

Wyoming Highway-Rail Grade Crossing State Action Plan

May 17, 2021



Executive Summary

The purpose of this Wyoming Highway-Rail Grade Crossing State Action Plan (SAP) is to describe the Wyoming Department of Transportation's (WYDOT's) current practices and programs related to highway-rail grade crossing safety, conduct a conceptual safety analysis to identify potential emphasis areas and key areas of need, and develop an action plan for the implementation of short- and long-term strategies to aid in achieving the overarching goals of improving safety at public highway-rail grade crossings throughout the state.

The development of this SAP complies with federal requirements as described under Section 11401 of the Fixing America's Surface Transportation (FAST) Act and as amended by the Final Rule issued by the Federal Railroad Administration (FRA) on December 14, 2020. This SAP development process also provides Wyoming with the opportunity to work with multiple stakeholders to identify the best strategies for improving highway-rail grade crossing safety statewide. Per the federal requirements in the Final Rule, each State's SAP must accomplish the following:

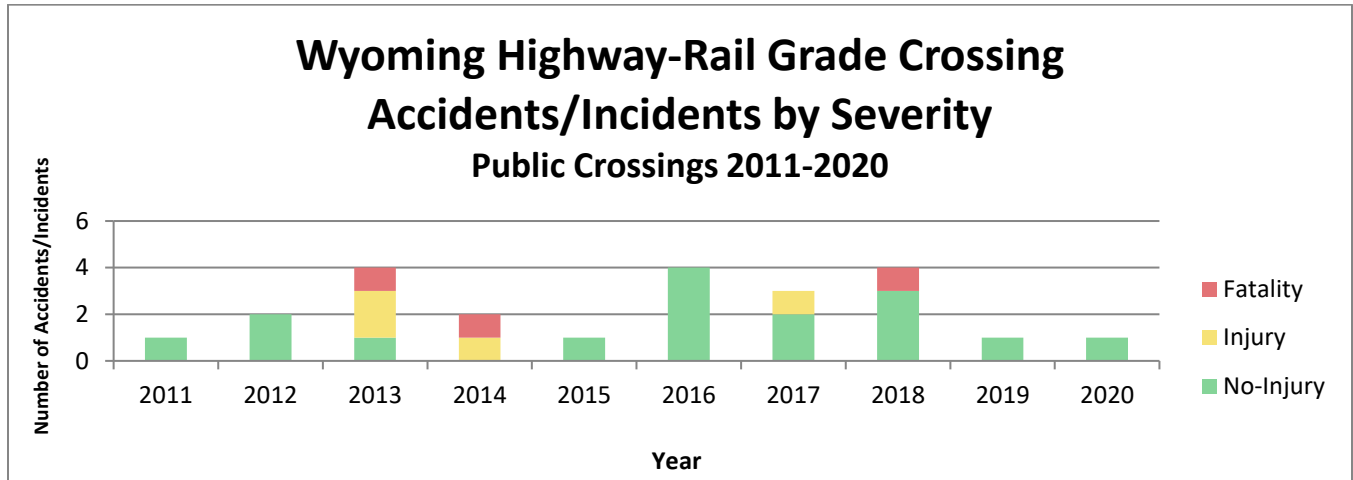
- Identify highway-rail and pathway grade crossings that:
 - Have experienced at least one accident/incident within the previous 3 years.
 - Have experienced more than one accident/incident within the previous 5 years.
 - Are at high-risk for accidents/incidents as defined in the Action Plan.
- Identify data sources used to categorize and evaluate the highway-rail grade crossings, including any pathway grade crossings.
- Discuss specific strategies, including highway-rail grade crossing closures or grade separations, to improve safety at those crossings over a period of at least 4 years
- Provide an implementation timeline for the strategies identified.
- Designate an official responsible for managing implementation of the State's highway-rail grade crossing action plan

A document developed jointly by the FRA and Federal Highway Administration (FHWA) identifying strategies for development of a Model SAP for states – *Noteworthy Practices Guide: Highway-Railway Grade Crossing Action Plan and Project Prioritization* (2016) – as well as subsequent guidance from the FRA were used as a guide for the development of this Wyoming SAP.

