A. NFRMPO's Role

As required by federal legislation, the NFRMPO has identified its role in regional transportation safety and security. As a planning agency, the NFRMPO acts in an informational capacity regarding safety and security of the transportation system in the region. The NFRMPO works with local agencies to ensure information is up-to-date and to make connections or hold trainings when necessary.

Partnerships

The NFRMPO acts in a supportive role for safety and security in the region. For example, the agency is a participant in the US85 and I-25 Traffic Incident Management (TIM) Standing Program Management Teams; supports local communities with applications for safety and security improvements; and ensures the transportation planning process is followed when amending projects into the Transportation Improvement Program (TIP).

Data Collection and Analysis

Regarding safety, the NFRMPO collects and analyzes data, which is used during the Call for Projects process. Safety data is used to track the achievement of NFRMPO's Goals, Objectives, Performance Measures and Targets (GOPMT). Funding applicants must show an improvement in safety to receive funding for any transportation project in the region.

Outreach

The NFRMPO advertises major construction and safety issues in its print and social media. VanGo™ provides social media and newsletter updates for major incidents on commuting corridors. The NFRMPO uses its newsletter to show major construction in the region, including duration, project descriptions, and funding sources.

Congestion on Harmony Road due to incident ahead.

B. Safety

One of the core goals of the NFRMPO is to reduce the number and severity of crashes on transportation facilities within the region. Safety is considered at all levels of the system, including roads, transit, bicycle and pedestrian facilities, and at-grade railroad crossings. The NFRMPO considers the reduction in crash rates, improvement of at-grade crossings, and safer bicycle and pedestrian facilities during the Call for Projects phase of the TIP when selecting projects.

Successive federal transportation spending bills have shifted transportation planning focusing on safety for roads, non-motorized trails, transit, and railroads. The Fixing America's Surface Transportation (FAST) Act, the most recent and current authorization bill, continued the shift to additional federal spending for safety projects. The inclusion of additional requirements from the Americans with Disabilities Act (ADA) has also made aspects of the transportation system safer for those with disabilities. Additionally, emergency response organizations are collaborating at the scene of traffic incidents to improve safety and efficiency.

Crash Data

State, NFRMPO, and local government staff track vehicle crashes and identify roadway locations with high crash rates. The State compiles crash data from traffic accident reports completed by law enforcement officers across the State, including both highway and local road crashes. The State crash dataset does not include counter reports, which are required reports completed by drivers involved in a crash when a law enforcement officer is not on scene. Counter reports cannot be used for any crash involving loss of human life, injuries which are evident at the scene, drugs, or alcohol use. The State

geocodes crashes located on State facilities, while the NFRMPO geocodes crashes located on all other public roads. The crash trend analysis for the North Front Range region includes all officer-reported crashes from 2011 through 2017, though for some statistics data is only available through 2015 or 2016. The crash analysis may differ from local government estimates, which typically include counter reports.

Crash Trends

The number of crashes in Colorado increased every year from 2012 through 2016, with a slight decrease in 2017, as shown in **Figure 2-42**. Data for 2011 through 2015 for the North Front Range region shows a similar trend, with the number of crashes increasing every year from 2012 through 2015.

The number of serious injuries, which is defined as incapacitating injuries, across Colorado has fluctuated slightly between 2011 and 2016 as shown in **Figure 2-43**, with an average of 3,198 serious injuries due to traffic crashes per year. Statewide, the number of fatalities due to traffic crashes increased every year from 2011 through 2017, with an average increase of five percent per year.

Within the North Front Range region, the number of serious injuries and fatalities are both on the rise. Serious injuries increased from 179 in 2011 to 227 in 2015, while fatalities increased from 24 in 2011 to 57 in 2017, as shown in **Figure 2-44**.
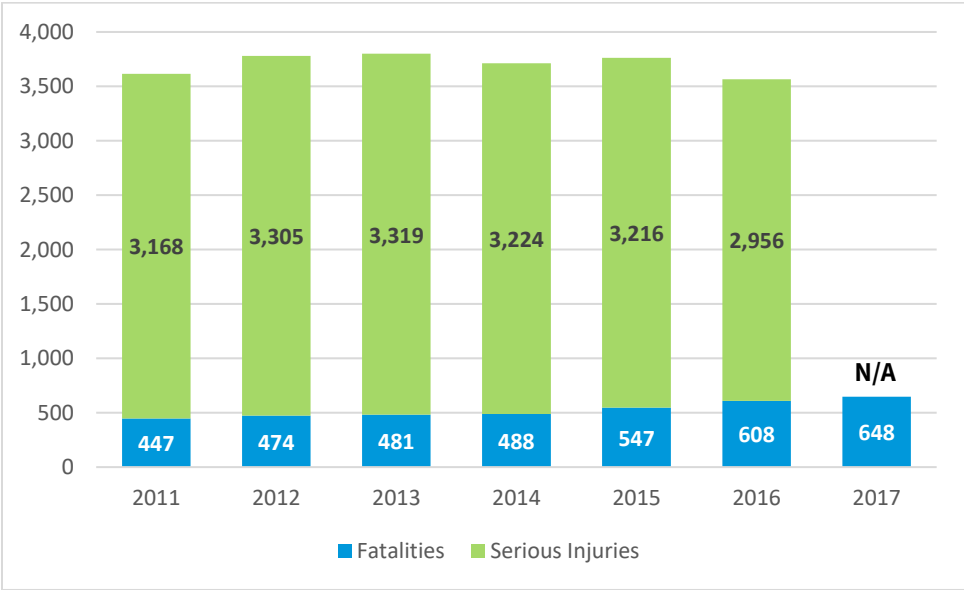
The locations of serious injury and fatal crashes from 2011 through 2015 in the North Front Range are identified in **Figure 2-45**. Serious injury and fatal crashes happen throughout the region, with a higher number of crashes occurring on major facilities such as I-25, US287, and US34.

