9 inspectors as follows:

- Crossings, Track and Structure - 2 inspectors
- Signal and Train Control/Highway-Rail Grade Crossing - 2-3 inspectors
- Motive Power and Equipment - 1 inspector
- Operating Practices - 1 inspector
- Hazardous Materials - 1 inspector
- Grade Crossing Safety and Trespass Outreach - 1 inspector

Section I: Committee Recommendations	
Industry Committee	**Community Committee**
The FRA recommendations regarding staffing are appropriate for Colorado given the current understanding and operations but would need to be reviewed periodically for adequacy. The appropriate amount of equipment for staff, specialized equipment such as vehicles, technology, tools and personal protective equipment, should also be reviewed periodically to ensure adequacy.	The state should hire at least one inspector, with associated equipment, for each of the six disciplines. The State should use data to determine the level of staffing and ensure those resources are focused in the most efficient and effective ways, which may require staffing at higher levels than recommended by the FRA. Over time and in some cases, one inspector could have up to two (2) disciplines moving forward, with track and mechanical being of the most importance. Inspections and resources should be targeted to high population areas, vulnerable (rural, funding, historical, waterways) or geographically restricted areas, state mapped areas of vulnerability and environmental justice, areas of environmental importance, and areas

	that historically have had numerous incidents. In order to operate a fully staffed Office of Rail Safety, the Office must have a minimum of 6 employees, one per discipline, with the ability to grow to 12 or more staff to support inspection and coordination of training and first response activity. The Office must be able to supply vehicles for each field staff, communication equipment for staff, phones, radios to communicate with rail and first responders, and a minimum of one high occupancy Hi-Rail Vehicle. The Office must also have adequate clean-up capacity and caches across the state, including but not limited to, personal protective equipment, fire suppression foam and foam systems, absorbent materials and containment booms, sandbags, and other equipment to divert material away from waterways, specialized leak mitigation and repair kits, personnel decontamination supplies, interoperable communication equipment, railroad standard procedures, and contact information.

Agencies Recommendation

The Agencies recommend that the FRA-State Rail Safety Participation program follow the recommendations from the FRA and the Committees and work to build an Office of Rail Safety with a total of eight to nine rail inspectors. However, the Agencies also recognize that it will take some time to hire and build this office and initial hires should be prioritized in disciplines identified by the Committees as being most important.

While inspectors are foundational to the success of the ORS, the Agencies also evaluated other staffing resources that would establish a comprehensive rail safety presence in Colorado. Two additional FTE are recommended.

- Data Analysis FTE: Responsible for collecting and analyzing rail data and building data dashboards on the ORS website to inform stakeholders on the status of safety for the Class 1 and passenger railroads operating in Colorado. The ORS also will need computer programming to establish some of the data collection, analysis and display of safety data. A full-time Statistical Analyst III is assumed for this position.
- Community Outreach FTE: Provide a single point of contact for community members and stakeholders. Conduct outreach to communities along rail corridors. This role should be filled by a part-time 0.5 FTE Marketing and Communications Specialist III.

The Agencies also recommend that the ORS have access to a higher capacity vehicle equipped with the ability to hi-rail as recommended by the Community Rail Advisory Committee. The hi-rail capabilities of this vehicle would help inspectors access areas where road access is difficult to non-existent.

In total, the Agencies recommend that the ORS consist of a total of up to 12.0 people as follows:

- 1 supervisor-possibly serving part-time as an inspector (this position has been announced by the PUC)
- 0.5 federal compliance specialist handling grant management and federal paperwork filing assistance (already hired)
- 8-9 full-time safety program inspectors
- 1 data analyst
- 0.5 community liaison

From HB 24-1030, three FTE have already been assigned to the ORS along with 0.5 FTE assigned for Administrative Law Judge time, so up to an additional **9.0 FTE** would be needed to establish the ORS.

Section II - Public Data Sharing

An assessment that public data not subject to exceptions under the "Colorado Open Records Act", Part 2 of Article 72 of Title 24, will be shared with the Community Rail Safety Advisory Committee and the Rail Industry Safety Advisory Committee.

In general, Colorado Open Records Act ("CORA")[3] enshrines in state law the policy that the public should have access to all non-exempt state records, except as specifically excepted by law. For this purpose, "public record" generally means all writings made, maintained, or kept by the state. CORA contains specific enumerated exemptions defining when a record does not constitute a "public record" subject to CORA and when a public record may, or must, be denied for public inspection. CORA places responsibility to allow or deny inspection of a state record on the "custodian," meaning the official custodian or any authorized person having personal custody and control of the public records in question.

Section II: Committee Recommendations	
Industry Committee	**Community Committee**
Public data not subject to exceptions under the "Colorado Open Records Act", Part 2 of Article 72 of Title 24, will be shared with the Rail Safety Advisory Committees. Data that might have confidential considerations will have to be processed through the CORA process. For additional public data sharing that will be created moving forward, resources may be necessary to provide that data in the most accessible way possible, and further refinement and discussions about what data exists, what data can be shared, and how that data should be shared is needed.	Public data not subject to exceptions under the "Colorado Open Records Act", Part 2 of Article 72 of Title 24, will be shared with the Rail Safety Advisory Committees. Data that might have confidential considerations will have to be processed through the CORA process. For additional public data sharing that will be created moving forward, resources may be necessary to provide that data in the most accessible way possible, and further refinement and discussions about what data exists, what data can be shared, and how that data should be shared is needed.

[3] §§ 24-72-200.1, *et seq.*, C.R.S.

	The Office of Rail Safety is tasked with researching, collecting data, and providing reports on a variety of topics including but not limited to; blocked crossings, including information regarding emergency vehicles affected by blocked highway-rail crossings; investigations into incidents; identifying high-risk crossings and strategies including funding to eliminate those; annual reporting on safety, including train length for covered railroads and facilities; facilitating public input; communication issues; environmental impacts; and environmental and public health; etc. The Office shall ensure that all data is shared with the Advisory Committees as soon as possible to inform the ongoing work of the Committees. For data collection related to environmental impacts, impacts to surrounding community, environmental health and public health implications, the economy, and infrastructure that is at risk; interagency cooperation and coordination with CDPHE (including air, water, hazardous materials, and emergency response sections), DPS, DNR (Water Conservation Board and Energy Carbon Management Commission), CDOT, the Office of Economic Development and International Trade and/or local economic development agencies, and other applicable state and federal agencies on rail in Colorado shall be taken into consideration when ensuring data sharing, and that data shall also be shared with the Committees.

Agencies Recommendation

The Agencies confirm that, per CORA, any publicly available data and any relevant available state records that are not subject to a CORA exception that prevents their

disclosure will be made available to the Community Rail Safety Advisory Committee and the Rail Industry Safety Advisory Committee.

Section III - Data Collection and Reporting Needs

An assessment of data collection and reporting needs to ensure annual reporting on rail safety, including train length, for covered railroads and facilities.

HB 24-1030 requires certain data to be collected by and made publicly available by the PUC. Described below are the major areas of data the ORS plans to collect.

Blocked Crossings

Through the development of this report the Agencies have learned that the FRA collects data[4] on incidents of blocked crossings (as reported to FRA). There have been 2,951 blocked crossings incidents reported to the FRA from 2020 through the October of 2024. Appendix Section E shows all of the crossings in Colorado where 10 or more blocked crossing reports have been made to FRA in this time period. In the coming months, ORS staff will be building a website that will provide access to the FRA data along with creating a mechanism for DPS[5] as well as members of the public and first responders to report incidents of blocked crossings to the ORS.

Wayside Detectors

What is a Wayside Detector?

The FRA Working Group defines a "wayside detector," as: A device or system installed on the right of way to monitor rolling stock, components, track, or environmental conditions to produce actionable and/or performance data to the handling railroad, or directly to the train crew.

HB 24-1030 requires that railroads annually report the general locations of installed wayside detector systems and spacing between wayside detectors on main lines in Colorado. The legislation also requires that this report provide the percentage of time that each type of wayside detector was operational for the previous year. The PUC implemented emergency rules on November

[4] https://www.fra.dot.gov/blockedcrossings/incidents

[5] HB1030 requires that: "The department of public safety shall, and other emergency vehicle operators may, report to the ORS the details of any event in which an emergency vehicle was stopped or delayed by a train blocking a highway-rail crossing, any request that was made to clear the crossing, the resolution of any such request, and any effects that the delay of the emergency vehicle had on the emergency response."

27, 2024 to establish a process for railroads to submit the first report on wayside detectors (due January 1, 2025).

Train Length

HB 24-1030 requires railroads to annually report train length to the PUC. The ORS staff will be working on a process for how the railroads can submit this information.

Other Data

The ORS also will evaluate additional data collection and reporting needs including areas identified by the advisory committees.

Section III	
Industry Committee	**Community Committee**
The Office of Rail Safety should evaluate if there is data that is not being reported to the FRA that would be helpful to provide in a reporting structure. If so, the Committees will continue to discuss this issue and determine what types of data should be reported and how (e.g., anonymity). If the information is proprietary or confidential, the Office of Rail Safety will follow current standards with regard to that information to protect confidentiality.	In order to best inform the work of the Office of Rail Safety, accurate and comprehensive data covering a range of topics must be collected and reported. In addition to data already required in existing statute, the railroad industry shall report, and the Office shall collect data on the following: ● Blocked crossing location, duration of blockage and reason ● Train length ● Train configuration ● Train wheel axle count ● Wayside detector information including ○ total number of defects identified, and corrective action taken once defect was identified ○ performance standards and calibration ○ the location of newly installed wayside detectors ○ inspection, maintenance and repair of wayside detectors

	○ new and emerging technology on detectors and railroad implementation plans ● Maintenance activity ○ Car and locomotive maintenance including how often a defect is identified, type of defect identified, corrective action, and when any action was taken ○ Track maintenance including how often a defect is identified, type of defect identified, corrective action, and when any action was taken ○ Signal equipment maintenance including how often an issue is identified, type of issue identified, corrective action, and when any action was taken ○ Crossing equipment maintenance including how often a defect or issue is identified, type of defect or issue identified, corrective action, and when any action was taken ● Siding locations and length ● Number of complaints filed to the railroad and to any future public hotline. Data must include type/topic of complaint and any action taken to address the complaint

Agencies Recommendation

The Agencies understand the importance of robust data collection and analysis to provide a more comprehensive understanding of rail safety. They also believe it is important not to duplicate data collection undertaken by FRA or others. A data analyst position within the ORS will be key to this work, including providing more

user-friendly summaries of Colorado data than available through FRA or other sources to provide fair and accurate presentation of Colorado safety data and trends. The Agencies also believe it is important to make this information publicly available and provide annual summaries (with appropriate exceptions for infrastructure security and confidential business information).

Section IV - HazMat Response and Cleanup Needs

An assessment of emergency response and cleanup capacity needed for hazardous materials incidents involving railroads.

As noted at the outset of this report, rail is the safest and most efficient way to move goods across the state on a per-ton basis. However, rail incidents, when they do occur, can be highly consequential to public safety and the natural environment. Recent accidents, including the derailment in East Palestine, Ohio, demonstrate the catastrophic damage caused by a large-scale derailment, particularly when hazardous materials are involved. In this context, Colorado's mountain geography and unique natural resources require particular consideration. Colorado's rail system traverses remote stretches of the Colorado River, which is a water source for some 40 million people. Major rail lines also cross through the state's largest cities and rail facilities, including intermodal yards, and have a significant presence in Disproportionately Impacted Communities.

At the same time, rail transport is in a time of transition as coal production and use in Colorado declines. CDOT's 2024 Freight and Passenger Rail Plan[6] states that: *"Between 2020 and 2050, the percentage of goods carried solely by rail to, from, and within Colorado is expected to decrease from a 7.4 percent share to a 3.1 percent share by tonnage, even as overall freight volumes are expected to increase 66 percent during this period...Excluding coal, rail tonnage into and out of Colorado is expected to increase from a baseline of 7.7 million tons in 2020 to 12.6 million tons in 2040."* While the transport of coal is predicted to decrease, there have been increases in the amount of crude oil transported in unit trains, with a current average of around three eastbound trains of crude oil per day on the Moffat Subdivision and three westbound trains returning from the Gulf Coast. Additionally, the Agencies are aware of a pending plan projected to transport by rail an additional five billion

[6] https://www.codot.gov/programs/transitandrail/colorado-freight-and-passenger-rail-plan

gallons of Uinta waxy crude oil from Utah through Colorado along the Colorado River, South Boulder Creek, and other key resources.

A final rail trend worth noting is the increasing length of trains. The FRA's Safety Advisory 2023–03 Accident Mitigation and Train Length, found that *"freight-train length, particularly for Class I railroads, has increased in recent years. The operation of longer trains presents different, more complex, operational challenges, which can be exacerbated by the weight and makeup of the trains."*[7]

The following text considers the "assessment of emergency response and cleanup capacity" as required by HB 24-1030 from three perspectives: 1) the railroad's capability to respond quickly and appropriately to an incident; 2) the ability of Colorado's first responders to do the same; and 3) the availability of specialized railroad emergency training and the extent to which Colorado's first responders take this training. The Agencies relied heavily on the expertise of the two advisory committees to understand each of these perspectives. Additionally, PUC and CDOT staff conducted a number of site visits and meetings across the state as described below. Senior officials from the Federal Railroad Administration and the Pipeline and Hazardous Materials Safety Administration (PHMSA) joined two of these visits which expanded federal awareness of the challenges faced by Colorado.

- Site Visit to Hot Sulfur Springs/Byers Canyon: The state team met with emergency responders and law enforcement personnel from across Grand County to understand local response preparedness along the Union Pacific Moffat Tunnel Subdivision. This stretch of rail includes numerous tunnels, including the 6-mile-long Moffat tunnel, and traverses steep and remote river canyons. Staff also traveled to Byers Canyon to see firsthand the rail line that runs directly along the Colorado River at the canyon's bottom.
- Site visit to Boulder County: Staff also met with fire, public health, and law enforcement personnel from across Boulder County. Boulder's Hazmat Authority

[7] https://www.federalregister.gov/documents/2023/05/02/2023-09239/safety-advisory-2023-03-accident-mitigation-and-train-length

is composed of the 11 Designated Emergency Response Authorities (DERA) located within Boulder County. All of the DERAs contribute to the funding of the Authority while 5 agencies also contribute personnel and equipment. The Boulder County Hazmat Authority is a Type 1 Hazmat Team and has First Response vehicles located in Boulder, Dacono, Lafayette, Longmont, and Louisville, with personnel available to respond 24/7/365. The Authority also has 85 Hazmat Technicians as members of the Team. As such, Boulder County represents one of the most prepared and well-resourced counties to respond to a hazardous materials derailment.