Wyoming has been served by railroads since the mid-19th century. As of 2020, the Wyoming statewide rail network is comprised of approximately 1,750 total route miles. Of these, 1,727 rail miles are owned by two Class I (large, continental) railroads. The remaining 23 rail miles are owned by one Class II (regional) railroad and two Class III (short line) railroads. The state's rail network intersects with a comprehensive network of public and private roadways in rural and urban areas statewide. As of December 2020, there are 384 intersections between railroads and public streets and highways at-grade.

This SAP presents a data analysis of 10 years of available accident/incident data between the years 2011 and 2020 to support the time frames of analysis required by FRA in the Final Rule as identified above, and also for WYDOT to identify longer-term trends in the state. This assessment is based on accident/incident records maintained by the FRA Office of Safety Analysis and by WYDOT. The total number of accidents/incidents at public highway-rail grade crossings in Wyoming has averaged approximately two to three incidents per year over this time period. The total number of accidents/incidents fluctuates from year to year with no particular trend.

Per federal guidance, this SAP identified locations where one or more accidents/incidents occurred within the previous 3 years, as well as locations where two or more accidents/incidents have occurred within the previous 5 years. In total, only one highway-rail grade crossing location was identified that experienced two or more accidents/incidents during the 2016-2020 period. This crossing was reviewed further to identify potential risk factors.



WYDOT's railroad safety strategies are currently implemented through the state's Railroad Crossing Improvement Program (RCIP). WYDOT receives approximately \$1.2 million in Section 130 funding annually from the FHWA for the implementation of safety improvements at locations where a public roadway intersects railroad tracks. Depending upon the cost of the improvements, approximately four to six safety projects and up to six crossing surface improvement projects are typically programmed annually in the Wyoming Statewide Transportation Improvement Program. Examples of RCIP projects include the installation of new or upgraded highway-rail grade crossing signal systems, interconnection of highway-rail grade crossing signals with a roadway traffic signals, and improvements to roadway approaches and crossing surfaces and roadway geometry improvements.

This SAP includes a conceptual risk assessment of the statewide public highway-rail grade crossing network through an analysis of available accident/incident and safety data compared to crossing features and characteristics including items such as highway and railroad traffic volumes and speeds, existing warning devices, and crossing geometry. The review used two distinct analysis methods to generate a better understanding of the characteristics most important to accident/incident prediction. The first method compared the proportion of crossing with a distinct characteristic to the proportion of accidents/incidents at crossings with that same characteristic. The approach helps to identify the crossing characteristics most commonly correlated with a risk of accidents/incidents. The secondary method followed a similar approach but also incorporated and adjusted for train and highway vehicle volumes to account for the fact that these volumes are the single largest determinant of crossing risk. The following crossing characteristics were reviewed as part of this analysis, based on accident/incident history over the previous 5 years:

- Average Daily Traffic Volumes
- Average Trains per Day
- Number of Tracks
- Number of Roadway Lanes
- Roadway Geometry

- Maximum Railroad Timetable Speed
- Highway Speed Limit
- Warning Devices

The development of this SAP by WYDOT included outreach and coordination with rail safety stakeholders, including the development of a project website and a public survey, as well as stakeholder meetings held in conjunction with the outreach for the 2021 Wyoming Statewide Rail Plan update.

As identified during the data and risk analysis and the stakeholder outreach conducted during development of the SAP, the highest priority public highway-rail grade crossing safety needs and challenges in Wyoming and related key areas of need/emphasis areas generally include:

- **Urban Crossings:** Locations where principal roadways – often the city’s main street which doubles as a United States or state highway – intersect with rail lines in the center of many cities in Wyoming present unique challenges. These crossings often have much higher traffic volumes than rural roads and other minor city streets and are also much more likely to have commercial accesses, private driveways, and intersections with public roadways near the crossing. These crossings are also more likely to host pedestrian and bicycle traffic.
- **Rural Crossings:** Rural crossings present their own unique challenges. In many cases, the highway approach speed at rural crossings is higher than in urban areas, increasing the importance of advance warning signs and clear sight distances to ensure that motorists are prepared to stop for an oncoming train. Sight distances may be limited by terrain or tight curvature on the approach to the crossing.