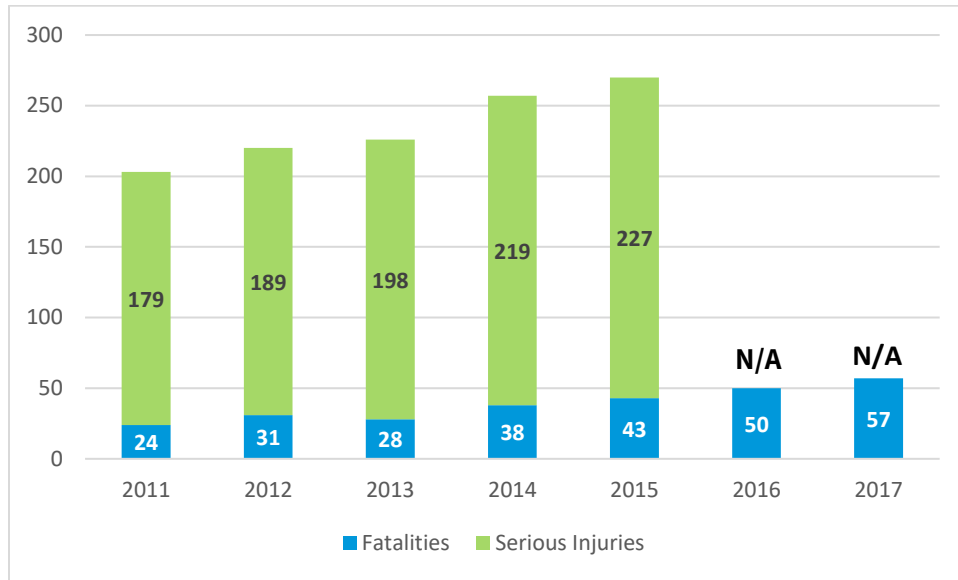**Figure 2-42: Crashes in Colorado and the North Front Range Region, 2011-2017**
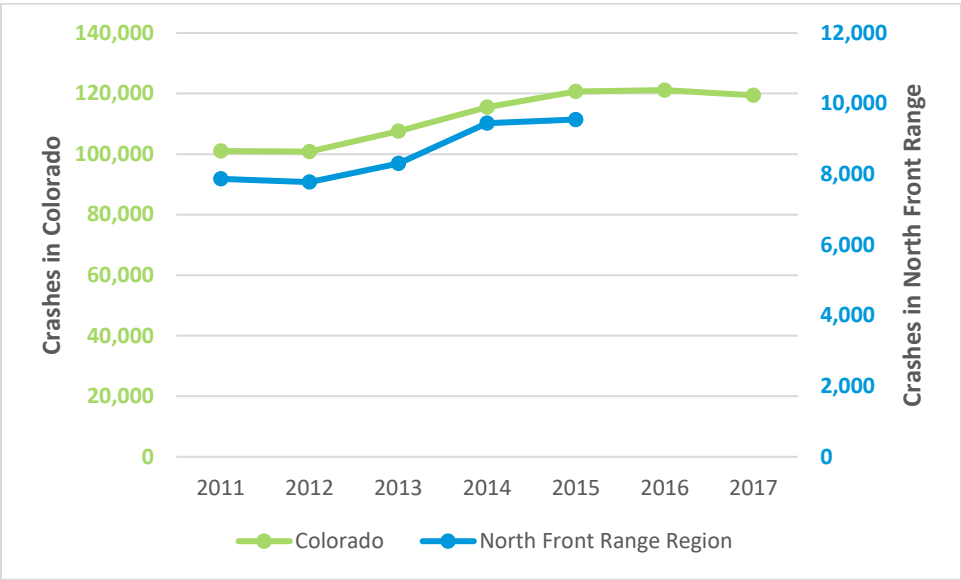
Source: CDOT, NFRMPO

Figure 2-43: Crash Serious Injuries and Fatalities in Colorado, 2011-2017
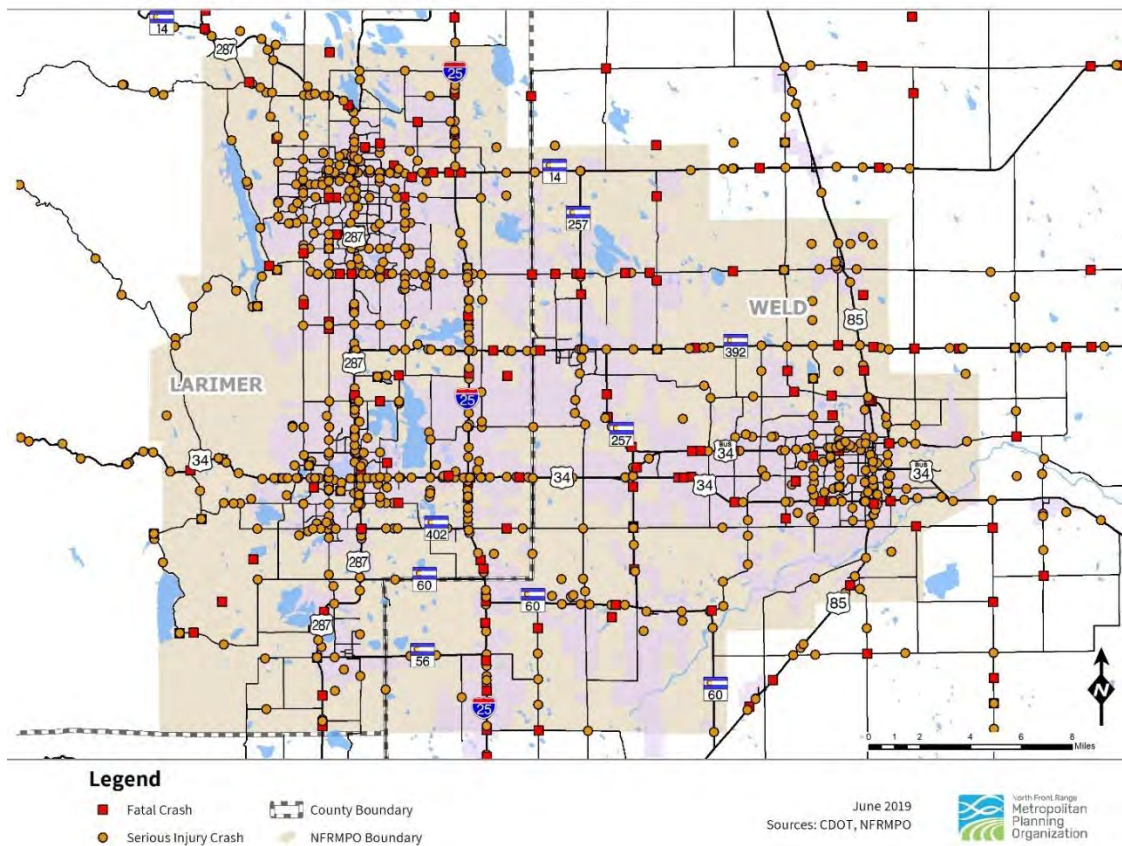

Source: CDOT, NFRMPO

Figure 2-44: Crash Serious Injuries and Fatalities in the North Front Range, 2011-2017

Source: CDOT, NFRMPO

Figure 2-45: Serious Injury and Fatal Crashes, 2011-2015

2045 Regional Transportation Plan
Chapter 2, Section 5: Safety and Resiliency

To evaluate the safety of truck travel on the roadway network, the percentage of overall crashes involving trucks was compared against the percentage of truck traffic on the region's top 10 truck routes along with the truck crash rate per 100M vehicle miles traveled (VMT).

Table 2-27 displays Annual Average Daily Truck Traffic (AADTT), Annual Average Daily Traffic (AADT), and the percent of truck traffic along the heaviest-traveled corridors in 2015. Crash data for the 2011-2015 time period displays the total number of crashes, truck crashes, and percent truck crashes to evaluate safety on routes with high truck traffic. As shown in **Table 2-27**, there is a correlation between the percent truck traffic and the percent truck crashes; however, some corridors have much higher truck crash percentages than can be explained by the percent truck traffic. The corridors with the highest truck crash rate per 100M VMT include US85 Business, US85, and SH14.

Table 2-27: Truck Traffic (2015) and Truck Crashes (2011-2015)

| Roadway | Centerline Miles | 2015 | | | 2011 - 2015 | | | |
		AADTT (Truck)	AADT (All Traffic)	Percent Truck Traffic	Total Crashes	Truck Crashes	Percent Truck Crashes	Truck Crashes per 100M VMT
I-25	27.1	5,292	63,267	8.4%	3,737	385	10.3%	12
US287	32.5	397	21,714	1.8%	4,513	116	2.6%	9
US34	34.4	646	25,449	2.5%	2,647	123	4.6%	8
US34 Business	15.5	147	15,561	0.9%	1,786	51	2.9%	12
US85	16.3	1,010	15,247	6.6%	844	135	16.0%	30
US85 Business	4.4	148	10,008	1.5%	363	37	10.2%	46
SH14	14.2	753	13,478	5.6%	905	91	10.1%	26
SH56	7.0	113	7,082	1.6%	135	6	4.4%	7
SH60	19.8	162	6,394	2.5%	410	39	9.5%	17
SH257	18.6	332	7,822	4.2%	450	35	7.8%	13
SH392	21.3	290	9,940	2.9%	860	73	8.5%	19

Sources: CDOT and NFRMPO, 2017

Rail Safety

As discussed in **Chapter 2, Section 1**, the region has extensive railroad trackage operated by BNSF Railway, Union Pacific Railroad (UPRR), and Great Western Railway (GWR). Across the region there are 316 at-grade railroad crossings. **Table 2-28** lists the number of crashes at these at-grade rail crossings. In the 10-year period between 2008 and 2018, 24 incidents between trains and passenger vehicles occurred at regional at-grade railroad crossings, with eight injuries and three fatalities.