- Dialogue with Local Emergency Planning Committee (LEPC) representatives at the annual LEPC conference. Staff presented on the purpose of HB 24-1030 and received input on how Colorado could improve its response preparedness.
- Tour of MxV Rail and the Federal Transportation Technology Center. These centers, both located in Pueblo, offer some of the world's leading research on train technology and provide safety training for emergency responders around the nation.

Railroad Response Capability

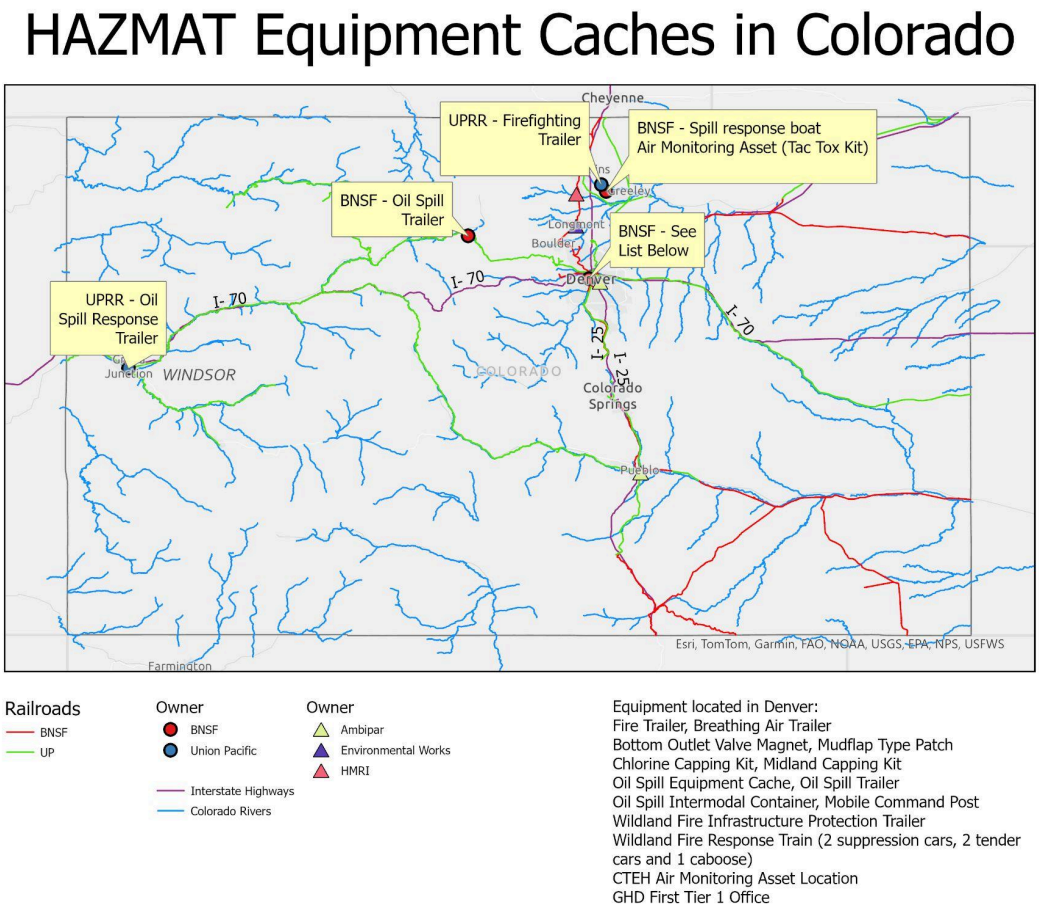
The two Class I railroads, BNSF and UP, presented to the Industry Committee on how each railroad is prepared to respond to incidents. The location of railroad-owned equipment caches was shared (see Figure 2) along with the number and location of hazmat trained railroad personnel. BNSF has three hazmat trained personnel based in Colorado (two in Denver and one in Pueblo) and four response contractors based along the I-25 rail corridor from Longmont to Pueblo. UP has two hazmat trained personnel available to deploy to Colorado–one is located in Salt Lake, Utah and one in North Platte, Nebraska. UP also has a spill response trailer (located in Grand Junction) and a firefighter trailer (located in Windsor). The Agencies also learned through these discussions that the Class I railroads are comfortable acting in partnership, particularly along stretches of rail used by both railroads, to respond to spills and share resources. Both railroads also presented data on Accidental Releases (caused by

a derailment) and Non-Accident Releases of hazardous materials over the last several years.

The Class I railroads also have developed a Colorado River Geographic Response Plan. The Agencies plan to fully review the plan with the railroads in 2025.

From the Community Committee the Agencies learned that rail operating crews on trains are not trained as hazmat responders. Their role is to to stand by and prepare to communicate the situation with first responders including consist details, location of incident in train, status of train securement, movement of trains on adjacent tracks, and other pertinent railroad operations status unknown to first responders. Crews also provide real-time communication between the on-site incident commander, first responders and railroad operations/dispatching center(s), if necessary. Union representatives on the Community Committee also noted that basic first aid training is not typically provided to crews.

Figure 2: Locations of Emergency Equipment Caches Accessible to Railroad First Responders



First Responder Capability

It was not possible with the time and resources available to prepare this report to fully describe the capabilities of Colorado's state and local first responders. However, the following provides a summary of the overall structure in Colorado.

Colorado law requires that each county and municipality designate an emergency response authority (known as a DERA) for responding to hazardous substance incidents. The default DERA for a municipality is the fire authority. The default county DERA is the sheriff. The Colorado State Patrol (CSP) is the DERA on any federal, state, or county highway located outside of municipal city limits. Counties and

municipalities are required to annually report their DERA designation to the CSP. The DERA is responsible for providing or conducting emergency response to a hazardous substance incident and may fulfill this obligation directly or through mutual aid and intergovernmental agreements, including agreements with private entities such as local businesses and non-government organizations. Given potential for jurisdictional complications, complex emergency responses, and the need to develop and maintain relationships with response specialists, railways may benefit from a single, assigned DERA similar to that assigned by statute for unincorporated roadways.

LEPCs are federally-mandated coordination and planning bodies for hazardous materials. Their primary goal is to enhance a county's ability to respond effectively to emergencies, including natural disasters, industrial accidents, and other hazardous incidents. LEPCs assess local risks, facilitate communication and coordination among relevant stakeholders, and promote community awareness and education regarding emergency preparedness. As described above, the Agencies attended the annual LEPC conference and received initial input on how counties can be better prepared for rail incidents. The LEPCs will be key stakeholders for the ORS going forward.

Although DERAs and LEPCs provide an important backbone, local level response capabilities vary widely across the state. Metro-based emergency response tends to be well resourced and supported by a full-time paid staff (see Boulder County Hazmat Authority above) while most rural areas depend on a volunteer force coordinated by one full-time, paid fire chief. Grand County noted that they lack a Tier I hazmat response equipment trailer despite the significant presence of both trucking and rail transport across the county. However, even well-resourced response centers are likely not prepared to handle a large-scale derailment–particularly one requiring several days of response.

Training Access and Uptake

Colorado is unique among states in that two of the nation’s leading rail research and emergency response training centers are located in Pueblo. USDOT’s Transportation

Technology Center (TTC) provides live fire conditions with simulated emergency response conditions including at an on-site train derailment site. MxV hosts the Security and Emergency Response Training Center (SERTC) which includes full-scale, on-site training in hazardous materials response ranging from 24-80 hours in length. SERTC is a member of the National Domestic Preparedness Consortium and receives grant funding so that training for first responders is offered at no cost. However, the Agencies were told by staff at both the TTC and MvX that Colorado tends to have lower enrollment in these courses compared to other states.

Both Class I railroads also provide training to local communities. The railroads each have a training rail car that can be deployed to communities for in-person hazardous material training. This training is free and typically lasts 4 hours. BNSF also offers virtual training on its website.[8]

The Industry Committee also heard a presentation from the Shortline Safety Institute which offers a first responder & railroad management training program.[9]

However, similar to what the Agencies heard from MxV and TTC, both railroads noted that participation by first responders, even when training is brought to communities, is often low. This is likely due to a couple of factors. One, volunteer fire crews must take vacation time or use their weekends to take training as many volunteers work full-time jobs in addition to serving as volunteer firefighters. Second, first responder staffing levels fell steeply after the pandemic and agencies have had difficulty filling shifts and providing leave for training.

[8] https://www.bnsfhazmat.com/community-responders/community-responders-home/
[9] https://www.shortlinesafety.org/training/

Section IV

Industry Rail Advisory Committee Input	Community Rail Advisory Committee Input
While rail is statistically one of the safest modes of transportation for goods over land, this Committee recognizes the potential consequences of a rail incident for public health, safety, and the environment are so significant that continued improvement in the area of rail safety is required. There may be opportunities for improvement in training, equipment, and incident management in government and industry sectors. To further define the Committee's understanding of these opportunities, the Office of Rail Safety should conduct a detailed and comprehensive inventory of capacities to respond to a rail emergency based on the ten existing emergency management all-hazard districts. The Committees should continue to discuss, evaluate, and develop solutions for gaps in emergency response identified through this ongoing process. Communication between rail employees and first responders during incidents should continue to be a focus for improvement. Additionally, the system could benefit from more specificity in terms of adequate training, number of staff, and certifications for responders and operations technicians, and the Committee requests that the legislature study solutions related to accepting and attending training. While a more detailed inventory is under way, the State will work with local first responders, emergency response and public health entities, the railroads, and other parties to identify and implement opportunities for improving emergency response.	The Committee recommends gathering existing data from emergency responders and industry officials and the LEPC's to identify the current state of hazmat response resources and emergency resources for rail incidents and provide data-based recommendations in line with risk management practices and industry data for the necessary resources needed in the state. Significant improvements can be made in the accessibility of equipment caches, coordinated training of first responders and railroad operators, clarification of roles and responsibilities, to ensure that resources are available when needed. Of specific concern is the quality and context of the contact list for emergency response for DERA. The assessment should include identification of areas of concerns to include geographic accessibility, rural areas, vulnerable environmental assets including waterways and protected lands, crossings that experience high traffic volume crossings (including vehicle, pedestrian, and bike traffic), and population dense areas.

Agencies Recommendation

The Agencies agree that the State's resources to respond to large-scale hazardous materials releases from rail incidents should be enhanced to reduce response time and increase capacity, especially in areas of high population density, special populations, and areas of sensitive resources like the Colorado River and South Boulder Creek that supply drinking water, irrigation water, high-value recreation and endangered species habitat. One significant concern is the ability of first responders to promptly mobilize in response to an event anywhere across the state, but especially in areas with fragile waterways and ecosystems, in rural areas, and in the areas within the western slope. Available caches of equipment in Grand Junction and the front range require hours of travel to deploy to parts of the mountains— even in the best of conditions. While Colorado is extremely well positioned to have the most highly trained first responder crews in the nation, first responders are unable to fully utilize these resources. Lastly, in many parts of the state first responders appear to lack the proper equipment and materials required to promptly contain and collect hazardous materials.

While gaps are evident, the Agencies need more information to fully scope these shortcomings and determine what resources and solutions are needed. Thus, the Agencies agree with both Advisory Committees that the ORS should conduct a comprehensive assessment of the state's ability to respond to a large-scale release of hazardous materials from rail transportation. Such an assessment should include:

1. The number, location, training levels, and equipment of hazmat first responders in the state and what areas of the state, if any, lacks access to trained and equipped hazmat first responders;
2. Recommendations on ways to increase access to training and incentives for volunteer firefighters to attend the training;
3. A map that identifies environmentally critical areas of the state, vulnerable environmental corridors, and disproportionally impacted communities that are adjacent to routes operated by freight trains and provides information about

the types and amounts of hazardous materials generally transported along these routes for the purpose of determining what a large a large-scale release could involve;

4. Recommendations on the types and number of additional equipment and materials caches necessary for local first responders to conduct a safe and effective first response to an incident involving a large-scale release of hazardous materials, along with recommendations as to the best locations in the state at which to store equipment and materials ready for deployment by local first responders;
5. The response plans of Class I railroads, and those of other emergency response and health entities, to arrive at the site of a large-scale hazardous release prepared to assume responsibility for the containment, collection, cleanup, and remediation of the site, including:
    (a) an estimate of the number of personnel and the amount and type of equipment and materials required to address a large-scale release of hazardous materials;
    (b) a description of the best routes and the best modes of transportation to be used to transport personnel, equipment, and materials to critical areas of the state; and
    (c) an estimate of the amount of time required for personnel, equipment and materials to be deployed in critical areas of the state.
6. Any additional information that assists in the development of comprehensive plans to promptly deploy the state's local resources immediately followed by the deployment of corporate railroad resources and those of other emergency response and health entities to contain and collect to the maximum extent possible a large-scale release of hazardous materials in critical areas of the state.

The Agencies will seek input from both Advisory Committees on this study and can share results with stakeholders and the state legislature. Additionally, the Agencies

note that there could be several possible sources of funding for improving response including federal grants, Supplemental Environmental Project (SEP) funding, and Fuels Impact Reduction enterprise funds. Such funding can and should be pursued immediately even as the study is underway.

Section V - Highway-Rail Crossing Assessment

A quantification of the adequate levels of investment necessary to reduce highway-rail crossing incidents and other risks.

Colorado has approximately 2,987 total public rail crossings throughout the state with 1,699 public rail crossings that cross Class 1 railroads and passenger railroads. Typically, these crossings have one of the following configurations: 1) grade-separated so that there is no interaction between the rail and vehicles, bikes or pedestrians (455 on Class 1 and passenger railroads); 2) at-grade and signalized with traffic signals, flashing lights, or flashing lights and gates (654 on Class 1 and passenger railroads); and 3) at-grade with signage but no signals or gates (590 on Class 1 and passenger railroads). In addition, Colorado has 772 private crossings, for example on farms and ranches. Colorado has dedicated but limited sources of funding to improve safety at rail crossings as described in this section.

Traffic engineering and planning experts point to three methods to address safety at highway-rail grade crossings:

- Education
- Enforcement
- Engineering

Education

Education of vehicle drivers, bicyclists, and pedestrians of all ages is an important and cost-effective method to teach people how to cross a rail line, and more importantly how not to cross. While the Colorado DMV includes railroad crossings as part of its new driver curriculum, education in safe behavior is most effective if introduced early and continued throughout a person's life.