Through the development of this SAP, WYDOT established a series of goals and objectives and related strategies designed to improve safety for the key areas of need/emphasis areas identified through the safety analysis. Each is based on federal guidance to establish goals that are **Smart, Measurable, Agreed-upon, Realistic, and Time-bound (SMART)**. WYDOT’s SAP goals include the following:

- Goal 1: Review Every Incident at or Near a Highway-Rail Grade Crossing
- Goal 2: Address Driver Expectations
- Goal 3: 100% *Manual on Uniform Traffic Control Devices* (MUTCD) Compliance
- Goal 4: Ensure Crossing Surface Safety

While no formal agreements between WYDOT and rail safety stakeholders have yet been established, this SAP identifies the potential roles and responsibilities of these partners. Representatives from these stakeholder groups have been involved throughout the development of the SAP. They have had the opportunity to review the final documentation and WYDOT will coordinate with them further throughout the implementation of these goals and action items during the short-term 4-year planning horizon for this SAP (2022-2025) and beyond.

Contents

Executive Summary	ES-1
1.0 Introduction.....	1
1.1 Scope.....	1
1.2 Goals and Objectives	2
2.0 Statewide Highway-Rail Grade Crossing Safety Efforts.....	4
2.1 Highway-Rail Grade Crossing Planning.....	4
2.2 Assessment of Current Process to Identify and Prioritize Highway-Rail Grade Crossing Investments.....	7
3.0 Data Analysis	10
3.1 State Rail Network Overview	10
3.2 Overview of Current Freight Volumes and Movement on the State Rail Network	11
3.3 State Highway-Rail Grade Crossing Environment Overview	12
3.4 Data Analysis Approach.....	13
3.5 Data Analysis Results	14
3.6 Identification of Crossings That Have Experienced Recent Accidents/Incidents	24
3.7 Significant Findings from Analysis.....	26
4.0 Risk Assessment.....	28
4.1 Analysis of Statewide Accident/Incident and Safety Data	28
4.2 Evaluation of Public and Financial Impacts.....	37
4.3 Identification of Public Highway-Rail Grade Crossings at High-Risk for Accidents/Incidents	38
4.4 Identification of Private Highway-Rail Grade Crossings at High-Risk for Accidents/Incidents.....	40
5.0 Stakeholder and Public Engagement	41
5.1 Process for Stakeholder Involvement in State Action Plan Development.....	41
5.2 General Conclusions from Stakeholder Engagement Process	42
5.3 Stakeholder Involvement in State Action Plan Implementation.....	43
6.0 Highest-Priority Highway-Rail Grade Crossing Safety Challenges Statewide	44
6.1 Final Key Areas of Need/Emphasis Areas	44
6.2 Identification of Potential Strategies and Improvements	44
7.0 Action Plan	47
7.1 Goals and Objectives for Addressing Safety Challenges.....	47
7.2 Action Plan for Accomplishing Goals and Objectives.....	48
7.3 Challenges to Meeting Goals and Objectives.....	50
8.0 Next Steps Defined as Short-Term and Long-Term Actions.....	51

Tables

Table 1. General Summary of Wyoming’s Federal Highway-Railroad Grade Crossings (Section 130) Program.....	7
Table 2. Railroad Owners in Wyoming by Classification and Approximate Mileage.....	11
Table 3. Highway-Rail Grade Crossings by Type in Wyoming (2020).....	13
Table 4. Accidents/Incidents by Highway-Rail Grade Crossing Protection Type (2011-2020).....	14
Table 5. Highway-Rail Grade Crossing Accident/Incident Totals for Public Crossings Only.....	15
Table 6. Highway-Rail Grade Crossing Accidents/Incidents by Time of Day and Month.....	20
Table 7. Highway-Rail Grade Crossing Accidents/Incidents by Location Typology and Year.....	23
Table 8. Public Highway-Rail Grade Crossing Accident/Incident Locations.....	24
Table 9. Private Highway-Rail Grade Crossing Accident/Incident Locations.....	25
Table 10. Highway-Rail Grade Crossing Multiple Accident/Incident Locations.....	25
Table 11. Top 10 Highest-Ranking Public At-Grade Crossings Statewide per Hazard Rating Formula.....	40
Table 12. Highway-Rail Grade Crossing Locations of Concern Identified by Stakeholders.....	43
Table 13. Short- and Long-Term Action Summary.....	51