Table 2-28: Railroad Crossing Crashes, 2008-2018

Crossing ID	City/Town	Roadway Name	Railroad	Crossing Protection	Number of Crashes	Number of Fatalities	Number of Injuries
804855W	Eaton	5th Street	UP	Cross Bucks	4	2	1
804852B	Eaton	CR 72	UP	Cross Bucks, Stop Signs	3	--	1
804856D	Eaton	CR 76	UP	Stop Signs	2	--	3
245033R	Loveland	Roosevelt Avenue	BNSF	Gates, Standard Flashing Light Signal	2	--	--
244647X	Fort Collins	Summit View	GWR	Gates, Standard Flashing Light Signal, Audible, Cross Bucks	1	--	--
921967R	Loveland	Boise Avenue	GWR	Highway Traffic Signals, Wigwags, Bells	1	--	--
804355Y	LaSalle	CR 48	UP	Cross Bucks, Stop Signs	1	--	--
244632H	Fort Collins	Plus Street	BNSF	Cross Bucks	1	1	--
245106Y	Windsor	CR 23	GWR	Cross Bucks	1	--	1
245032J	Loveland	Private Road	BNSF	Stop Signs	1	--	--
804501C	Fort Collins	CR 32	UP	Gates	1	--	--
804514D	Fort Collins	US 287	UP	Highway Traffic Signals, Wigwags, Bells	1	--	--
804363R	Evans	31st Street	UP	Gates	1	--	--
804491Y	Milliken	CR 17	UP	Cross Bucks	1	--	1
244622C	Fort Collins	Horsetooth Road	BNSF	Gates, Cantilever Flashing Light Signal	1	--	1
804854P	Eaton	Collins Ave	UP	Gates, Standard Flashing Light Signal, Audible, Cross Bucks	1	--	--
804848L	Eaton	CR 70	UP	Cross Bucks, Stop Signs	1	--	--
Total					**24**	**3**	**8**

Freight Northern Colorado (FNC), the region's first Freight Plan, studies the impacts of truck and rail safety on the region's transportation network. Because rail and truck corridors intersect bicycle and pedestrian, transit, and travel corridors, freight safety impacts the entire regional transportation system.

BNSF Railway, GWR, and UPRR provide multiple programs to ensure track safety. BNSF Railway and UPRR staff inspect their routes multiple times per week for internal defects, track strength, undue stress on wheels, or preventable equipment failures.

Educating the public about safety near railroad tracks is an important undertaking for the railroads. UPRR and BNSF Railway provide safety grants, which can be used by communities to provide education about safety near railroads. Grants can be used for youth education activities, school or community safety days, community safety blitzes, and at-grade crossing educational enforcement activities. In addition to programs for the public, the railroads maintain a firm commitment to safety behind the scenes. The railroads provide safety and technical training for all employees. Employees are trained in the field, on the job, and at centralized training centers.

Operation Lifesaver Inc. (OLI) is a rail safety education non-profit organization established in 1972. The organization offers free rail safety education programs using a network of authorized volunteer speakers and trained speakers. OLI focuses on what it calls the three E's: education, enforcement, and engineering. By partnering with federal, state, and local government agencies, highway safety organizations, and the freight railroads, OLI reaches a wide population as rail transport

increases, becomes more efficient, and uses quieter trains.

Some jurisdictions within the region are working to ensure safety while creating Quiet Zones at some at-grade crossings in their communities. The FRA allows Quiet Zones, which are areas where trains proceed without sounding a warning horn unless it is an emergency, at crossings with gates, flashing lights, constant warning time devices, and power out indicators. In 2016, the Town of Windsor established a Quiet Zone throughout the downtown area after installing safety equipment at 13 at-grade crossings with federal TIGER grant funds. The City of Fort Collins is currently pursuing an exemption from the Quiet Zone rules for the downtown area due to intersection space constraints. The City of Greeley is in the process of creating Quiet Zones at 12 downtown railroad crossings.

Transit Safety

In 2017, the Federal Transit Administration (FTA) released the National Public Transportation Safety Plan required under MAP-21 and the FAST Act. The goal of the Plan is to improve the safety of all public transportation systems that receive Federal transit funds. The National Public Transportation Safety Plan identifies safety performance criteria for all modes of public transportation, defines "state of good repair" (SOGR), identifies minimum safety performance standards for public transportation vehicles and minimum safety standards to ensure the safe operation of the system, and a safety certification training program.

The National Public Transportation Safety Plan identifies the following transit safety performance measures:

- **Fatalities** – total number of reportable fatalities and rate per total vehicle revenue miles by mode
- **Injuries** – total number of reportable injuries and rate per total vehicle revenue miles by mode
- **Safety events** – total number of reportable events and rate per total vehicle revenue miles by mode
- **System reliability** – mean distance between major mechanical failures by mode

In May 2018, the FTA issued the Public Transportation Safety Program final rule, formally adopting the Safety Management Systems (SMS) approach to safety. As part of the final rule, the FTA can enforce compliance with Federal transit safety law. Consequences for noncompliance include mandating how funds can be spent, withholding funds, and imposing restrictions on a transit agency's operations.

Each local transit agency must create their own Public Transportation Agency Safety Plan within one year of the effective date of a final rule issued by the FTA. These plans must include methods for identifying and evaluating safety risks throughout all elements of the system; strategies to minimize the exposure of the public, personnel, and property to hazards and unsafe conditions; a process and timeline for conducting an annual review and update of the Plan; performance targets based on the safety performance criteria and SOGR, assignment of an adequately trained safety officer reporting to the general manager; and a comprehensive staff training program for the operations personnel and personnel directly responsible for safety.

The Colorado Association of Transit Agencies (CASTA) partners with CDOT in use of the State's apportioned Rural Transit Assistance Program (RTAP) program. These funds are used for safety and training courses at the spring and fall CASTA conferences. In addition, CASTA is piloting a Professional Transit Driver Certification (PTDC) program, which will focus on defensive driving, Passenger Assistance Security and Safety (PASS), First Aid/CPR, safety, emergency and evacuation procedures, and workplace violence among other topics.

Statewide Initiatives

The NFRMPO works alongside and follows initiatives undertaken at the State level. There are two key components to the State's approach to safety, including the Whole System Whole Safety initiative and the Towards Zero Deaths (TZD) goal.

CDOT's Whole System Whole Safety initiative heightens safety awareness by taking a systematic statewide approach to safety by combining the benefits of CDOT's programs that address driving behaviors, the built environment and operations. The goal is to improve the safety of Colorado's transportation network by reducing the rate and severity of crashes and improving safety conditions for those traveling by all modes.

CDOT's Strategic Highway Safety Plan (SHSP), approved in 2015, establishes the state's TZD goal and identifies the important role of engineering, education, enforcement, and emergency medical services to accomplish it. The Plan notes in the 10 years between 2002 and 2012, traffic-related fatalities in Colorado dropped 36 percent and serious injuries declined

35 percent.[19] To continue this decrease, the SHSP brought together a range of stakeholders to achieve TZD in eight emphasis areas: aging road users; bicyclists and pedestrians; impaired driving; infrastructure – rural and urban; motorcyclists; occupant protection; young drivers; and data.