Operation Lifesaver is a non-profit organization that has provided rail safety education since 1972. Operation Lifesaver is "committed to preventing collisions,

injuries, and fatalities on and around railroad tracks and highway-rail grade crossings, with the support of public education programs across the U.S."[10] PUC, CDOT RTD, UP, BNSF, OmniTRAX and others are partners for Colorado Operation Lifesaver. Colorado Operation Lifesaver has participated in a number of community events over the years to provide highway-rail grade crossing safety education to community members during local community events, and railroads in Colorado have participated in these events in the past as well. Colorado Operation Lifesaver provides booths at community events as well as presentations at schools. Operation Lifesaver presentations can be requested by contacting the State Coordinator, however Colorado currently lacks a State Coordinator (this position that has been vacant for several months).

Enforcement

Enforcement of existing laws is a form of education for drivers, bicyclists and pedestrians of all ages and is also an important and cost-effective method to improve behavior around at-grade highway-rail grade crossings.

Enforcement can include:

- Law enforcement citations
- Targeted enforcement campaigns
- Officer on the train programs
- Video and/or photo enforcement at highway-rail grade crossings
- Tougher penalties for at-grade crossing traffic violations

Citation of existing local laws by law enforcement is one way to curb unsafe behavior at highway-rail grade crossings. Targeted enforcement campaigns have proved to be an effective way to change driver, bicyclist and pedestrian behavior. There are local, state, national, and international awareness days and safety blitzes that are targeted towards changing unsafe behavior to safe behavior on roadways and at railroad crossings. Operation Lifesaver participates in Rail Safety week occurring during the

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[10] *Operation Lifesaver, Inc. website accessed October 10, 2024 www.oli.org/about-us).*

later part of September every year. Operation Lifesaver International publishes the results of Rail Safety Week participation discussing activities, events, public service announcement campaigns, media, and social media campaign results. These annual reports can provide ideas for cost-effective enforcement campaigns that can be targeted towards highway-rail grade crossing safety.

Officer on the Train "is an Operation Lifesaver safety program that allows local, county, and state law enforcement officers into the locomotive cab and allows the officers to observe highway-rail grade crossing problems first-hand and to assist enforcement of motor vehicle laws at railroad crossings."[11]

Photo enforcement or video enforcement are two possible options to collect data and allow for police citation of unsafe and illegal behavior at at-grade highway-rail grade crossings. The FRA has conducted research on the effect of photo enforcement of vehicle driver behavior at highway-rail grade crossings using a crossing with both passenger rail service and freight rail service as a test case and saw reductions in violation types when comparing pre- and post- installation data.

Tougher penalties for at-grade crossing traffic violations is another cost-effective way for drivers, bicyclists, and pedestrians to understand the seriousness of unsafe behavior. Currently, statutory violations at railroad crossings are either a Class A or Class B traffic infraction with a minimum $15 penalty and a maximum penalty of $100. Penalties for each of the different violations range from $15 to $100 with a $6 to $10 surcharge. The penalties are low compared to the severe consequences of rail-crossing crashes. Creating tougher penalties for railroad crossing violations in concert with education could reduce incidents at at-grade crossings.

Engineering

Engineering at highway-rail grade crossings involves a review of any safety issues at the crossing and determining what, if any, engineering treatments will improve the

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[11] *Operation Lifesaver, Inc. website accessed October 11, 2024 https://oli.org/safety-near-trains/track-safety-basics/frequently-asked-questions*

safety at the crossing. Some of the engineering details that are reviewed at the crossing in the field include a review and determination of:

- Sight distance issues at the crossing that do not allow drivers, bicyclists, and pedestrians to see oncoming trains in a safe area near the crossing
- Looking at train speed to determine if there is enough time for drivers, bicyclists, and pedestrians to analyze the conditions and make a determination if it is safe for them to cross the tracks of the crossing
- Looking at vehicle speed, bicycle speed, and walking speed for drivers, bicyclists, and pedestrians, respectively, to determine if there is enough time for drivers, bicyclists, and pedestrians to analyze the conditions and cross safely
- Train volume and vehicle volume to determine the exposure factor at a crossing (number of trains per day x number of vehicles per day), which will increase the probability of a train/vehicle collision at a crossing
- Effectiveness of existing warning device at the crossing
- Determine if upgrading from passive warning (signs) to active warning (flashing lights, bells, gates, traffic signals, etc.) will mitigate any identified safety issues at the crossing
- Determine if upgrading from an at-grade to a grade separated crossing will mitigate any identified safety issues at the crossing
- Addition of supplemental safety measure to improve safety at the crossing (e.g. medians, four-quadrant gates)
- Addition of alternative safety measures to improve safety at the crossing (e.g. exit gate on one side and median on the other side of a crossing, photo enforcement)
- Consolidating or closing crossings

Each of the example engineering treatments can be reviewed and determined if the safety measure will improve safety at the crossing, but many of these engineering measures can be costly, which will limit the number of engineering measures that can be installed at crossings. For example, for a single track crossing with no nearby

adjacent crossings and no sidings or turnouts nearby, the cost of installing flashing lights with gates and bells is estimated at $350k - $400k with costs increasing as additional tracks, switches, or closer adjacent crossings become involved in the active warning crossing design. Grade separations cost much more, depending on the constraints at particular crossings, with low estimates in the tens of millions and higher estimates reaching close to one hundred million. Depending on the part of the state the engineering improvement is proposed, it could be the equivalent to the public works budget for a small town or county for the budget year.

Funding Sources

Current funding sources for at-grade and grade-separated engineering improvements include:

- Federal Section 130 Fund
- State of Colorado Highway-Rail Grade Crossing Signalization Fund
- Local government funding
- Developer funding
- Railroad funding
- Railroad crossing elimination grant
- Consolidated rail infrastructure and safety improvements program
- Grade separation cost allocation

Federal Section 130 Funding

Colorado receives $3.8 million annually from the Federal Highway Administration for hazard reduction and elimination at rail crossings including the installation of safety appliances and grade separations. One-half of this funding ($1.9 million) can be banked for four years to go towards the cost of grade separations, for a total contribution of $7.6 million dollars at the end of four years. Under the Federal Section 130 rules, railroads are expected to contribute five percent of the capital cost.

CDOT allocates Section 130 funding. CDOT ranks the hazard risk of accidents at public passive warning crossings and contacts the road authorities and railroads with crossings that are ranked higher and are being considered for Federal Section 130 funding. After a safety diagnostic to determine needed safety improvements at the crossing, CDOT applies on behalf of the road authority to the PUC for permission to make the proposed safety improvements. The PUC Commissioners review and determine if the proposed improvements will improve safety at the crossing and should be granted. Appendix Section G shows the passive crossings hazard rates. To date, Colorado has improved approximately 292 crossings with Section 130 funds since 1988.

State Highway-Rail Grade Crossing Signalization Funding

The Highway-Rail Grade Crossing Signalization (HRGCS) Fund receives $240,000 per year (adjusted for inflation) to signalize crossings in Colorado. This funding is allocated to the PUC by the legislature for use by local governments to signalize their crossings. The current fund balance is $839,312. The HRGCS can be used if no federal funding is used for a project. Use of the HRGCS fund requires that the railroad pay a minimum of 20% of the cost of the project. The remaining part of the project not paid by the railroad is split between the road authority and the HRGCS as requested by the applicant. All HRGCS projects require a PUC hearing to determine the final allocation percentages to the railroad, road authority, and HRGCS fund. HRGCS funds are not paid to the railroad for the signal project until PUC staff verifies the project was constructed as ordered including review of equipment in the field and watching a train move through the crossing to verify operation is as ordered by the PUC.

Local Government Funding

Local government funding is a common source of funding for highway-rail grade crossing projects. Local governments can appropriate funds for projects to improve safety at crossings including, but not limited to, installing active warning, supplemental safety measures, alternative safety measures and grade separations of

roadway and railroad crossings. As noted above, many local governments lack sufficient funding for these projects.

Developer Funding

Local governments may turn to developers to provide partial or total funding to mitigate safety issues at a highway-rail grade crossing due to additional traffic impacts from the development.

Railroad Funding

Some highway-rail grade crossing safety projects are initiated by and paid for by railroads. These projects can include, but are not limited to, upgrades to existing train detection circuitry systems and upgrades to antiquated active warning equipment.

Railroad Crossing Elimination Grant

The railroad crossing elimination program provides competitive grant funding for highway-rail or pathway-rail grade crossing improvement projects that focus on improving the safety and mobility of people and goods."[12]

Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program

The CRISI "program provides funding for projects that improve the safety, efficiency, and reliability of intercity passenger and freight rail."[13] For example, CDOT partnered with BNSF and contributed State match funds to secure a CRISI grant in 2024 to provide improved crossing warning at three locations in Boulder and Larimer County, and study grade separations at the crossings of SH 66 and SH 119 in Longmont.

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[12] *U.S. Department of Transportation, Federal Railroad Administration, Railroad Crossing Elimination Grant Program website accessed October 15, 2024*

[13] *U.S. Department of Transportation, Federal Railroad Administration, Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program website accessed October 15, 2024*

Note that the federal grants generally require 20-50 percent local match, depending on the grant program, and also require on-going operations and maintenance costs be covered by the road authorities and/or railroads.

Grade Separation Cost Allocation

For grade separation projects that do not involve federal funding and if the crossing meets the minimum criteria for cost allocation pursuant to Commission Rule 4 *Code of Colorado Regulations* 723-7-7206, the cost of a grade separation is allocated at fifty percent to the railroad and fifty percent to the road authority. This cost allocation is a rebuttable presumption whereby the PUC may impose a different allocation if demonstrated by the evidence of benefit and need.

House Bill 83-1569 originally required the PUC to review all grade separation applications that requested cost allocation to the railroads at the same time and allocate costs to each railroad up to $1.25 million per Class 1 railroad. Any projects or combination of projects that were over the $1.25 million per Class 1 were not approved and would have to be applied for in the next year. This requirement was changed by Senate Bill 86-123 to allow projects to be paid over multiple years with no Class 1 railroad paying out more than $1.25 million per year. As Class 1 railroads merged throughout the 1990s, the funding remained the same until 1999. In 1999, House Bill 99-1114 increased the maximum amount to be paid out by a Class 1 railroad per year to $2.5 million. The maximum amount to be contributed per year by a single Class 1 railroad has not increased since 1999, even though costs for grade separations have increased significantly during this same time period.

Section V: Committee Recommendations

Industry Committee	Community Committee
The Committee recognizes that, given the limited time frame for conversation, it is not possible to offer a full quantification of adequate levels of investment. Further study and conversation is required, and the Class I railroad public project team can be actively involved in those meetings. We would recommend that the approach and focus for rail safety be organized into three areas: 1. Education: This includes school curriculum, drivers' education, drivers' license renewal, signage, and marketing. Education is a lower cost and long-term approach to increasing awareness of rail, pedestrian, and vehicular safety at crossings and in high traffic areas. In addition to the staffing levels for inspections and compliance, the Committee would strongly encourage and support education campaigns to include staffing Operation Lifesaver, PSA's, events, officers on the train and general outreach efforts to inform the public about safety and railroads. 2. Engineering: The Committee recommends continuing to coordinate identifying priority projects across the state based on data, developing a budget for those projects, and funding those projects in priority order. The state, local governments and railroads should prioritize identifying and funding grade separations when a city, county or state street crosses a main rail line, particularly along emergency routes. Engineering is a significant investment but is the only way to profoundly affect	The Committee recommends gathering existing data on high priority crossings and working with the owners of the crossings to understand the levels of investment that would include a focus on improving data collection methods to create a full picture of the existing situation and projected needs. The areas of most concern include funding existing state programs such as Operation Lifesaver, adequate funding for local governments and road authorities to make necessary updates and upgrades to prevent incidents and provide maintenance of crossings; and requirements for railroads to communicate with road authorities to achieve the necessary maintenance and infrastructure upgrades. Eliminating and upgrading railroad crossings should be priorities for safety improvements, but investments in signage, education, communication, and coordination are also important, with a balance between rural areas and more urban areas. Improved coordination and efforts to increase funding, including grant applications, for both freight and passenger rail are also important.

public safety. The Committee recommends that PUC and CDOT report annually to the Committees and public on the top 10 highest risk (a) urban and (b) rural crossings in the State and status of Section 130 prioritization and grants. 3. Enforcement: The Federal Railroad Administration recognizes that law-enforcement is an important part of reducing railway related fatalities and incidents. This committee recommends the Office of Rail Safety conduct an analysis of the current statutory and regulatory framework and make recommendations to legislative and regulatory bodies related to the effectiveness of violation penalties and classifications levels. Additionally, the Office of Rail Safety should provide data-driven enforcement recommendations to enforcement partners throughout the state.	

Agencies Recommendation

The Agencies believe improvements can be made across each of the categories described above. The ORS should further examine the following ideas:

- For the education category : 1) Provide additional highway-rail grade crossing safety education for elementary, middle, and high school students; 2) Require that highway-rail grade crossing safety education be required for all driver education programs; 3) Encourage communities to request Operation Lifesaver presentations and encourage the Colorado Operation Lifesaver program to recruit additional volunteers for these additional presentations; 4) Conduct joint recruitment efforts to fill the Operation Lifesaver State Coordinator position as soon as possible; 5) Require the DMV's Colorado Driver Handbook to provide more information on highway-rail grade crossings; and 6) Should be sensitive to language justice considerations.

- For the enforcement category: 1) Bring penalties for highway-rail grade crossing violations into parity with surrounding states and include considerations for the type of vehicle, the related class of driver's license, and the severity of the consequence of causing an incident; 2) Have communities work with the ORS to develop targeted safety and officer on the train campaigns; and 3) Provide funding for photo enforcement at highway-rail grade crossing violations.
- For the engineering category: The Agencies acknowledge that the railroads and agencies are collectively working on a number of projects to address blocked crossings. For example UP, Commerce City, and Adams County are currently collaborating on a grade separation solution and, as a result of this collaboration, received a CRISI Grant[14] and other funds. 1) Evaluate adjusting the $2.5 million cap (applied to each Class I railroad) to account for inflation and passage of time given that the cap has not increased since 1999; 2) CDOT and the PUC should work together to develop a statewide ranking of all public crossings including passive warning crossings and active warning crossings to better target Section 130 funding to crossings that have higher risks to improve safety throughout the state; and 3) The State should continue to use available funds where cost effective and permissible to help pay for the road authority share of crossing surface replacements to improve safety at a crossing. Note that funds for improving highways and crossings are limited and engineering solutions for crossings should be balanced with other safety improvements to reduce loss of life. For context, there were 716 traffic fatalities in Colorado in 2023, of which 6 were from rail crossing incidents.