To provide an up-to-date analysis of safety, every year CDOT publishes the Colorado Integrated Safety Plan (ISP). The ISP identifies the State's goals, objectives, and strategies for improving traffic safety. The Plan presents different funding sources, the amounts allocated to each CDOT region, and potential projects/project types that could be funded. Every year CDOT studies the crash data, including number and severity, and further refines existing strategies to reduce and mitigate future crashes.

One major source of state funding for safety improvements is the Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Road Safety Fund, which was approved by voters in 2009. This source of funding has been used throughout the region to enhance the safety of the regional transportation system. Safety projects include pavement resurfacing and culvert repairs, variable messaging signs, and bicycle-pedestrian facilities.

Within the region, the State is leading efforts on the North I-25 corridor and the US85 corridor to improve safety via TIM. The purpose of TIM is to detect and remove traffic incidents and restore traffic capacity as soon as possible through a planned and coordinated effort. TIM activities are typically categorized into five overlapping functional areas:

1. **Detection and Verification**: the determination that an incident of some type has occurred, and the determination of the precise location and nature of the incident.

2. **Traveler Information**: The communication of incident related information to motorists who are at the scene of the incident, approaching the scene of the incident, or not yet departed from work, home, or other location.

3. **Response**: The activation of a "planned" strategy for the safe and rapid deployment of the most appropriate personnel and resources to the incident scene.

4. **Scene Management and Traffic Control**: the coordination and management of resources and activities at or near the incident scene, including personnel, equipment, and communication links and the process of managing vehicular traffic around the scene of the incident.

5. **Quick Clearance and Recovery**[20]: the safe and timely removal of a vehicle, wreckage, debris, or spilled material from the roadway and the restoration of the roadway to its full capacity.

The I-25 TIM effort led by CDOT covers I-25 from SH7 to the Wyoming State Line. The I-25 Traffic Incident Management Plan (TIMP), developed in 2012, guides the TIM effort and was developed with stakeholder participation from nine fire districts, 12 law enforcement agencies, 12 cities

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[19] Colorado Strategic Highway Safety Plan, CDOT, October 2014. https://www.codot.gov/safety/safety-data-sources-information/safety-plans/colorado-strategic-highway-safety-plan Accessed June 10, 2019.

[20] Best Practices in Traffic Incident Management. U.S. Department of Transportation. Federal Highway Administration. Emergency Transportation Operations. September 2010. https://ops.fhwa.dot.gov/publications/fhwahop10050x/index.htm Accessed 6/10/19.

and towns, three counties, CDOT, and WYDOT. The Plan emphasizes the need to create relationships between agencies and conversations between responders so there is a consistent and coordinated effort at the scene of an incident. To facilitate a continuing dialogue about best practices, CDOT holds regular Standing Program Management Team (SPMT) meetings and TIM trainings to enhance communication and improve TIM implementation on I-25.

The US85 TIM effort, which began in 2018, covers US85 from SH7 to the Wyoming State Line. CDOT is finalizing the Plan in 2019 with collaboration from law enforcement, fire districts, emergency management, public works, railroads, and other local agencies.

Moving Forward

Federal transportation planning guidelines promote safer transportation systems for all users. Colorado transportation planning guidelines promote TZD, a program the NFRMPO supports. As the region moves forward, the NFRMPO and local jurisdictions should work together to study safety issues in depth, promote coordination, and provide education opportunities. Specifically, recommendations to improve safety within the region could include:

- Inventory safety procedures in each jurisdiction to understand how a regional safety program could operate. Continue to study and address the safety needs within EJ areas.
- Study high-risk travel corridors for potential projects to improve safety, such as operational or capacity improvements on I-25.
- Promote coordination between the NFRMPO, jurisdictions, CDOT, FHWA, FTA, and other agencies to ensure increased safety as a consideration for road, transit, and bicycle and pedestrian transportation projects. Projects chosen should implement the 2045 GOPMT identified in **Chapter 2, Section 3**.
- Facilitate coordinated emergency responses through incident management. Ongoing efforts such as the I-25 Traffic Incident Management Plan and US85 Traffic Incident Management Plan bring a wide range of organizations together to promote coordination at incident locations, improving safety and operations.
- Explore educational programs like OLI to ensure the public understands how to stay safe near railroad tracks.

C. Congestion Management Process (CMP)

The safety of the transportation network is closely related to congestion, as congestion is one of the major contributors to crashes within the region while, in turn, crashes are one of the major contributors to congestion. Congestion is

defined as the build-up of vehicles on certain portions of the transportation system resulting in travel speeds that are slower than "free flow" speeds.[21] To address congestion, the region uses the systematic process identified in the

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[21] Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation. FHWA Office of Operations. 12.4.2013. Accessed 3/29/19.

https://ops.fhwa.dot.gov/congestion_report/executive_summary.htm

Congestion Management Process (CMP). The CMP is updated with the same frequency as the RTP and was most recently updated in 2019. The 2019 CMP establishes a performance-based approach to address congestion within the region and integrates with the entire metropolitan planning process.

One of the major functions of the CMP is to guide the project selection process for the TIP. As federally required, any project proposed for inclusion in the TIP that adds general-purpose lanes must demonstrate demand and operational management strategies are insufficient to satisfy the need for additional capacity unless the project addresses an established bottleneck or is a safety improvement. If a roadway expansion project is deemed necessary, the CMP must identify all regional demand and operational management strategies to maintain the functional integrity and safety of the project into the future.

The 2019 CMP incorporates the congestion-related elements of the 2045 GOPMT, including the eight performance measures identified in **Table 2-29**. Half of the measures directly measure congestion, while the other half address factors that influence congestion and are considered indirect measures of congestion.

The 2019 CMP identifies congested RSCs using the three segment-level direct measures of congestion, including Travel Time Index (TTI), Travel Time Reliability (TTR), and Truck Travel Time Reliability (TTTR). The congested Regionally Significant Corridors (RSCs) are identified in **Figure 2-46**.