[14] https://railroads.dot.gov/sites/fra.dot.gov/files/2022-06/FY21-CRISI-Selections_PDFa.pdf Colorado – 120th Avenue Grade Separated Crossing with US 85 and UPRR (Up to $9,589,000) City of Commerce City The proposed project will advance preliminary engineering and right-of-way acquisition to create a new grade-separated interchange with US 85 and 120th Avenue and a grade-separation with 120th Avenue and the Union Pacific Railroad line in Commerce City, Colorado. The project will eliminate vehicular-rail conflicts by grade separating the 120th Avenue at-grade crossing and closing the 124th Avenue at-grade crossing. These infrastructure changes will eliminate vehicular traffic bottlenecks and vehicle-rail collision locations, and improve vehicular access while reducing road congestion. Commerce City and state partners will provide a 40 percent match, and the project also includes additional Federal funds in TIP/FHWA funding.

Section VI - Public Input

Mechanisms for ensuring equitable input from members of the public to state agencies regarding rail safety.

HB 24-1030 established a new Office of Rail Safety to promote transparency, accountability, and safety in all rail operations. This section examines how this new office can ensure equitable input from members of the public to state agencies regarding rail safety. Each of the Agencies responsible for developing this report values receiving input from members of the public and has put into place public outreach structures to notify the public of important developments in its work and public participation structures by which members of the public may provide input on its work. Given the recommendation in this report to house the Office of Rail Safety at the PUC, this section focuses on the PUC's efforts to improve its communication and outreach activities. An overview of recent, related efforts at the FRA is also provided.

Colorado Public Utilities Commission

The mission of the ORS is to ensure freight, passenger, community and environmental rail safety in the state for the state's unique and delicate terrain, its headwaters, its communities, and its rail workers. The PUC welcomes its responsibilities under HB 24-1030 and recognizes that effective public outreach and participation structures are required for the ORS to fulfill its mission. Although the PUC is taking important steps to improve its outreach and engagement efforts across the agency as described below, the Agencies also have recommended in Section I of this report that a part-time community liaison position be assigned to the ORS to provide focused outreach and a single point of contact for community members and stakeholders.

Much of the PUC's recent efforts are focused on the implementation of SB21-272, which requires the PUC to incorporate equity in all of its work. The PUC has been engaged in a thoughtful, multi-year process focused both on changes to the PUC's

existing administrative rules as well as its outreach and engagement practices with the public.

To this end, the PUC has created a foundational equity framework[15] for its work that includes the following components:

- Four dimensions of equity—recognition, procedural, distributive, and restorative—to guide the agency's consideration of equity in its work.
- A set of Guiding Principles to steer the agency's actions, priorities, and direction as it works to consider equity in all of its activities and decisions.
- An overview of each industry or team within the PUC including what it regulates, primary equity concerns, and a baseline for progress.
- A set of industry-specific goals and metrics to advance equity in the PUC's work.
- A strategic work plan and reporting requirements for the agency.

Additionally, the PUC's public outreach and participation structures support the work of the ORS. The PUC gathers stakeholder input through a variety of methods including public meetings, focus groups (notably including the diverse 15-member Equity Advisory Focus Group which informs the PUC's equity efforts), workshops, information campaigns, and collaboration with county agencies. The PUC actively maintains the web presence of the ORS on the PUC's website and maintains an online and a direct customer complaint system.

Building upon the foundational equity framework, the PUC also drafted a Staff Work Plan which required the PUC to gather an extensive amount of information related to public participation and outreach as part of its compliance with SB21-272. Based upon that work, the PUC then published a Staff Capstone Report on Equity, which sets out the following staff recommendations regarding improving public participation in specific proceedings:

[15] https://sites.google.com/state.co.us/pucequityinitiatives/implementation

- Continue making public comment opportunities increasingly inclusive and accessible to the public.
- Consider rules on addressing public comments in adjudicated proceedings.
- Consider modifications to rulemaking procedures to require informational meetings, workshops, and public comment hearing for rulemakings that concern retail programs.
- Consider rules that require potential parties to state in their intervention whether they will address the interests of certain disproportionately impacted communities as part of their advocacy in the case.
- As the PUC's E-Filings System for electronic records is being replaced, the Director can engage users to assess the process and what kinds of education may be helpful.

Federal Railroad Administration

It is also important to note the extent to which the FRA will be a supportive partner of Colorado's work in this area, particularly as it relates to Colorado's agreement with FRA on the state inspection program. Two recent rulemaking efforts are relevant to this assessment.

On October 1, 2024, the FRA finalized a rule [Docket No. FRA-2024-0034[16]] amending its Accident/Incident Regulations. This final rule codifies the Agency's "Policy for Gathering Information and Consulting with Stakeholders" which established guidelines for:

- When FRA will provide the opportunity for stakeholders to participate in FRA accident/incident investigations
- How FRA will notify stakeholders of an accident investigation in which they may participate
- The expectations of stakeholders;
- How stakeholders can participate in FRA's accident investigation process;

[16] https://www.regulations.gov/document/FRA-2024-0034-0002

- How stakeholders can submit information to FRA to assist with the investigation; and
- How confidentiality of individuals and requests for confidentiality by entities will be addressed and maintained.

In a recent Notice of Proposed Rulemaking [Docket No. FRA-2024-0033[17]], the FRA examines the definition of the phrase “in the public interest” with respect to waivers, suspensions and other safety-related proceedings for regulatory relief. The NPRM seeks to draw a meaningful distinction between the two phrases “in the public interest” and “consistent with railroad safety,” and to require the certification of meaningful, substantive consultation with stakeholders, especially railroad employees, before a petition is filed. The FRA clarifies that for a safety-related request to be considered as being “in the public interest” it must affirmatively demonstrate one or more positive innovation factors, which could include empowering workers, ensuring equity, protecting the environment, creating robust infrastructure, enabling adaptability and resiliency, bringing legacy systems up to current standards, allowing for experimentation consistent with railroad safety, providing opportunities to collaborate, ensuring interoperability integration across transportation modes, and the well-being of the public at large.

The FRA envisions a more streamlined process in which petitioners conduct stakeholder outreach with employees and other affected stakeholders before filing a petition, so that others may be involved earlier in the process rather than responding only after a petition has been filed. That would require filed petitions to include sufficient specific information to establish that meaningful and substantive stakeholder involvement has already been accomplished.

17 https://www.federalregister.gov/documents/2024/10/29/2024-24586/federal-railroad-administrations-procedures-for-waivers-and-safety-related-proceedings

Section VI: Committee Recommendations	
Industry Committee	**Community Committee**
Members of the public should be able to communicate with the Office of Rail Safety. Members of the public can communicate with a railroad regarding an issue or question by calling the 800 number posted in compliance with federal regulations at each crossing. The numbers are also found on each railroad's website. The FRA also collects data from the public regarding blocked crossings. Railroads engage in community outreach and are willing to coordinate with the PUC/Office of Rail Safety in those efforts. Railroads report incident, derailment, crossing incident and trespassing strike information to Colorado's Fusion Center. The Committee suggests a data sharing relationship between the Office of Rail Safety and the Fusion Center to eliminate redundant reporting. Additionally, railroads periodically submit a report to the FRA regarding the specifics of any complaints they receive from the public about railroad crossings and the Office of Rail Safety has access to that report.	Members of the public and businesses should be able to communicate directly to both the railroad and to the Office of Rail Safety. Recommended methods of communication include: a specific hotline (such as 311) that is on each rail crossing as well as marketed to the public; a report from each railroad to the Office of Rail Safety regarding public complaints including the specific location of that complaint and the resolution to the complaint; marketing and outreach of existing PUC website; and community meetings and listening sessions statewide.

Agencies Recommendation

The Agencies agree with the recommendations of the Community and Industry Rail Advisory Committees. A designated community liaison as proposed in this report will provide a much needed resource to accomplish the Committee's recommendations in addition to serving as a single point of contact for communities and stakeholders. Further, the Agencies recognize the need for enhanced interagency coordination among them with the goal of making it easier for the public to track and provide input

on rail safety issues, especially on topics that involve the expertise of more than one agency. The ORS also should continue to track federal policy development related to the conduct of state inspections and investigations.

Section VII - Best Practices For Financial Responsibility

An assessment of best practices for ensuring financial responsibility for response, cleanup, and damages from major rail events, which assessment reviews best practices from other states.

In order to develop this section of the report the Agencies researched current state, federal and railroad practices and requirements and sought the expertise of both advisory committees. The Agencies were not able in the time available to prepare this report to find examples of best practices in other states[18].

State of Colorado - Claims For Reimbursement for The Costs Of Response And Mitigation Of Hazardous Substance Incidents (Section 29-22-104, C.R.S)

Earlier in this report, the role of DERAs–Designated Emergency Response Authorities–was discussed. Colorado statute sets forth the right to claim reimbursement for a DERA's costs to respond to a hazardous substance incident as listed below. It is important to note that this statute is not designed to cover long-term mitigation costs. It can however cover long-term recovery costs.

- Section 1(a) discusses that public and private entities, when in agreement with the DERA or fire department, may claim reimbursement from the person(s) who had care of the hazmat at the time of the incident. All reasonable, necessary, and documented costs resulting from the action taken to remove, contain, or mitigate a hazardous substance incident may be claimed for reimbursement. Section 1(b) states that "Response costs recoverable under this section include the value of reasonable emergency response services provided by a private

[18] The agencies are aware of 2024 Minnesota law that established a railroad and pipeline safety account with $560,000 annually appropriated from the railroad and pipeline safety account to the commissioner of the Pollution Control Agency for environmental protection activities related to railroad discharge preparedness. However, this law is currently being challenged. https://www.revisor.mn.gov/statutes/cite/299A.55#stat.299A.55.4 https://legalnewsline.com/stories/658210892-minnesota-law-on-hazardous-materials-on-trains-challenged-by-railroad-group

entity under an agreement for assistance with a fire department or the DERA regardless of whether the private entity has been paid by the fire department or the DERA.

- Section 3 discusses that the governing body of the DERA is responsible for collecting any claims for reimbursement made in response to a hazardous substance incident and the DERA is responsible for the appropriate distribution of the collections.

Railroad Insurance and Liability Limits

Generally, railroad financial responsibility for rail incidents varies based on federal statute and can be shared with shippers or others that may have responsibility for an event. There are currently no federal rules regarding insurance that railroads are required to carry. According to railroad representatives on the Industry Committee, most railroads currently address potential liabilities primarily through self insurance[19]. In Committee discussions, the Class 1 railroads stated that they have had adequate resources to cover derailments and hazardous materials events, including events similar to the East Palestine accident.

The Interstate Commerce Act of 1887 placed common carrier obligations on railroads, which required railroads to provide reasonable service for a reasonable rate upon a reasonable request from a shipper. Shippers, car owners, and lease owners are required to maintain minimum insurance for the cars and materials that are being transported, and that insurance can be between a minimum of $10 million to as high as $1.8 billion for certain classes of chemicals.

There is a federal limitation of liability for rail passenger transportation, 49 U.S.C. 28103(a)(2) - Limitations on rail passenger transportation liability. In 2021,the legislation was updated so that the aggregate allowable awards to all rail passengers,

[19] There is some evidence that is not universal across the industry. Further, shipper vs railroad responsibility remains a topic of debate nationally.
https://www.google.com/url?q=https://www.stb.gov/wp-content/uploads/ACC-Letter-to-STB-Rail-Liability-September-12-2023.pdf%23:~:text%3DRailroad%2520insurance%2520serves%2520as%2520the%2520primary%2520mechanism,for%2520health%252C%2520environmental%252C%2520property%252C%2520and%2520economic%2520injuries&sa=D&source=docs&ust=1731776097493188&usg=AOvVaw2HGmHBsF-pfKknxIvIq3cc

against all defendants, for all claims, including claims for punitive damages, arising from a single accident or incident, shall not exceed $322,864,228 from the previous $200 million. Amtrak has mandatory coverage requirements and shall maintain a total minimum liability coverage for claims through insurance and self-insurance of at least $200 million per accident or incident.[20]

Section VII: Committee Recommendations	
Industry Committee	**Community Committee**
This issue is complex, especially in consideration of environmental and other impacts that may cause legal delays in the determination of responsibility. Railroads can be responsible for events if they have culpability, and there may be multiple responsible parties, such as shippers, consignees, and car owners (or lessors or lessees) that would also have financial responsibility. Class I railroads are self-insured for financial responsibility for a large range of events and may have access to their own or other responsible parties' insurance or self-insurance resources. Federal and State law have structures in place that the state could defer to and there are tools available that the Committees can continue to explore and understand. Existing legislation is in place through C.R.S. 29-22-104 that addresses financial responsibility for the emergency response to a hazardous materials incident. This framework is sufficient to address most scenarios for possible incidents consistent with the federal common carrier obligation imposed on railroads in the national rail network,	The goal of the Office of Rail Safety is to prevent incidents through safety and inspection. However, adequate insurance and financial responsibility of the Railroads is critical to ensure that should an incident occur, communities and the environment can undergo the correct remediation process to be made whole and mitigate further negative impacts. While there are existing statutes in place to address the issue of ensuring financial responsibility, there are gaps in the intersections of these laws and practical on the ground implications such as ongoing cleanup and damages. There also are gaps due to the lack of DERA over railroads leading to smaller DERAs being on the hook for recouping costs, and delays which may be difficult for some DERAs around the state. Additionally, the lack of a DERA over railroads causes gaps in coverage and clear coordination should an incident occur. The committee would like to ensure that there are stop gaps available to ensure proper response, financial responsibility and cleanup of any disasters, this includes the state having the proper equipment to respond quickly

[20] *Federal Register, Vol. 86, No. 36/Thursday, February 25, 2021, Notices Page 11571*

requiring them to accept freight reasonably requested by a shipper and properly tendered for movement. The current legal and financial responsibility structure is sufficient to address most scenarios for possible rail-event incidents that may occur given federal common carrier obligations. The Committee recommends those statutes are followed. Financial responsibility related to the cleanup and repair extending beyond the initial emergency response to a hazardous materials incident and other types of incidents may need to be handled through other existing or forthcoming statutes and rules, as discussed above.	to incidents, potentially lessening impacts and clean up necessary. The committee would like to ensure: 1. The Office of Rail Safety considers a DERA-like structure for railroads, right of ways and incidents related to railroads, similar to that for trucking. 2. That financial responsibility includes funding for worst-case scenario events, ongoing cleanup and long-term monitoring after incident. 3. Gaps in coordination & communication before, during and after an event are addressed, in particular the coordination and command of efforts during an incident which a DERA for railroads could streamline. 4. To ensure financial responsibility, CDPHE (including air, water, hazardous materials, and emergency response sections), DPS, DNR (Water Conservation Board and Energy Carbon Management Commission), CDOT, the Office of Economic Development and International Trade and/or local economic development agencies, and other applicable state and federal agencies on rail in Colorado, will coordinate efforts and engage in interagency cooperation to gather information about the following: environmental impacts, impacts to surrounding community, environmental health and public health implications, the economy, and infrastructure that is at risk. Data shall also be shared with Committees. 5. That concrete preparedness plans and mitigation plans are in place and shared with impacted communities and organizations including organizations that represent rail workers, first responders, local governments, the Office of Rail Safety, etc.

Agencies Recommendation

At this time the Agencies do not recommend immediate changes but do agree to hold future conversations on the sufficiency of the current DERA statute given the state's increased focus on rail safety. The DERA statute provides important protection for State and local emergency response agencies to be able to recoup direct costs to remove, contain, or mitigate a hazardous substance incident resulting from a derailment. In part because local resources for immediate response are constrained, the financial liability for the immediate response is similarly constrained.

Our limited knowledge of recent major derailment events suggest that railroads likely have sufficient capital (combined with shipper contributions where relevant) to cover the immediate costs of railroad hazardous materials release incidents. However, these costs are likely a small part of the cleanup and damages impacts from a major event. The largest direct cleanup costs are generally undertaken by EPA and the railroads themselves after immediate emergency response. Class I railroads have covered the costs of major recent incidents like the East Palestine disaster. Insurance coverage beyond the size of such events is not clearly available or affordable. Nonetheless, the Agencies suggest that the ORS develop a fuller understanding of potential impacts and liabilities, including how federal environmental laws such as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Clean Water Act and Oil Pollution Act, and the Superfund Amendments and Reauthorization Act (SARA) apply to derailments and associated liability. Similarly, ORS should evaluate the extent to which an enhanced State role in required greater financial responsibility tools will be consistent with federal law.

Section VIII - Railroad Communication

A report concerning communication issues impacting rail lines in the state, including communication with state entities such as the Department of Public Safety; communication issues between crews working long trains; and communication from wayside detectors to crews.

As required by HB 24-1030, the Agencies examined several aspects of railroad communication and consulted experts on both committees on current practices and areas of concern. A number of scenarios are discussed in this section based on incidents discussed in the committees (and in some cases experienced directly by committee members). Also summarized is a recent Pipeline and Hazardous Materials Administration (PHMSA) rulemaking that could improve several aspects of communication during an emergency event.

What is a Train Consist?
This is a document showing the number of loaded or empty cars, weight in tons, and length in feet of a specific train. A locomotive consist shows the identifying number and location of each locomotive within that consist for a specific train. The term may also refer to the make-up of the train itself. Source: Operation Lifesaver oli.org

1. Communication between rail crews and state entities such as the Department of Public Safety

During an incident it is critical that first responders, emergency managers and resource agencies have immediate knowledge of what materials are on a train so that they can best protect the responders, train crews, and local communities. Current practice relies on use of the AskRail app, a paper consist on the train, and communications with railroad dispatch. As described below, the PHMSA issued a final rule earlier this year to improve information access for first responders.

AskRail

"The AskRail app, launched in 2014, is a collaborative effort among the emergency response community and all North American Class I railroads. The app provides more

than 2.3 million first responders …with immediate access to accurate, timely data about what type of hazardous materials a railcar is carrying so they can make an informed decision about how to respond to a rail emergency." The Agencies learned through the preparation of this report that the AskRail app has been instrumental to improving first responder greater access to information about train consists. At the same time, there are notable drawbacks:

- Use by first responders is mixed as the app tends to be difficult to install because it requires several steps and proof of qualifications;
- The app is only useful in areas with cell coverage which many parts of Colorado lack (however if first responder dispatch uses the app this information can be communicated via radio to frontline personnel); and
- AskRail is a "near real-time" system rather than fully real-time because train consist information is not uploaded prior to train movement in all cases, due to spacing between Automatic Equipment Identification (AEI) readers.[21]

PHMSA Final Rule Updating its Hazardous Materials Regulations

On June 24, 2024 PHMSA finalized amendments to its Hazardous Materials Regulations[22] in response to congressional mandates and a safety recommendation of the National Transportation Safety Board (NTSB). Class I railroads have one year to implement the new rule. Major provisions of this final rule (pulled from PHMSA materials) are summarized below:

Consist Accessibility: Railroads must provide a local printed paper copy version of train consist information to train crews which must be maintained in a conspicuous location of an occupied locomotive or in the possession of a train crew member if they evacuate the locomotive during an accident or incident. Railroads must also ensure that train consist information is generated and updated in electronic form;

[21] This information is directly from PHMSA' explanation of their final rule requiring real-time consist information. https://www.federalregister.gov/documents/2024/06/24/2024-13474/hazardous-materials-fast-act-requirements-for-real-time-train-consist-information

[22] HMR; 49 Code of Federal Regulations (CFR) parts 171 to 180

maintained offsite of the train itself; and immediately accessible by the railroad's designated emergency response point of contact. Railroads must ensure the local printed paper copy and electronic train consist information maintained off the train are at all times accurate and consistent and that the consist include the origin point of the train (e.g., the railyard where the train was assembled), and the next destination (e.g., the next railyard with a scheduled stop in the direction of travel). PHMSA finds that maintaining electronic train consist information away from the train and updating this information in real-time as the position and number of railcars containing hazardous materials on a train change, addresses many of those shortcomings from reliance solely on the local copy of train consist information.

Class III Railroads have an alternative compliance method that allows for continued use of paper train consist information provided an emergency response notification plan is created with the following:

- Develop a written plan on how the railroad will provide accurate train consist information to local emergency responders.
- Inform response organizations and PSAPs about the plan.
- Test the plan at least annually to demonstrate effectiveness.
- Enact the plan during emergencies.

Emergency Response Information Sharing Requirements: In the event of either an accident or incident involving hazardous materials, railroads must immediately notify by phone the primary dispatch (or Public Safety Answering Point) responsible for the area where the incident occurred, and provide the train consist information by electronic means to authorized federal, state, and local first responders; emergency response officials; and law enforcement personnel who could be involved in the response to—or investigation of—an accident. Railroads must develop a test program and conduct tests of their emergency notification and electronic train consist transmission system at least annually, to ensure reliability of these systems across their network. Railroads must also provide a dedicated, consistent phone number for an emergency response point of contact.

2. Communication issues between crews working long trains

Maintaining effective crew communications is a critical part of safely operating a train. Federal regulations require that all occupied locomotives have a working radio along with a backup wireless system[23]. Crew members onboard and those on the roadway must be able at all times to communicate with central dispatchers in order to navigate track occupation, coordinate maintenance schedules, and report problems. Onboard crews also need an unconstrained ability to coordinate with each other via radio contact in order to maintain optimal train operations.

Crews use two-way, short-range, very high frequency radios that have a limited range based on "line of sight," which "naturally creates more problems for longer trains, especially those moving through rugged terrain[24]." The use of in-train repeaters addresses the limitations of line of sight communication. According to the railroad representatives on the Industry Committee, the Class I railroads in Colorado place repeaters no more than 8,500 feet apart in the mountainous areas of the state, compared with 10,000 feet spacing in non-mountainous areas and a maximum of 12,000 feet spacing set by the manufacturer of the repeater technology.[25] Additionally, UP states that the company does not run trains that approach 8,500 feet in mountainous or tunnel terrain.

On long trains, the difference between the 35 W power limits of the radio in the cab of the locomotive and the 5 W power limits of the handheld radios may result in the engineers being able to transmit to conductors, but conductors not always being able to transmit to engineers under certain conditions[26].

The FRA has agreed that train length is one of several variables that can negatively impact communications, and that the restrictions on bandwidth imposed by the

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[23] https://nap.nationalacademies.org/catalog/27807/long-freight-trains-ensuring-safe-operations-mitigating-adverse-impacts

[24] Id

[25] Members of the community committee noted that reliance upon repeaters may create a troublesome, multi-second lag in the receipt of a radio communication. That lag, coupled with the possibility of several people speaking at the same time, can result in the breakdown of communications under emergency conditions when effective communications are most needed.

[26] Id (National Academies)

Federal Communications Commission has independently contributed to communication problems on railroads[27]. The FRA has stated that it cannot fully analyze the risks posed to communications by train length based on the limited data available. However, railroad employee stakeholders have expressed concerns based on their experience that long trains consistently exceed radio communication limits[28].

The concerns expressed by railroad employees include the problems crew members can have maintaining communications with one another while they are moving long trains at yards and during train inspections and repairs, which take more time to perform as train length increases. The potential for error arising from crew member miscommunications and from the fatigue associated with walking longer trains was also raised as a concern[29].

3. Communication issues between crews and wayside detectors

The Wayside Detectors Working Group of the FRA's Rail Safety Advisory Committee[30] (RSAC) was set up after the East Palestine, Ohio, derailment was linked to a hot bearing that passed two hot bearing detectors without setting off an alert and then failed almost immediately after an alert was sent out by a third hot bearing detector.

The RSAC's Wayside Detector Working Group identified 32 different types of wayside detectors and grouped them into four categories, namely Rolling Stock, Infrastructure, Environmental, and Intrusion.

What is a Wayside Detector?

The FRA Working Group defines a "wayside detector," as: A device or system installed on the right of way to monitor rolling stock, components, track, or environmental conditions to produce actionable and/or performance data to the handling railroad, or directly to the train crew.

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[27] https://www.google.com/url?q=https://nap.nationalacademies.org/catalog/27807/long-freight-trains-ensuring-safe-operations-mitigating-adverse-impacts&sa=D&source=docs&ust=1732476563816591&usg=AOvVaw0ukF6XGG3SXSZEHYKggBOA

[28] Id

[29] Id

[30] https://www.google.com/url?q=https://rsac.fra.dot.gov/meetings?id%3D66&sa=D&source=docs&ust=1731776097279819&usg=AOvVaw0Zlk5Sfij6_cjjnK87hFkc

This working group focused its efforts on hot bearing detectors, hot wheel detectors, and Wheel Impact Load Detectors, because the failure of any one of these rolling stock components can derail a train. Also, a trend analysis[31] done by the FRA indicated that the rate of derailments caused by hot bearings continues at a relatively constant rate notwithstanding the widespread deployment of hot bearing wayside detectors across the nation's rail systems. To close this gap between expected and actual results from these wayside detectors, the Working Group is considering how wayside detector safety systems are being operated and maintained, including the need for focused 24/7 staffing of the desk that monitors the system and issues alerts; the level of system inspection and maintenance needed to determine when a detector is not working as designed; and the appropriate operation of the technology, including if temperature or other settings required to set off an alert are appropriate.

A related concern is the ability of the handling railroad to provide timely and accurate wayside detector information and alerts to another railroad that is using its tracks but is otherwise not a part of the host railroad's wayside detector safety monitoring system. This concern was voiced by the Community Committee, along with concerns about not trusting the reliability of wayside detectors to provide accurate actionable information.

The newly required wayside detector reports under HB 24-1030 will provide important information on the current network of wayside detectors and their reliability which will help inform the future efforts of the ORS.

Communication Issues Identified by Advisory Committees

During committee discussions, a number of potential and real-life Colorado scenarios were discussed.

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31 https://www.google.com/url?q=https://www.federalregister.gov/documents/2024/07/17/2024-15691/safety-advisory-2023-01-evaluation-of-policies-and-procedures-related-to-the-use-and-maintenance-of%23:~:text%3DThis%2520Safety%2520Advisory%2520reiterates%2520FRA%27s,to%2520integrate%2520wayside%2520detector%2520data&sa=D&source=docs&ust=1731776097532331&usg=AOvVaw2455MglchWCBn6oiUXPJ9F

The first scenario arises from the prohibition by the railroads on the use of the train crew's radio frequency for anything other than communications between and among railroad employees and dispatch. One specific example involved a local fire chief who noticed a moving train setting off fires in an area that had no cell phone service. The chief could neither contact the train's crew to alert them on his radio nor call the railroad's dispatch center on his cell phone to notify the train crew of the problem due to no available cell phone service.[32] Access to the train crew via an alternate emergency radio frequency may be a way to bridge the gap in communications in areas without cell phone service which abound in Colorado.

A second scenario involves the adverse effects to both parties involved in a local train-related emergency when both parties report directly to the railroad's dispatch center but neither party receives adequate follow up information as to what actions are being taken by the other. For example, if train crews tell dispatch that they are abandoning a derailed train, but that information is not passed on by dispatch to local emergency responders it may result in a delay in receiving train consist information needed to guide an emergency response. Likewise, train crews report receiving little or no follow up from dispatch to inform them what to expect next from local first responders. As a result the train crew may be left wondering what to expect and when, which may affect their ability to take proper actions to ensure their own safety. Again, bridging this communication gap between the train's crew and local emergency responders would avoid confusion and delays in response.

A third scenario involves the shared desire of train crews to be able to quickly and directly contact the appropriate emergency responder during a health emergency being experienced by a crew member without having to expend valuable, perhaps life-saving time initially reporting the problem to the railroad's dispatch center and relying on dispatch to connect them with the closest available emergency responder.

A fourth scenario focuses on the ability of a local emergency responder to alert an approaching train to a wildfire, flood or other local emergency situation. A real life

[32] While a different incident, this article describes a fire caused by a train: https://patch.com/colorado/boulder/train-ignites-grass-fire

experience involving the Marshall Fire illustrated the importance of being able to contact an approaching train while still en route, or even as it blocked an emergency crossing. Given that train engineers may only take directions from their dispatch center, first responders need to have immediate access to the number for railroad dispatch and not have to:1) know that dispatch phone numbers are listed at crossings; and 2) access this number by finding a crossing, especially during a major event such as the Marshall Fire.