Strategies to manage congestion are identified in the 2019 CMP and are categorized into six Tiers, ranked generally by efficacy of mitigating congestion. The strategies serve as a starting point for identifying potential projects oriented at reducing congestion, where appropriate, within the region's transportation system.
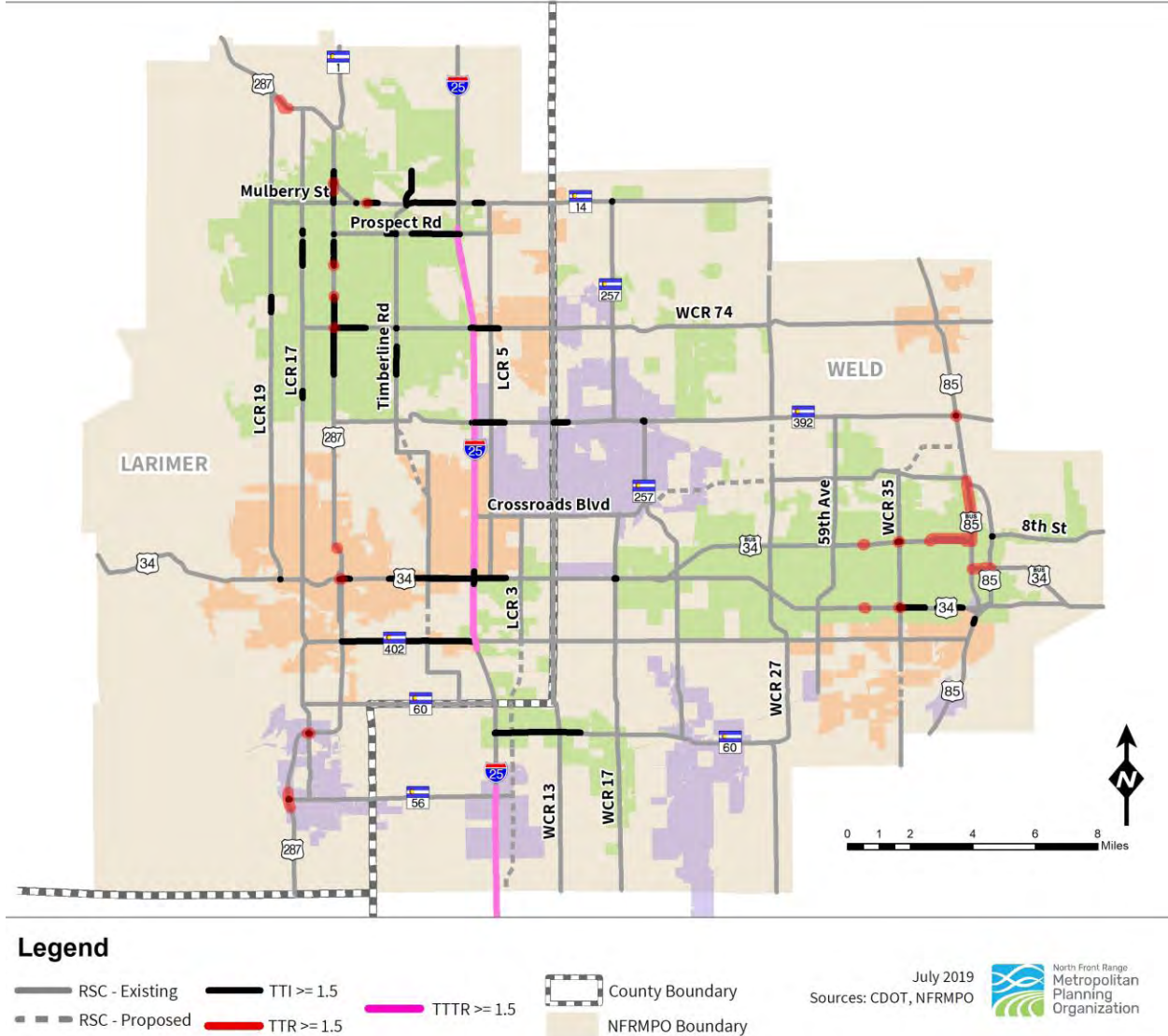
- **Tier 1**: Reducing trip generation and shortening trips
- **Tier 2**: Encouraging shift to alternative modes of transportation
- **Tier 3**: Increasing vehicle occupancy and shifting travel times
- **Tier 4**: Improving roadway operations without expansion, including Intelligent Transportation Systems (ITS)
- **Tier 5**: Traffic Incident Management (TIM)
- **Tier 6**: Roadway capacity

Effectively managing and even mitigating congestion in the North Front Range will require a multi-level, multi-jurisdictional approach. The 2019 CMP identifies recommendations, entities responsible for implementation, and possible funding sources for addressing congestion in the region.

Table 2-29: CMP Performance Measures

CMP Performance Measure	Description	Measure Type
Travel Time Index (TTI)	Ratio of average peak travel time to an off-peak (free-flow) standard. A value of 1.5 indicates that the average peak travel time is 50% longer than off-peak travel times.	Direct, Segment-level
Vehicle Miles Traveled (VMT) per Capita	Miles traveled by vehicles in a specified region over a specified time period. Calculated per person for all trips or for specific destinations including home, work, commercial, etc.	Direct, Regional-level
Travel Time Reliability (TTR)	Measures non-recurring delay for all vehicles by comparing the 80th percentile travel time to the average (50th percentile) travel time. A value of 1.5 or higher indicates the segment is not reliable. A corridor may be congested, but reliable if the congestion is consistent.	Direct, Segment-level
Truck Travel Time Reliability (TTTR)	Measures non-recurring delay for trucks by comparing the 95th percentile travel time to the average (50th percentile) travel time. A value of 1.5 or higher is considered unreliable.	Direct, Segment-level
Number of Crashes	The number of collisions involving one or more vehicles on public roads.	Indirect, Regional-level
Transit Ridership per Capita	The number of unlinked weekday trips per resident within each provider's service area. Measuring per capita helps account for population growth.	Indirect, Regional-level
Percent of non-Single Occupant Vehicle (SOV) commute trips	Percent of all commute trips completed by any mode other than SOV, including by transit, bicycle, walking, or carpooling.	Indirect, Regional-level
Percent NHS miles covered by fiber	Percent of NHS miles with fiber-optic cables installed and used for transportation management purposes.	Indirect, Regional-level

Figure 2-46: Congested Regionally Significant Corridors

Legend

—— RSC - Existing	—— TTI >= 1.5	—— TTTR >= 1.5
- - - RSC - Proposed	—— TTR >= 1.5	

County Boundary
NFRMPO Boundary

July 2019
Sources: CDOT, NFRMPO

North Front Range
Metropolitan
Planning
Organization

D. Hazards

The North Front Range region is susceptible to a wide range of natural hazards, including snowy and icy road conditions, wildfires, flooding, tornadoes, high winds, hail, and more. Parts of the region receive an average of 47 inches of snow annually, which can stick to roads and create dangerous driving conditions. Heavy flooding can cause significant damage to transportation infrastructure and strain vulnerable parts of the system. The 2013 flood alone resulted in $4B in damage to roads, bridges, and other infrastructure and property across the state, including $280M on US34, and has taken years to replace or repair. Communities within or near designated floodplains are most susceptible to flood risks. As shown in **Figure 2-47**, the majority of NFRMPO communities are located near 500-year

flood plains. These communities received heavy flooding in 2013.

Wildfires within the region may pose a significant risk to people and property, but even those outside of the region can have a significant impact on our air quality. Wildfires across the West during the summer months in 2018 significantly increased the concentration of particulate matter (PM) in the air. Increased concentrations of PM may cause or exacerbate respiratory health problems and may reduce visibility. **Figure 2-47** shows the location of wildfires between 2015 and 2018 in addition to

the 500-year flood zones in Larimer and Weld counties.

Mitigation and response to hazards like snowstorms occurs operationally at the state and local level. Local municipalities with a snow removal process prioritize their street networks, giving highest priorities to emergency routes, such as routes connecting hospitals, fire stations, police stations, and rescue squad units. Second priority is given to streets which carry the highest traffic volumes, followed by schools and bus routes. Residential streets are typically not plowed, but intersections may be sanded.