Section VIII: Committee Recommendations

Community Committee	
Concerns with onboard train communications	Ground-based employees are issued handheld radios that work on a radio bandwidth that has become narrower. Engineers rely on the mounted, stationary radio in the cab of the locomotive which is larger and provides a stronger signal and increased range. However, this is the only radio they can use, so in the event of an emergency that requires the engineer to leave the cab they are left without radio communication. Ground based employees use handheld radios to perform safety tasks such as switching moves, to control reverse movement of the train, to properly procure red zone and release red zone, federally mandated air tests and other critical three-point protection safety tasks. These handheld radios frequently experience jumbled speech when more than one person is speaking at the same time, this is even more prevalent in the case of an emergency. When working trains over 8,500 feet, workers rely on signal repeaters to intensify the limited range of handheld radios to communicate. Signal repeaters create a lag between sending and receiving a signal of between six and eight seconds which complicates communication for train workers especially in an emergency situation. Moreover, when trains over 8,500 feet move through a tunnel or mountainous or hilly, undulating terrain the signals can be interrupted. In an emergency, especially in a mountainous region, these communications issues can impede or prevent a timely response by train workers to an emergency.

Concerns with being uninformed when entering an ongoing emergency situation	Train workers expressed concern with not having a system that alerts them to emergency incidents that are underway in an area the train is approaching. The discussions of the Industry Committee about the train blocking emergency routes during the Marshall Fire highlighted a need for greater carrier situational awareness of ongoing emergencies unrelated to the operation of a train in these distinct emergency situations.
Concerns with one-way reporting a train incident to central dispatch	Train workers are required to notify their company's central dispatching system in the event of an incident. However, there seems to be no clear protocol for keeping train workers informed on emergency response. Once the report is made there is little to no follow-up from dispatch with the train workers, who are often the only ones at the scene before the first responders arrive. Even though train workers should not and cannot be expected to be first responders, they are often on the scene before emergency responders and throughout emergency operations. Sometimes, they become victims of emergencies or find themselves assisting a fellow worker during a health crisis. In these cases, workers will need to know the emergency protocol they should follow while they wait for emergency responders to arrive. While waiting for an emergency response, workers need to know what response is coming to the scene, when emergency responders will arrive, and what needs to be done to the train to mitigate risks, (cut the crossing, etc) The Committee requests an update to railroad General Code of Operating Rules (GCOR) to allow the crew (after alerting the railroad emergency response center) to follow up with State Watch and the Office of Rail Safety and report that there has been an incident, derailment, crossing incident, or trespassing without retaliation from railroad management.
Concerns with wayside detectors	Often, train workers do not receive real time information from wayside detector readings since the warnings go to dispatchers instead of directly to crewmembers. As a result, it is left up to the discretion of the carrier to relay the wayside detector information to crewmembers. The committee underscores that the crew must be alerted in real time to any defects detected. Historically detectors were essential in letting the crew know how many cars were in the train, this is key to ensuring there are no additional cars, especially cars carrying hazardous materials, that were in the train when leaving the yard. Even with consist information, receiving real time information from wayside

	detectors provides another check for crews to know what they are carrying. Differing announcements from wayside detectors depending on the year of technology models and the type of defect the wayside detector is made to detect cause discrepancies in information reporting to crews vs. operation centers and the information captured by detectors.
Concerns regarding training	Safety training for rail workers, management, and emergency responders needs to cover a variety of communication-related topics/issues, including but not limited to: Training on management and worker side to ensure State/DPS are notified correctly, timely, and with the right information. Training for rail workers needs to focus on life safety in response to incidents (not reopening track or commerce/customers). Updates to training will need to include information on reporting to the Office of Rail Safety.
Industry Committee	
It is axiomatic that technology continues to evolve and improve, and the railroads are continuously looking for ways to improve the safety and efficiency of their operations. Furthermore, correctly and timely making required notifications to state and federal entities is part of the railroads' protocols. The Office of Rail Safety should be notified of any issues stemming from communication gaps that have been identified by the rail companies, first responders and any other stakeholders. It should be within the limits of the Office of Rail Safety to investigate why these gaps are present and work with the parties involved to find a solution to improve communications among railroads, first responders and the state. First responder agencies can only be hindered in their response efforts while these communication gaps exist. Therefore it is imperative that they be resolved. The Office of Rail Safety can play a key role in identifying these areas and working towards nullifying them. Focused workshops in the field would be a best practice to identify and understand the technical aspects of railroad communication.	

Agencies Recommendation

The Agencies are not in a position to derive a single set of recommendations given the timeline of this report, the range of issues identified in this section and the variety of jurisdictions involved. Implementation of PHMSA's new rule will be an important step in improving communications between first responders and railroads and ensuring that first responders have immediate access to accurate consist information. Moreover, the

new PHSMA requirement for railroads to provide a dedicated phone number for emergencies is a huge step forward and would have been instrumental during the Marshall Fire evacuation. CDPS, CDOT and the PUC should work together to broadcast this number to the State Emergency Operations Center, 911 call centers, and to all DERAs and LEPC coordinators. The Agencies also recommend that UP and BNSF provide this number immediately and not wait for the one year implementation timeline in the PHMSA rule. Additionally, despite the limitations of AskRail, the Agencies recommend a new round of outreach to first responders to encourage use of this app as a measure of redundancy and to improve overall awareness of train movement and contents.

The required wayside detector reports from HB 24-1030 will provide important information on the current network of detectors and their reliability which will help inform future efforts of the ORS.

Lastly, we recommend that the Class I railroads consider the communication challenges raised by the community committee and evaluate whether strategic technology investments (e.g. additional repeaters in mountain canyons and/or available cell coverage) are needed. We recommend further joint investigation by representatives of the Railroads, labor, ORS and DPS.

Section IX(A) - Legislative Fee Structure

A legislative proposal concerning the creation of a fee structure or other revenue source, an assessment, and a governance body and an Office of Rail Safety to address the needs described in sections I through VIII

This section focuses on options to fund the Office of Rail Safety based on the expected costs explained in Section I. Given that Colorado will join a list of 28 other states with rail inspection programs, it is important to consider how these other programs are funded. Based on the PUC's review, nearly all states rely on some sort of fee structure assessed to the railroads to pay for the cost of the state program. These fees are based on a range of metrics including:

- Percentage of gross intrastate revenues
- Per gross ton miles
- Fixed cost per route mile and per grade crossing
- Fuel tax on railroad
- Percentage of total receipts reported
- A formula using track miles + # of grade crossings + gross operating revenue
- Fixed cost per placard
- Railroad route miles

Colorado Railroad Funding Options

HB 24-1030 makes Class I railroads and heavy passenger rail subject to state law requirements. In Colorado this involves two Class 1 railroads (UP and BNSF) and two passenger railroads (Amtrak and RTD)[33]. Given this make-up, there are several options for the legislature to consider should a separate fee be established to fund the Office of Rail Safety. Freight railroads have information on gross ton miles, but passenger railroads do not. Freight railroads will have placarded cars within the consist, but passenger railroads will not. Both freight and passenger railroads share crossings

[33] Total train miles for the Rocky Mountaineer excursion train was reviewed, but the total miles were de minimis in comparison to the other railroads.

throughout the state, and some freight and passenger railroads share operations on the same track. Passenger rail will have the number of passengers transported and passenger miles, which the freight railroads will not. Amtrak does not currently provide an annual report to the PUC (so information on intrastate revenue is not available). However, one common metric with data either currently available or calculable is total train miles.

The total train miles for the two Class 1 railroads and the commuter passenger rail are available through the Colorado Specific reports for the Class 1 railroads and through the National Transit Database for the commuter passenger rail provider. This information is not available in any current filings for Amtrak, but can be easily calculated.[34] This allows each of the four current railroads to be compared by a common metric which can be equitably distributed across the four railroads based on the total train miles each railroad travels in Colorado. Presumably, this funding formula would need to be adjusted in the future once the Front Range Passenger Rail and Mountain Rail operations become active.

It is also possible to apply a fee based on gross ton-miles of freight cars, contents, and cabs which would factor in the additional wear on the Class 1 rail system (and additional inspections) related to the greater number of train consists, rail cars and hazardous materials cars, signal and train control systems, etc. Annual intrastate reporting data is available for this metric from the Class 1 railroads.

Another option is to base a fee on the total track miles for each railroad in Colorado. This metric can be used to divide proportionally the inspection work that will be performed by each inspector among the total miles of track that will be inspected throughout Colorado.

Any combination of these metrics can also be used to represent different utilizations of track in Colorado.

[34] The total miles the passenger rail railroad travels in Colorado for each passenger route can be multiplied by the number of trains that travel along that route every day in Colorado. That total mileage is multiplied by 365 days for two of the routes and the total number of round trips scheduled for the last route can be multiplied by the distance of that route.

Section IX(A): Committee Recommendations

Community Committee

This was a critical part of the legislation that was negotiated with, passed and signed by the Governor last session. We believe that this will make Colorado similar to 30 other states in the country and will start making rail lines safer in Colorado.

Fee Structure:
We believe the proper way to structure and fund the services provided by the Office of Rail Safety is through an enterprise or standalone Office of Rail Safety financed with a fee.
An enterprise is a government-owned business that receives revenue in return for providing a good or service. Enterprises cannot levy taxes and must provide goods or services in exchange for fees. From 1994 through 2024, Colorado has created over 30 state enterprises.
The Office of Rail Safety will conduct unbiased inspections to ensure the proper functioning of rail lines, ensure the state has adequate equipment and staffing to facilitate the work of the Office. This can be done through reasonably calculated rates to the railroads based on the benefits received.
The PUC and the state legislature should review the following as possible fee structures for the enterprise or standalone Office of Rail Safety.

- Track miles
- Corporation fee
- Gross revenue percentage
    - Originated
    - Pass through
- Percentage of gross intrastate revenues
- Per gross ton-miles
- Fixed cost per route mile and per grade crossing
- Fuel tax on RR
- Percentage of total receipts reported
- Track miles + number of grade crossing + operating revenue
- Fixed cost per placard
- Railroad route miles
- Per tonnage
- Gross or car tonnage

This is a comprehensive list that shows a number of potential funding options, but in no way are we suggesting that these should all be utilized in creating a fee structure. The revenue raised from one or a combination of these sources would be more than adequate to cover the services of the office.

Governance Body:
Should the Office of Rail Safety be set up as an enterprise, the enterprise should be governed by a board of directors. The board should consist of various appointees with expertise in freight, rail, environmental impacts, environmental health, public health, public safety, etc. These appointments can be determined in statute and consistent with other enterprises in the state. We want everyone to have representation on this governing board, similar to the representation in these working groups.

Transparency:
To ensure transparency and reporting, the Office of Rail Safety shall be required to report to the Industry and Community Rail Safety Advisory Committees and the Legislature on a recurring basis, at least annually. Additionally, if structured as an enterprise, all funds are subject to periodic audits, allowing for a level of supervision from the legislature.
In closing, creating a dedicated enterprise or standalone fund for rail safety in Colorado is not just a vision—it's a necessity. By establishing a data-driven, unbiased entity, we can proactively address rail safety challenges and protect our communities, workers, and environment.
Through robust collaboration with local governments, rail companies, law enforcement, and rail workers, we can build an Office of Rail Safety that prioritizes safety, fosters trust, and drives lasting change across our rail networks. Together, we can make Colorado’s rail lines safer, ensuring a secure and sustainable future for all.

What We Need to be Funded:
In order to operate a fully staffed Office of Rail Safety, the Office must have a minimum of 6 employees, one per discipline, with the ability to grow to 12 or more staff to support inspection and coordination of training and first response activity. The Office must be able to supply vehicles for each field staff, communication equipment for staff, phones, radios to communicate with rail and first responders, and a minimum of one high occupancy Hi-Rail Vehicle. The Office must also have adequate clean-up capacity and caches across the state, including but not limited to, personal protective equipment, fire suppression foam and foam systems, absorbent materials and containment booms, sandbags, and other equipment to divert material away from waterways, specialized leak mitigation and repair kits, personnel decontamination supplies, interoperable communication equipment, railroad standard procedures, and contact information.
After discussions with rail workers across the state, and from information gathered from other states, we believe this is a strong initial list for a successful office of rail safety in Colorado. We also believe it is important for the enterprise to have the ability to amend and add to this list in the future. This will allow them to be nimble as safety standards change, as the economy and rail traffic levels change. This will also allow the office to address different climate, weather, and geographical challenges that are highly unique to Colorado compared to other states.

Industry Committee

Note: The Industry Committee was not able to agree on a single statement thus two are provided in this report.

Statement #1: Railroad position:
Railroads already pay a fee to the Public Utilities Commission based on annual intrastate revenue. The Office of Rail Safety should not be funded by additional or increased fees, rather from the state's general fund. If a new or increased fee is implemented, the state should ensure the funds are deployed exclusively for inspection purposes. Further, it is imperative that impacted users are defined before rates are determined and applied. Fees should be scalable in relation to activities performed by the office. Any fee should be imposed only on annual intrastate freight revenue. There are legitimate questions regarding interference with interstate commerce and the legality of additional fees. The Office must provide a report each year to all users on sources and uses of funds and efforts to avoid and eliminate inefficiencies, encumbrances, and duplications.

Statement #2: Remaining Committee position
The Office of Rail Safety, housed within the PUC, should be funded utilizing, but not limited to, user fees. This follows the best practices currently in place by the majority of States that already have such an office. The type of user fees to be used may include one or multiple sources that can be defined and evaluated through further study. (i.e., Track miles, Gross revenue percentage, Per gross ton-miles, etc). In addition, the PUC would seek to maximize available federal grants for this Congressionally directed program.

Agencies Recommendation

New, stable funding is necessary to administer the important responsibilities of the ORS, which the Agencies believe is the single greatest step the State can take to improve rail safety in Colorado. The Agencies recommend that the legislature establish a mechanism to provide this funding during the 2025 legislative session so that inspectors and key staff can be brought on as soon as possible but also recommend that this fee be phased in over a multi-year period as it will not be possible to reach full staffing levels in year 1.

The Agencies also recommend that additional funding for emergency response be considered after the assessment recommended in Section IV is complete. However, even then, existing state fees (e.g., the Fuels Impact Reduction enterprise), relevant penalty dollars (e.g., Supplemental Environmental Projects), and federal grant dollars

(e.g., CRISI) should be examined and pursued before creating a new fee structure. Additionally, the legislature may want to consider the responsibilities of hazmat shippers and whether any fee structure should include shipping either in the short or long term.