**Figure 2-47: 500-Year Flood Zones and Fire Locations (2015-2018)**
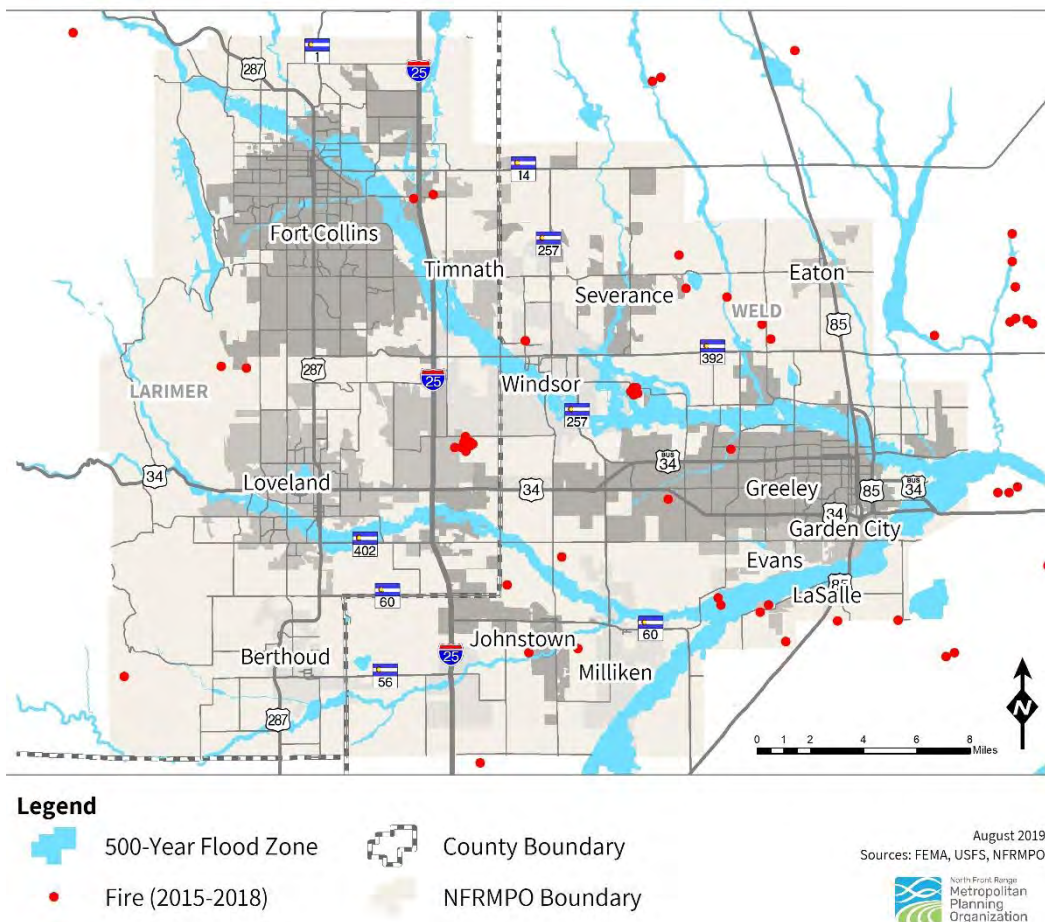
Response

Advanced Traveler Information Systems (ATIS) that communicate information to the public via smartphones, roadside infrastructure, or other means, are crucial to helping drivers make informed decisions when hazards are imminent. Larimer and Weld counties each have an Office of Emergency Management (OEM) tasked with planning for and responding to hazards and other emergencies, as well as helping communities recover from and mitigate hazards. Several other NFRMPO communities have similar offices, departments, or designated professionals.

TIM planning efforts between CDOT and local planning and law enforcement partners along the I-25 and US85 corridors have identified both local and regional detours for closures due to various factors and have strengthened partnerships for safer and more coordinated emergency response.

Recovery

Recovering from hazardous events can be a long, but ultimately rewarding process. Events such as floods often highlight the criticality and vulnerability of certain facilities and services throughout the transportation network. Recovery efforts are a chance to address weaknesses and mitigate impacts from the next event. Following the 2013 floods, several agencies have worked together to recover and improve the resilience of the transportation system. CDOT led the charge in repairing and improving US34 through the Big Thompson Canyon to help it withstand future floods. As part of the North I-25 expansion, CDOT will also raise the North I-25 bridges over the Cache La Poudre River to prevent future closures due to flooding. This multifaceted effort will also allow the Poudre River Trail to connect Timnath and Fort Collins under the interstate.
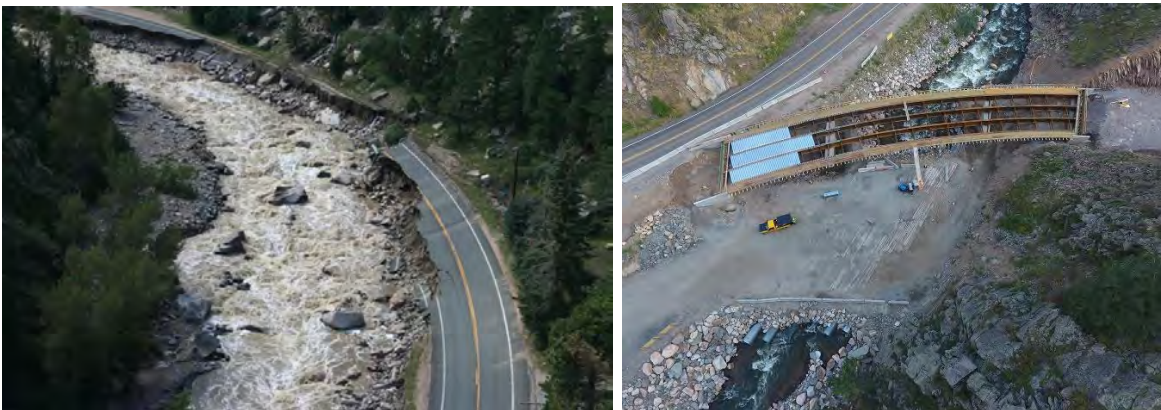
The images above show the immediate aftermath (left) of the 2013 floods on US34 in Big Thompson, as well as the recovery and mitigation efforts to realign the roadway out of the floodway (right). The reconstruction was named Best of the Best out of 820 construction projects nationwide by Engineering New Record. (Image credit: CDOT)

Mitigation

Communities such as Milliken, situated at the confluence of the Little Thompson and Big Thompson Rivers, partnered with the Colorado Department of Local Affairs (DOLA) and other stakeholders to revise their Land Use Code to ensure future development is resilient to natural hazards such as flooding and fires.

Planning partners are working through their transportation planning processes to identify facilities that are both critical to transportation and vulnerable to natural hazards. Currently, the NFRMPO, local agencies, and industry partners are working together with CDOT to build on the 2019 Truck Parking Assessment, in part to identify opportunities to address truck parking capacity and communication in emergency events such as the March 2019 bomb cyclone which hit Colorado's Front Range, as well as

other high wind and snow events that frequent the NFRMPO region and southern Wyoming.

In March 2019, CDOT Region 4 completed the US34 PEL Corridor Operational Resiliency Analysis. The analysis identified short-term and long-term risks to US34's operational functionality and provides resiliency recommendations for various threats posed by impending growth. This type of analysis lays the groundwork for improved collaboration between public and private planning partners working to address both natural and manmade threats.

Hazard mitigation plans are required by the Federal Emergency Management Agency (FEMA) as a condition for receiving certain disaster recovery and mitigation funding. Larimer[22] and Weld[23] counties each have multi-jurisdictional hazard mitigation plans prepared with extensive public and private stakeholder input.

E. Security

The NFRMPO identified its role in regional transportation security as informational regarding security of the transportation system in the region. The NFRMPO works with local agencies to ensure information is up-to-date and to make connections or hold trainings when necessary.

USDOT defines a transportation security incident as one resulting in a significant loss of life, environmental damage, transportation system disruption, or economic disruption in a particular area. Examples of environmental

security issues identified in the regional Hazard Mitigation Plans (HMP) include biological hazards; earthquakes; extreme weather; fires; floods, hazmat; and tornadoes. Overall transportation security incidents may include trespassing, vandalism, or terrorism.

This Section addresses how local agencies prepare for the aforementioned incidents and risks depending on the services they provide. Websites or other contact information are provided for up-to-date information.

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[22] 2016 Larimer County Multi-Jurisdictional Hazard Mitigation Plan

[23] 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan

Park-n-Rides (PNR)

Colorado Department of Transportation (CDOT)

- CDOT-maintained PNR locations in the NFRMPO region include: Harmony Transfer Center, SH392 PNR, US34 PNR, SH402 PNR, SH60 PNR, SH56 PNR, and Promontory PNR west of Greeley

- Each of the CDOT-maintained PNR locations has surveillance cameras with the exception of the SH56 PNR location
- Law enforcement officers regularly drive through the PNR lots
- Currently, there is limited parking in many of the lots along I-25

Website: https://www.codot.gov/travel/parknride

Transit Agencies

Berthoud Area Transportation System (BATS)

- Transit Safety and Security Plan (2003)
  - Driver Selection, Driver Training, Vehicle Maintenance, Drug and Alcohol Education Programs, Safety Data
- System Safety and Emergency Preparedness Plan (SSEPP)
  - Training policy, security and emergency protocol, contacts, and other preparedness guidelines. It is modeled after the CDOT prototype.
- Drivers for BATS have a complete background check performed, they must pass a drug and alcohol screening and have the two previous years drug and alcohol records checked. Motor vehicle records are checked. Training on policies and procedures lasts approximately two weeks. Each driver has a cell phone for emergency purposes.
- Vehicles have first aid kits and a fire extinguisher
- Vehicles do not have cameras installed

Contact phone: (970) 344-5816

Website: https://www.berthoud.org/departments/berthoud-area-transportation-system-bats

Bustang (CDOT)

- Operated by Ace Express Coaches under contract to CDOT
- Driver training involves a multi-week training program that covers the Occupational Safety and Health Administration (OSHA) guidelines; Federal Motor Carrier Safety Administration Regulations (FMCSA); Customer Service; Hours of Service; Drug and Alcohol Screening; Passenger Safety; Vehicle Inspection; Fundamentals of Defensive Driving

- Drivers required to take annual qualification and recertification tests to maintain driving skills
- Vehicle safety includes required routine maintenance on all buses
- Safety inspections are performed whenever a vehicle is being maintained
  o Drivers inspect vehicles before departing Ace Express Coaches Line facilities
- Each bus has eight onboard cameras that record a week of video and can be monitored in real time using wireless internet (Wi-Fi) access

Contact phone: 800-900-3011
Website: https://ridebustang.com/

City of Loveland Transit (COLT)

- Emergency Operations and Security Plan (2007)
- Safety and security protocol based on Loveland Office of Emergency Management input and feedback
- All buses have a six-camera security system on-board
- The North Transfer Point is monitored by the Loveland Police Department

- Drivers prescreened before employment to verify they carry a Class B CDL or higher with proper endorsements, pass a background check, pass a pre-employment drug screen, and must have a clean driving record
- Drivers required to complete a defensive driving course; be certified in both CPR/AED and First Aid; attend all safety-related meetings and trainings required by the City of Loveland; submit to random testing for both drugs and alcohol; and have their driving records monitored

Contact Phone: (970) 962-2700
Website: http://cityofloveland.org/transit

Greeley Evans Transit (GET)

- Safety and Security Plan (2015), technical aspects updated annually with major planned update in 2019
- GET 5-10 Year Strategic Plan (2016)
- New driver training
  - o Full tour of the facilities; and an explanation of procedures, the various transit shifts, chain of command, the pre-post trip log book, which is kept for a year, work related timekeeping, dress code; bulletin boards; the transit time book; safety board, a variety of informational training videos, sensitivity training handouts, drug/alcohol training, and transit communication codes; and the Standard Operating Procedures
  - o Skills course to test driving skills, tablet training using RouteMatch, an automatic vehicle locator (AVL) system, fare collection system, wheelchair securement training, and mechanically assisted and manual wheelchair lift operation

- o Drivers must have final supervisor approval before they begin service
- o Background and driving checks performed in the initial hiring process
- Drivers must have current, personal automobile insurance in good standing in addition to insurance with GET for the transit vehicles
- Each year drivers are required to attend an eight-hour class on defensive driving techniques
- Drivers have a supervisor ride along at least twice a year. If a driver is involved in an incident, a supervisor will ride along on the next workday of operation
- GET Regional Transportation Center (RTC) facility has surveillance cameras, double lock doors, and proximity doors for identification cards for limited after-hours security access
- All GET buses have surveillance cameras on board. There are four to five cameras on each vehicle and the video from each bus is downloaded every night. New fixed-route buses have eight cameras.

Contact Phone: (970) 350-9287
Website: https://greeleyevanstransit.com

Transfort

- <u>System Safety Program Plan</u> (SSPP) – 2018
  - o Outlines hazard management; contract management; bus rapid transit (BRT) guideway access management; accident/incident notification, investigation, and reporting; maintenance audits and inspections; training and certifications; emergency response procedures; employee safety program; procurement; compressed natural gas fuels (CNG) and safety; security; and an internal safety audit process
- New driver training consists of six to eight weeks of progressive training. Conditions of employment, defensive driving, customer service, emergency and security, and service operating policies are covered.
- Continuing education is a focus of the Transfort training programs

- Conditions of Employment Section lists Equal Employment Opportunity (EEO), Sexual Harassment, and Substance Abuse Rules that must be followed by all employees
- A Citywide ID program is in place for City employees, non-public facility visitors, and contractors
- Transfort-specific transit security officers have been commissioned by the Fort Collins Chief of Police
- All Transfort buses, including MAX and FLEX, have cameras on board
- All MAX bus stations and stops have security cameras and are well lit
- Transfort installed two security gates at the dispatch facility
- Transfort Operations Manual contains sections on the <u>Severe Weather and Emergency Event Plan</u> and the <u>Safe Operator Plan</u>

Contact Phone: (970) 221-6620
Website: http://ridetransfort.com/

Volunteer Transportation Providers

Senior Alternatives in Transportation (SAINT)

- Volunteer screening for SAINT includes: a motor vehicle driver background check; a criminal background check; confirmation of their personal automobile insurance; and an in-person interview in the SAINT office
- All vehicles involved in the SAINT program are owned by the volunteer
- No cameras or other special equipment in the vehicles
- No SAINT 'road supervisor', but clients have been willing to let SAINT staff know how the drivers are performing

Contact Phone: (970) 223-8604
Website: http://www.saintvolunteertransportation.org/

60+ Ride

- Two weeks advance notice is required to ensure the highest rate of ride fulfillment possible
- 60+ Ride also has one minivan, driven by staff, which provides transportation to non-
- medical appointments in the Greeley-Evans area Monday through Friday
- Drivers are subject to background checks, including from the Colorado Bureau of Investigations and individual counties

Contact Phone: (970) 352-9348
Website: https://SRSweld.com

RAFT

- Vehicles used in this program are personal automobiles driven by volunteers
- There are no cameras in the volunteer vehicles or in the van
- The volunteer driver requirements for RAFT include: having a current, valid driver's license; a clean, safe and dependable vehicle; compliance with speed limit and traffic laws; authorization to obtain a copy of their driving record; a background check;
- must be 18 years of age or older, and if requested will submit to a drug test.
- Volunteer drivers must maintain the minimum automobile insurance required by Colorado State Law and proof of insurance must be provided to RAFT
- First Aid classes and defensive driving courses are not required, but recommended, reimbursement is offered to volunteers who complete either training.

Contact Phone: (970) 532-0808
Website: http://berthoudraft.org/

Vanpool Service

VanGo™ Vanpool Services

- System Security and Emergency Preparedness Plan (SSEPP)
  - Ensures security and emergency preparedness are addressed during all phases of system operation, including the hiring and training of agency personnel; the procurement and maintenance of agency equipment; the development of agency policies, rules, and procedures; and coordination with local public safety and community emergency planning agencies
  - Promotes analysis tools and methodologies to encourage safe system operations through the identification, evaluation, and resolution of threats and vulnerabilities, and the ongoing assessment of agency capabilities and readiness
  - Creates a culture which supports employee safety and security and safe system operations (during normal and emergency conditions) through motivated rules and procedures and the appropriate use and operation of equipment

- Annual safety meeting where vanpoolers have access to CDOT presentations on construction updates and operating in cone zones and presentations on a selected driving related topic (e.g. backing, safe driving distance, managing road rage)
- VanGo™ drivers and riders each have their own required application before they can begin using the service
- Drivers are required to undergo driving record checks and complete an online defensive driving course
- VanGo™ vehicles are based out of three locations: Fort Collins, Loveland, and Greeley Maintenance facilities
  - Each facility provides all the emergency equipment for the vans
  - Items in the vans include a fire extinguisher, emergency blankets, First Aid kit, snow shovel, reflective traffic triangles, and information on accident response
- There are no security cameras in the VanGo™ vans.