Section IX(B) - Office of Rail Safety Host Agency

A recommendation as to which state agency would host the proposed governance body to ensure proper compliance with state and federal law, equitable access to community and worker organizations, and enforcement of safety requirements.

HB 24-1030 established an ORS and required the Office to handle a number of rail safety responsibilities. Three different agencies are listed in the legislation as agencies that could house and host the new ORS including the CDOT, DPS, and the PUC.

The agency that houses and hosts the ORS will have a number of responsibilities to carry out that include:

- Collect and report information regarding blocked highway-rail crossings in the state, including information regarding emergency vehicles affected by blocked highway-rail crossings
- Create a standard process for investigators to be used during investigations to determine the appropriate time and method for:
    - Gathering information about an investigation from railroads, contractors, or employees of railroads or from representatives of employees of railroads, and others, as determined relevant by the ORS;
    - Consulting with railroads, contractors, or employees of railroads, or with representatives of employees of railroads, and others, as determined relevant by the ORS for technical expertise on the facts of an investigation;
- Include consideration of how to maintain the confidentiality of any entity identified pursuant to these requirements if:
    - The entity requests confidentiality;
    - The entity was not involved in the accident or incident; and
    - Maintaining the entity's confidentiality does not adversely affect an investigation by the ORS.

- Promulgating rules to protect employees from retaliation for their participation in investigations under this section and creating a mechanism to accept and resolve complaints regarding violations of the rules, which mechanism is consistent with federal law.
- Coordinate with CDOT, CDPS, the CDPHE, CDNR, and stakeholders such as railroads, first responders, local governments, metropolitan planning organizations, and labor organizations to identify and implement initiatives and priorities to reduce the frequency of blocked highway-rail crossings, improve emergency preparedness and resilience, and improve rail safety. This may include innovative use of data and technology to prioritize elimination or protection of highway-rail crossings, information sharing, and first responder decision support. The ORS Shall also coordinate with the aforementioned entities regarding possible federal grants to improve rail and public safety.

CDOT has dedicated rail experience on both freight and passenger rail, houses the Freight Rail Advisory Committee, is the designated agency to prepare the State Rail Plan and the State Freight Plan, which include sections on rail safety and capital development, and administers the Federal Highway Administration Section 130 program to fund railroad crossing projects. However, CDOT does not regulate rail or other transportation system users except, to a limited extent, managed lanes. CDOT's strength is in operating, planning, and funding infrastructure. CDOT also has potential conflicts of interest in housing the ORS if it is responsible for pursuing the issuance of fines that would be sent to the Rail District Maintenance and Safety Fund that is controlled by the CDOT Division of Transit and Rail, and may have conflicts of interest as CDOT develops its Mountain Rail and potentially other passenger rail projects.

DPS is strongly connected to the first responder community and shares concerns regarding blocked crossings and emergency response and currently engages in a variety of investigative and enforcement activities. DPS's current activities include information sharing, emergency response, and resilience of critical infrastructure. DPS hosts a potential analogue to the ORS in that a subordinate division maintains federal

regulatory and enforcement authority over commercial motor vehicles (CMV) and carriers in conjunction with the Federal Motor Carrier Safety Administration which includes direct and related responsibilities including: 1) federal grant management; 2) maintaining a cadre of federally certified inspectors; 3) maintaining a CMV safety training program; 4) in harmony with federal standards, rulemaking and regulation promulgation authority related to standards for CMV operation, transportation and routing of hazardous and nuclear materials, required equipment, hazardous materials emergency response reimbursement, size, weight, clearance, and emergency routing rules, conducting CMV carrier federal compliance reviews, enforcement of federal and state CMV safety standards, maintaining a cadre of certified emergency responders, and maintaining close partnerships with local authorities and industry; 5) DPS manages significant and complete information disclosure requirements; and 6) a subordinate DPS division is the DERA for hazardous materials incidents on unincorporated public roadways throughout the state and could provide the framework for a similarly structured authority for railroads. However, DPS would require additional FTE's to fill the office, and DPS may require additional authorities to fulfill the requirements of the office.

The PUC is currently responsible for administering the ORS per the legislation and already has the fining authority and is required to impose fines under the legislation. The PUC has the necessary processes in place for the determination, imposition, and appeal of any fines issued and is already responsible for most of the rulemakings required under the legislation including fining for certain violations, training content, safety drills, communication, and railroad incident response requirements. Per the legislation, the railroads are already required to submit annual reports on the locations of installed wayside detector systems and train length to the PUC as well as existing financial reporting and other data and information annually. The legislation requires the PUC to regularly engage with railroads, unions representing railroad employees, local governments of counties, special districts, and municipalities that contain railroad lines, first responder organizations, disproportionately impacted communities and environmental organizations and is required to conduct periodic

compliance reviews to ensure each railroad is in compliance with the legislation. The PUC was required to submit the State Rail Safety Participation program to FRA to secure authority for the program and already has experience with running U.S. Department of Transportation Safety Oversights programs with the State Rail Safety Oversight program under the Federal Transit Administration and the Pipeline Safety Program under the PHMSA. The enabling statutes for the ORS are included in the PUC's Title 40 statutes and the PUC was appropriated 3.5 FTE already to enable this legislation.

While individuals and groups often find the PUC's more formal and legalistic processes and procedures to be confusing and expensive (as it is presumed legal counsel is necessary), the PUC has been working to improve its communications and engagement efforts and to implement equity in all of its work as required by Senate Bill 21-272. The PUC has developed an equity framework, is working on equity initiatives, has developed a Staff Work Plan, and is developing resources for individuals to learn more about PUC processes.

Section IX(B): Committee Recommendations	
Industry Committee	**Community Committee**
The Office of Rail Safety should be hosted within the Public Utilities Commission and the necessary steps taken to allow the Committees to provide advice to the Commission on rulemakings.	The Office of Rail Safety should be housed within the Public Utilities Commission in coordination with other departments in the State as outlined in the legislation. Although the committee recognizes the historic role that the PUC has played in protecting the public from large agencies such as railroads and utilities, we also maintain strong concerns around the level and quality of access that would be afforded to workers and community members if housed in the PUC. The ability of railroad workers and members of the public to talk directly to staff and report issues with ease are vital to the success of the Office. Transparency, responsiveness, and

	accessibility must be key features of the Office of Rail Safety. The PUC shall implement best practices for public accessibility in accordance with language in legislation including Senate Bill 272 and House Bill 1266 and the Environmental Justice Task Force recommendations. The committee suggests having a staff member that is available to the public. The PUC should articulate a plan for how they would integrate interagency collaboration into their work should they house the Office and its inspectors. The PUC should also articulate a plan for how they will integrate inspection staff and develop their enforcement capabilities if they are to support the mission of the Office.

Agencies Recommendation

The Agencies concur with the advisory committees that the PUC is the most logical place to house the Office of Rail Safety. The Agencies also acknowledge the importance of close coordination on rail safety including through the planning and execution of table top exercises, the study of additional emergency response needs, etc.

APPENDIX

A. Definitions

Class I Railroad: a railroad carrier with annual operating revenues of more than $1.05 billion dollars. For purposes of this report, the Class 1 railroads are the BNSF Railway Company and the Union Pacific Railroad Company.

Class II and III Railroad: a railroad carrier with annual operating revenues of between $47.3 million and $1.05 billion dollars is a Class II railroad, and a railroad carrier with annual operating revenues of less than $47.3 million dollars is a Class III railroad. There are currently no Class II railroads in Colorado.

Passenger Rail: For purposes of this report, passenger rail is defined as "heavy" passenger rail transport which includes RTD's commuter rail lines (A, B, G, and N) and Amtrak service in Colorado including the California Zephyr, the Southwest Chief, and the seasonal Ski Train.

Scenic/Tourist Railroad: For purposes of this report, the scenic and tourist railroads are all remaining railroads operating in Colorado that are not freight or passenger railroads.

Short Line Railroad: a Class II and/or Class III railroad.

Train: means a locomotive unit or locomotive units, with or without cars, that require an air brake test pursuant to 49 C.F.R. Part 131 and Part 238.

Wayside Detector: means an electronic device or a series of connected devices that monitors a passing train to determine whether the train has a defect, including a hot bearings detector and a dragging equipment detector.

B. Inspector Staffing Classification and Salary Considerations

The Department of Transportation has a Railroad Safety Series Position Classification that is used when hiring FRA Railroad Inspections. This series "includes positions that are involved in developing, administering, or enforcing railroad safety standards and regulations or investigating and preventing railroad accidents. These positions require; 1) broad knowledge of railroad operating practices and recordkeeping; 2) practical knowledge of methods used in the installation, maintenance, or manufacture of railroad equipment, signal systems, or track; 3) knowledge of safety practices applicable to the investigative techniques used in determining the cause of accidents."[35]

Colorado does not have a rail specific job classification and thus existing job classifications were reviewed to determine which state classifications could accommodate the new rail inspector positions and provide equivalent compensation to federal rail inspectors GS 11 and GS 12 salary scales. Based on job classification names, the Inspector[36] job classification and the Environmental Protection Specialist (EPS) job classification were reviewed as possible job classifications. The EPS classification was determined to cover the responsibilities of a rail inspector.

The EPS job classification describes professional scientific application work in monitoring, controlling, preserving, reclaiming, or regulating the environment and natural resources in which people live and work. Positions work with private

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[35] (*U.S. Office of Personnel Management Railroad Safety Series, GS-2121 TS-37 November 1979, p.2)*

[36] The Inspector classification describes work in the inspection of structures and equipment or systems to ensure compliance with industry standards, specifications, and regulations required for the safety of citizens. Work includes interpretation of regulations and industry codes, issuance of violation notices, inspection of documents and sites, and granting of permits and certificates of occupancy. Inspections or reviews are distinguished from compliance investigation in that inspections used predetermined regulatory and industry criteria to issue permits or certifications and report deficiencies to be corrected. Typically, any enforcement issues found during the inspection are turned over to investigative entities for formal investigation and legal enforcement action or sanction." (*Colorado Department of Personnel/General Support Services State of Colorado Class Series Description July 2018 Inspector D9C1XX to D9C3XX Description of Occupational Work p.1)* This classification would allow rail inspectors to perform inspections as outlined in the FRA personnel classification, but would not allow for any investigations to be performed as is required in the FRA personnel classification. Based on this analysis, the Inspector job classification would not be appropriate for the new Colorado rail inspectors.

companies and governmental agencies to enforce laws and regulations aimed at protecting the public health and safety and/or remediating the environment. Additionally, the PUC currently uses the EPS category for the pipeline safety program.[37]

Salary Considerations

Salary and wages for federal employees consist of 15 grades. Based on conversations with FRA, rail inspectors start at the apprentice level at a GS 11 grade and move to a GS 12 grade once the inspector is certified and can perform their job duties independently. The table below shows the 2024 GS 11 and GS 12 annual salary ranges from step 1 to step 10 in salary and wages with locality pay specific to Colorado.

Grade	Location	Annual
GS 11	Colorado	$72,553 - $94,317
GS 11	Co. Spgs	$74,361 - $96,666
GS 11	Denver	$80,665 - $104,861
GS 12	Colorado	$86,962 - $113,047
GS 12	Co. Spgs	$89,128 - $115,863
GS 12	Denver	$96,684 - $125,685

The pay plan in Colorado involves class levels for each of the job classifications in the state. Under the new step system, each class level is now divided into 30 steps. The table below shows the 2024/2025 fiscal year class level minimum and maximum salary range for the 30 steps.

[37] *Colorado Department of Personnel & Administration State of Colorado Class Series Description July 2015 Environmental Protection Specialist I3A1I* to I3A6** Description of Occupational Work p.1).* This class series has speciality areas including consumer protection..

Class Level	Annual	Authority
EPS I	$64,440 - $95,196	Individual Contributor
EPS II	$74,604 - $110,196	Individual Contributor
EPS III	$86,376 - $127,584	Work Leader or Staff Authority
EPS IV	$99,994 - $147,684	Unit Supervisor or Senior Authority
EPS V	$110,232 - $162,828	Manager or Leading Authority

While the annual salary ranges look similar between the GS 11 grade and the EPS II class, and the GS 12 grade and EPS III class, there is a difference in that the GS salary ranges cover 10 steps and the EPS salary ranges cover 30 steps. One possible way that the state annual wages could keep up with the GS annual wages would be through promotions within the EPS classification to higher levels as inspectors gain additional authority through experience.[38]

[38] The other option would be to create either a rail safety inspector specific state classification or a federal safety program inspector state specific classification. Creating a separate rail safety inspector or federal safety program inspector specific state classification would allow for greater flexibility in determining appropriate salaries in Colorado for these specialized inspectors. However, it is recognized that new classifications require considerable time to create.

C. FRA State Safety Participation Program Survey by State

FRA State Safety Participation Program Survey By State June 2024

	How many people are in your program?	Which disciplines does your state program cover? -Operating Practices (OP) -Track (T) -Motive Power & Equipment (MP&E) -Signal & Train Control (S&TC)l -Grade Crossing (GC) -Hazardous Materials (HM)	How did you determine the number of people you needed in each discipline? How many track miles do you have in your state where known?	Where did you find or how did you recruit inspectors for your program?	How the State Program is funded. Plus program cost where available.
Alabama	5 - Manager/Inspector plus 4 additional inspectors.	T, MP&E, OP.	Demand driven. 3950 track miles	Word of mouth, including RR's and FRA inspectors.	Railroads pay User Fees - Intrastate transportation only.
Arizona	9 - Manager/inspector plus 8 inspectors.	S&TC, HM, OP, MP&E, T, GC.	Track and hazmat is dictated by the legislature. Ideally have 1 in everything. and increase as need arises. 3100 miles of track.	General advertising. State website. Submit resumes to FRA for alignment. Require 4 years experience except hazmat. No word of mouth.	General fund - Corporate Commission. $1.503M/year.
California	46 inspectors	HM, S&TC, OP, MP&E, T, Bridges.	Demand driven.	Word of mouth and contacts, advertise via California-HR postings.	RR's contribute to "Railroad User Fee Fund".
District of Columbia	Manager plus 2 inspectors.	HM, T	Dual certification desired due to 26 total track miles.	Share openings with Association of State Rail Managers, LinkedIn, Railroad Operators Association job board.	Anticipate a fee based on the number of cars coming through DC.