Contact Phone: (800) 332-0950
Website: https://vangovanpools.org/

Railroad Security

To identify incident locations on the railway system, the following information is needed when contacting the appropriate railroad:
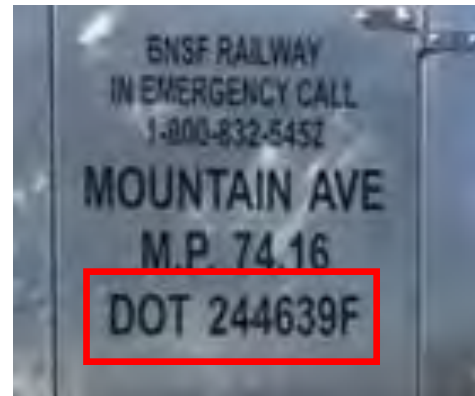
- Street/highway name;
- Nearest city/town;
- Railroad mile post (MP);
- Railroad subdivision; and
- Crossing/DOT Number (if available)

An example is shown in **Figure 2-48.**

BNSF Railway

- Fully certified State law enforcement officers who carry full police and arrest powers who conduct proactive, uniformed patrol to combat trespassing and cargo theft
    - K-9 units and the BNSF Police Canine team, which allows the BNSF Police to expedite train searches, discourage trespassers, and detect explosives
- Member of the Customs-Trade Partnership Against Terrorism (C-TPAT), which is a U.S. Customs Service and trade community endeavor to develop, enhance, and maintain effective security processes throughout the global supply chain
- Hazardous materials receive special identification and handling including waybill preparation, track and train list inventories, in-train placement checks, automatically

Figure 2-48: Example DOT Number

updated train list entries and emergency response information
- BNSF tracks all sensitive shipments
- BNSF Community Awareness and Emergency Response Code
    - Developed by BNSF Railway through its work with multiple local agencies across the country
- First Responder Training at their Security and Emergency Response Training Center in Pueblo, Colorado
- ON GUARD is a BNSF employee program which encourages employees to report suspicious activities, individuals, or trespassers to BNSF's Resource Operations Call Center (ROCC)
- [Citizens United for Rail Security](#) (CRS) program encourages interested citizens and railway fans to participate in BNSF security training

Contact phone: (800) 795-2673
Contact website: www.bnsf.com

Union Pacific Railroad (UPRR)

- Police department with more than 200 Special Agents across their system
- Special Agents are certified State law enforcement officers who can arrest both on and off railroad property. Special Agents investigate trespassing, theft, threats of terrorism, and derailments
- K-9 unit with officers who have access to surveillance technology and investigative techniques in addition to relationships with local, State, and federal law enforcement agencies.
- UPRR partners with the U.S. Customs and Border Protection, U.S. Coast Guard, the Federal Bureau of Investigation, Central Intelligence Agency, the Department of Homeland Security, and the Transportation Security Administration on security efforts
- Member of the C-TPAT.
- Provides a surveillance network which can report the location and movement of hazardous cargo within seconds
- In partnership with constant track checks, UPRR can pinpoint and manage the locations of the trains to ensure products are being shipped safely and efficiently.
- Virtual-fencing pilot program around their facilities that triggers an alarm to the Response management Communication Center
- Developed the Train Rider Identification Detection System (TriDS), which can detect unauthorized train riders.

Contact website: www.up.com
Contact phone: (888) 870-8777

Great Western Railway of Colorado (GWR)

- Customer Safety Handbook (2018)
  - Provides recommendations, contact information, and explanations of what to do in an emergency.

Contact website: www.omnitrax.com
Contact phone: (303) 398-4500

Airport Transportation Security

Greeley–Weld County Airport

- Access controlled by computerized access control system
- Gates restrict vehicular access at key locations around the airport
- Airport Security Plan (ASP) outlines procedures and practices for authorized access to the airport

- Greeley Police Department has law enforcement jurisdiction at the airport
- Security cameras provide view of the terminal building aircraft parking apron

Contact Website: http://www.gxy.net/
Contact Phone: (970) 336-3000

Northern Colorado Regional Airport

- Security operations at the Northern Colorado Regional Airport are conducted by the Transportation Security Administration (TSA). The same level of security inspections, regulations, and restrictions used at major airports are in place at the Northern Colorado Regional Airport.
- Technology to assist aircrafts land safely include full ILS, VOR/DME, RNAV, CTAF: 122.7, and AWOS: 135.075

- The Remote Air Traffic Control Tower is the first FAA approved version in the US, expected to be active at the end of May 2019, which will convert the airport to Class D airspace at that time
- Airport property uses security gates which everyone who wishes to maintain access must submit to TSA's requirements for badging which includes an application with background check.

Contact Website: http://www.fortloveair.com/
Contact Phone: (970) 962-2850

Emergency Management

- Larimer County Multi-Jurisdictional Hazard Mitigation Plan (2016)
  - Partnership with the towns of Berthoud, Estes Park, Johnstown, Timnath, Wellington, and Windsor; the cities of Fort Collins and Loveland; and other special districts and organizations
  - Submitted to the State of Colorado, Division of Homeland Security and Emergency Management, and the Federal Emergency Management Agency
  - Updates mitigation actions, especially at the local community level.

- READYColorado
  - Funded using a grant from the Department of Homeland Security (DHS) to enhance preparedness and response capabilities
  - Assists in making a personal plan, a one-stop shop for local emergencies, and a list of tools residents can use to prepare for and mitigate the risks from natural disasters and emergencies. More information about the program can be found at www.readycolorado.com.

- Weld County Multi-Jurisdictional Hazard Mitigation Plan (2016)
  - Partnership with the towns of Ault, Erie, Firestone, Frederick, Garden City, Gilcrest, Hudson, Keenesburg, Kersey, LaSalle, Mead, Milliken, Pierce, Platteville, Severance, and Windsor; the cities of Brighton, Dacono, Evans, Fort Lupton, and Greeley; as well as other special districts and organizations
  - Submitted to the State of Colorado, Division of Homeland Security and Emergency Management, and FEMA
  - Major goal to guide development away from high hazard areas and to improve hazard mapping to communicate risk
  - Focus on building partnerships and county-wide hazard mitigation strategy

Vulnerability Assessment

FEMA defines vulnerability as "any weakness that can be exploited by an aggressor".[24] To identify vulnerabilities, FEMA uses a multidisciplinary team including engineers, architects, security specialists, and subject matter experts. The team reviews and coordinates building plans, utilities, emergency plans, and interview schedules. Using this information, FEMA is able to assess potential damages and impacts on local buildings and transportation networks if an event were to occur. The analysis identifies vulnerabilities in the critical functions and critical infrastructure using a Vulnerability Assessment Checklist that rates them on a scale from "very low" (no weaknesses) to "very high" (extremely susceptible).

Cybersecurity

The downside to investments in transportation technology is the potential cybersecurity risks that follow. FHWA has acknowledged the risks and has highlighted certain concerns about connected transportation systems. The region should undertake a concerted effort to improve cybersecurity for its transportation system. Currently, the NFRMPO maintains its own cybersecurity policy applying to internal information; many local communities maintain their own policies as well. The region should make strides in improving cybersecurity issues, especially as hacks, ransoms, and other cybersecurity attacks have created major issues in Colorado.

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[24] http://www.fema.gov/pdf/plan/prevent/rms/155/e155_unit_iv.pdf