Florida	7 - Supervisor, program manager/Inspector plus 5 inspectors.	S&TC, HM, OP, MP&E, T.	Consideration of covering key disciplines, inspector home location and number of FRA inspectors in the state. 2738 miles of track.	Word of mouth, from Railroads most often, FRA employees now interested too. Post on the state website, as well as LinkedIN.	Unknown $0.864M/year. (Vehicle fuel/maintenance not included).
Idaho	2 inspectors.	HM.	Funding driven.	Network with rail roads.	Tax is based on revenue of Railroads - Annual Gross Intrastate Revenue.
Illinois	Nominal staff 21 - 10 certified inspectors	S&TC, HM, OP, T.	Incident and demand driven, then divided state into 3rd's as well for coverage. 7400 miles of track.	Salary is the biggest factor. Quality of life counts too.	RR Grade crossing protection motor fuel tax=$5.5m. Also have fees to the RR, $28 per public crossing per year.
Indiana	0 - Left program due to staffing shortages, may participate at a later date when vacancies filled.	NA	NA	NA	NA
Iowa	3 - supervisor and 2 inspectors.	T	Demand driven. 3,837 miles of track.	Advertise through state channels, let railroads know positions are open and network with railroads.	Unknown
Maine	1 inspector dual certified.	OP, T.	Not captured. 1475 miles of track visited 3 times per year.	NA.	Unknown
Maryland	5 - 3 inspectors, 1 admin, and 1 manager.	OP, MPE, T	Targeting 1 per discipline. Currently MP&E TBH.	Focused on candidates from large railroads.	MD Railroad Fund. $0.375M for 3 inspectors (includes travel/vehicles).

Minnesota	6 inspectors.	S&TC, HM, OP, MP&E, T.	The number of yards affect inspector needs significantly. Have a goal of inspecting everything in a year, more for passenger rail. HM became more important due to oil from North Dakota. OP is the number one cause of error. 4600 miles of track.	Most are from Railroads-like more work-life balance though pay is less, have not had a problem, hazmat came from highway discipline, use LinkedIn, also word of mouth through inspectors.	State statutes make an assessment on the Railroads to pay for the program. $1.037M/Year.
Mississippi	0 - Left the program due to staffing shortages and work load increase (a state law requires all at -grade crossings to be inspected annually).	NA	NA	NA	NA
Missouri	7 inspectors.	S&TC, OP, MP&E, T.	Prefer 2 of each discipline in case of sickness, retirements etc. 4800 miles of track.	Word of mouth is best. Johnson County Community College and BNSF Railway program in Kansas has been a resource too. Thinks FRA would accept graduates from there,	Funded by a tax on Railroad Intrastate Revenue. $2.08M/year. Covers salaries, travel, vehicles & admin costs.
Nebraska	2 inspectors.	MPE and T	State limits to 2 currently.	State jobs site, LinkedIn and Johnson Co. Community College. Kansas.	Appropriations from a State General Fund".
Nevada	4 inspectors.	MP&E, T HM, OP.	Demand driven. 1119 miles approx.	Recruit through HR, networking via state managers.	BNSF and UP pay a mil, a percentage to fund part of the

					program.
New Hampshire	1 inspector.	T.	One track inspector is adequate. 443 miles of active track.	Word of mouth and advertising. Can be challenging.	5% Tax on Freight, 10% on Passenger Rail Revenue.
New Mexico	3 - part time manager plus 2 inspector positions.	Hazmat, OP TBH.	Funding driven.	Standard hiring procedures for state employees.	Unknown
New York	15 - 3 supervisors/inspectors, 12 inspectors.	S&TC, HM, OP, MP&E, T.	Based on demand and policy. 4500 miles of track.	Word of mouth mostly, posted as well. Get queries regularly for work-life balance reasons. Much lower ($30k lower than FRA, 1/2 of Railroad).	Annual fee assessment on RR's.
North Carolina	5 - a supervisor and 4 inspectors.	T, OP, S&TC, GC.	Targeting 1 per discipline. HM TBH. 3448 track miles.	Post and advertise the positions, be specific on inspection and maintenance experience. Usually Class I applicants.	Gas Tax. $0.564M/year
North Dakota	3 - Manager plus 2 inspectors.	T, MP&E, HM.	Not captured. 3400 miles approx.	Advertise on state websites plus LinkedIn and Indeed, manager association and inspector word of mouth.	4 cents per gallon Diesel Tax. $0.332M/year
Ohio	Nominal staff of 17, with 13 inspectors.	S&TC, HM, OP, MP&E, T.	Having key disciplines and location within the state. 5000 track miles.	Ohio posts within the state before going to the general public. All hires have worked typically for a Railroad except one. Inspectors pay was upgraded in 2018 to be closer to FRA salary	Fee based on profits of utilities including the Railroads.

				levels. $60k-$90k scale. 12-1300 FRA inspectors nationwide include state trained inspectors.	
Oregon	2 FRA inspectors.	HM, T.	Hazmat and track were prioritized. 2300 miles of track.	Word of mouth. Easy to get people.	RR Gross Revenue Fee of 0.0035%.
Pennsylvania	10 - 2 inspector managers plus 8 inspectors.	S&TC, HM, OP, MP&E, T.	Discipline needs and territory allocation. 5100 miles of track.	4 cents per gallon Diesel Tax. A portion of the latter goes to fund the program.	Funds through fees on utilities, including Railroads.
South Carolina	Manager that manages multiple groups plus 2 inspectors.	T & OP.	T was prioritized. OP and MP&E were next.	Word of mouth, post on state websites as well. Share openings with other state program managers.	RR Gross Receipt Tax - state revenues are filed with the state - the tax factor changes each year. Fractions of a percent is typical.
Tennessee	5 - a dual manager-inspecto r and 4 other inspectors.	OP, S&TC, T, GC, Bridges.	Following FRA recommendations to cover key disciplines. 5900 track miles.	Via state website. Post on the rail union job board as well.	RR's fund the program, Tonnage/Mile Fee by state law. $0.55M/year (does not include vehicles & maintenance).
Texas	Nominally staffed at 49 employees.	HM, T, MP&E, S&TC, OP.	Demand driven. 11,000 track miles.	Standard state hiring processes, sometimes hired from short line rail roads.	TX charges the Railroads, 95% of costs to class 1's Tonnage Mileage, 5% to Cars small Railroads. $1.6M for the state safety program portion of work.

Virginia	11 - Manager/inspector plus 10 inspectors.	S&TC, HM, OP, MP&E, T.	Based on workload initially. 3600 miles of track.	2015-all inspectors $40k typical salary went to 65-70k. Now 75-80k with many inspectors making $95k today. Hired a person from the FRA at 93k, now at 102k. Word of mouth, Railroad employees ask about openings since they know salaries are good. Use a state website, plus the option of LinkedIn Monster etc. VA does not have a step program	1/16 of 1% of Railroad Revenue Tax. $1.088M for 11 inspectors (benefits/vehicles/travel not included).
Washington	15 - manager plus 14 inspectors.	S&TC, HM, OP, MP&E, T.	Started with a goal of one/per discipline, then added more for HM, OP, MP&E and T. 3000 miles of track.	Post in Monster, Facebook, etc. Salary is a big deal. WA is in mid 90's, little lower than RR's and FRA. Quality of life is attractive. Overtime is offered for weekend events. GS-12 chart (government) will give base pay. Inspectors start at GS-1. www.opm.gov see latter!!	RR's pay a percentage of gross in state operating revenue (about 2.5%), and if transport oil pay an additional surcharge. $3.01M
West Virginia	11 inspectors.	S&TC, HM, OP, MP&E, T.	Driven by # of crossings, miles of track, number of cars, amount of train traffic. Busier track gets more inspection.	Word of mouth - inspectors know a lot of people on the Railroads - a bit tough as Railroads pay more. Advertise through the state	"Miles of track" tax on the RR's under PUC .

			Just over 3000 miles of track.	website.	

D. Highest Colorado Highway-Rail Grade Crossing Accidents 2014 - June 2024

Highest Crossing Accidents										
					10.5 Years			4.5 Years		
Crossing Number	RR	Location	County	City	Accident	Fatality	Injury	Accident	Fatality	Injury
245394V	BNSF	KALAMATH AVE	DENVER	DENVER	5	5	0	5	0	4
804343E	UP	CR 36	WELD		5	3	0	3	0	1
805500Y	RTDC	CHAMBERS	ADAMS	AURORA	4	3	1	6	0	3
945877K	RTDC	CENTRAL PARK PED X	DENVER	DENVER	4	3	3	1	3	0
804342X	UP	CR 34	WELD		4	2	3	0	1	0
003591R	BNSF	SKY VIEW LANE	DOUGLAS		4	0	0	0	0	0
804351W	UP	CR 33	WELD		4	0	0	0	0	0
804635B	RTDC	SB QUEBEC ST	DENVER	DENVER	3	3	3	0	3	0
003617R	BNSF	PRIVATE	DOUGLAS	LOUVIERS	3	2	2	2	0	2
804347G	UP	CR 38	WELD		3	2	2	3	2	2
804870Y	UP	CR98	WELD	NUNN	3	2	1	1	1	1
804877W	UP	HWY85/RR AVE	WELD	AULT	3	2	0	1	0	1

245077R	UP	LIME ROAD	PUEBLO		3	0	0	1	0	0
804855W	UP	5TH STREET	WELD	EATON	3	0	2	1	0	0

E. Blocked Crossings Reported to FRA 2020 - October 2024 With 10 Or More FRA Reports

Crossing ID	City	Street	County	Number of Blocked Crossing Reports
057191X	ROCKY MOUNTAIN ARSENAL	104TH AVE	Adams	30
804479S	BRIGHTON	168TH AVENUE	Adams	47
057190R	ROCKY MOUNTAIN ARSENAL	96TH AVE	Adams	30
253266H	DENVER	BROADWAY STREET	Adams	12
804433D	COMMERCE CITY	East 104th Avenue/CO 44	Adams	140
804434K	COMMERCE CITY	East 112th Street	ADAMS	75
804594Y	COMMERCE CITY	East 88th Avenue	ADAMS	23
804592K	COMMERCE CITY	East 96th Avenue	ADAMS	137
253269D	DENVER	WASHINGTON STREET	ADAMS	19
244845T	LONGMONT	DIAGONAL HWY	BOULDER	13
244849V	LONGMONT	MAIN ST	BOULDER	24
253322M	TABERNASH	CR 823	GRAND	12

244747C	GOLDEN	MCINTYRE ST	JEFFERSON	16
244645J	FORT COLLINS	9TH ST	Larimer	202
906297N	FORT COLLINS	Cherry Street	Larimer	40
089373X	FORT COLLINS	CO RD 50	Larimer	28
244624R	FORT COLLINS	DRAKE RD	LARIMER	52
244861C	FORT COLLINS	East Mulberry Road	LARIMER	63
804506L	FORT COLLINS	East Prospect Road	LARIMER	13
244620N	FORT COLLINS	HARMONY RD	Larimer	27
804503R	FORT COLLINS	HARMONY ROAD	Larimer	10
244622C	FORT COLLINS	HORSETOOTH RD	LARIMER	37
244627L	FORT COLLINS	LAKE ST	LARIMER	11
244640A	FORT COLLINS	LAPORTE AVE	Larimer	24
244633P	FORT COLLINS	LAUREL ST	Larimer	12
244645J	FORT COLLINS	LEMAY AVE/9TH ST	LARIMER	43
906295A	FORT COLLINS	Lincoln Avenue	LARIMER	16
244644C	FORT COLLINS	LINDEN ST	LARIMER	53
906296G	FORT COLLINS	Linden Street	LARIMER	11
244636K	FORT COLLINS	MAGNOLIA ST	Larimer	10
244641G	FORT COLLINS	MAPLE ST	LARIMER	27
244639F	FORT COLLINS	MOUNTAIN AVE	Larimer	15

244635D	FORT COLLINS	MULBERRY ST	Larimer	73
244643V	FORT COLLINS	N COLLEGE AVE	LARIMER	60
244856F	FORT COLLINS	N. College Ave./CO 14/US 287	LARIMER	11
244628T	FORT COLLINS	PITKIN STREET	Larimer	12
804567C	FORT COLLINS	Private	Larimer	10
244866L	FORT COLLINS	PROSPECT Road	LARIMER	30
244626E	FORT COLLINS	PROSPECT ST	LARIMER	133
245306H	FORT COLLINS	South Lemay Avenue	LARIMER	27
244647X	FORT COLLINS	SUMMIT VIEW	Larimer	33
089367U	FORT COLLINS	SWALLOW RD	Larimer	10
244647X	FORT COLLINS	TIMBERLINE RD	LARIMER	329
244867T	FORT COLLINS	TIMBERLINE Road	LARIMER	28
244648E	FORT COLLINS	VINE ST	LARIMER	185
244635D	FORT COLLINS	W MULBERRY ST	LARIMER	16
094505R	FORT COLLINS	Willow Street	LARIMER	17
057548K	STERLING	COUNTY RD 322	LOGAN	177
253149M	PUEBLO	CLARENCE ROAD	PUEBLO	15
804356F	LA SALLE	1st Avenue	WELD	17
804861A	AULT	1ST STREET	WELD	17
804362J	EVANS	37th Street	WELD	11

804361C	EVANS	39th Street	WELD	15
804359B	EVANS	42ND STREET	WELD	24
804472U	FORT LUPTON	CR 8	WELD	11
934005P	WINDSOR	Eastman Park Dr	WELD	11

F. State Inspector Necessary Equipment

The FRA District 6 specialists were asked about necessary equipment for inspectors in their disciplines. General equipment necessary for all inspectors is estimated at $1,530 per inspector. Safety lights to be added to vehicles are estimated at $14,000. Additional equipment estimates for track inspectors is $5,055 per inspector, for signal and train control is $2,370 per inspector, for motive power and equipment inspectors is $1,739 per inspector, for hazardous materials inspectors is $415 per inspector, for grade crossing safety and trespass outreach inspector is $530 per inspector, and is not needed for operating practices inspectors. This initial inspector equipment purchase total estimate is $47,674.

The Community Rail Advisory Committee recommends that the ORS purchase a larger vehicle that is equipped with hi-rail capabilities that can access and traverse rail corridors. A higher capacity Ford Excursion Hi-Rail Vehicle is estimated to cost $110,000 to purchase.

G. Current Section 130 Ranking for Passive Crossings in Colorado

Available on the PUC website's Office of Rail Safety Page.