Figures

Figure 1. Wyoming State Rail Network (2020).....	10
Figure 2. Rail Traffic Density (2019-2020).....	12
Figure 3. Accidents/Incidents by Highway-Rail Grade Crossing Protection Type.....	14
Figure 4. Yearly Highway-Rail Grade Crossing Accidents/Incidents by Severity for Public Crossings.....	15
Figure 5. Wyoming Highway-Rail Grade Crossing Accident/Incident Severity by County.....	16
Figure 6. Highway-Rail Grade Crossing Accident/Incident Distribution by Railroad.....	17
Figure 7. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Vehicle Speed.....	17
Figure 8. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Train Speed.....	18
Figure 9. Wyoming Injury-Related Highway-Rail Grade Crossing Accidents/Incidents by Driver Age.....	18
Figure 10. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Driver Behavior Type.....	19
Figure 11. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Collision Type.....	20
Figure 12. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Weather.....	21
Figure 13. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Roadway Conditions.....	21
Figure 14. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Visibility.....	22
Figure 15. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Vehicle Type.....	23
Figure 16. Average Daily Traffic Volumes Risk Assessment.....	29
Figure 17. Average Daily Train Volumes Risk Assessment.....	30
Figure 18. Number of Main Tracks Risk Assessment.....	31
Figure 19. Roadway Lanes Risk Assessment.....	32
Figure 20. Horizontal Roadway Geometry Risk Assessment.....	33
Figure 21. Maximum Railroad Timetable Speed Risk Assessment.....	34
Figure 22. Highway Speed Limit Risk Assessment.....	35
Figure 23. Warning Device Risk Assessment.....	36

Acronyms

EXECUTIVE SUMMARY

FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
MUTCD	Manual on Uniform Traffic Control Devices
RCIP	Railroad Crossing Improvement Program
SAP	State Action Plan
WYDOT	Wyoming Department of Transportation's

INTRODUCTION

FAST Act	Fixing America's Surface Transportation Act
FRA	Federal Railroad Administration
SAP	State Action Plan
SRP	Statewide Rail Plan
WYDOT	Wyoming Department of Transportation

SECTION 2

DOT	department of transportation
FHWA	Federal Highway Administration
RCIP	Railroad Crossing Improvement Program
STIP	Statewide Transportation Improvement Program
U.S.	United States
WYDOT	Wyoming Department of Transportation's

SECTION 3

AM	morning
BNSF	BNSF Railway
CWT	constant warning time
FRA	Federal Railroad Administration
mph	miles per hour
PDO	property damage only
PM	evening
UP	Union Pacific Railroad
WYDOT	Wyoming Department of Transportation

SECTION 4

FRA	Federal Railroad Administration
mph	miles per hour
SAP	State Action Plan
WYDOT	Wyoming Department of Transportation

SECTION 5

SAP	State Action Plan
SRP	Statewide Rail Plan
WYDOT	Wyoming Department of Transportation

SECTION 6

CCTV	closed-circuit television
EMS	emergency medical services
SAP	State Action Plan
WYDOT	Wyoming Department of Transportation

SECTION 7

BNSF	BNSF Railway
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
SAP	State Action Plan
UP	Union Pacific Railroad
WYDOT	Wyoming Department of Transportation

SECTION 8

SAP	State Action Plan
WYDOT	Wyoming Department of Transportation

1.0 Introduction

Section 11401 of the Fixing America's Surface Transportation (FAST) Act requires each State to develop a Highway-Rail Grade Crossing State Action Plan (SAP).

Train-vehicle accidents/incidents at public highway-rail grade crossings are relatively rare in Wyoming, averaging about two or three per year. These accidents/incidents are typically due to driver inattention or related behavioral errors, and rarely can be attributed to geometrics (i.e., sight distance) or issues related to warning devices at the crossings. Reports of both unsafe motorists near grade crossings and near-miss incidents are both more common and more valuable and provide a better indication of areas where additional behavioral enforcement or engineering solutions may be required. The Wyoming Department of Transportation (WYDOT) receives these reports and reviews each one to identify any needed improvements. Nevertheless, every accident/incident that results in an injury or a fatality is a tragedy, and WYDOT is committed to reducing the occurrence of such incidents.

This SAP was developed by the WYDOT through coordination with stakeholders statewide and in consideration of applicable federal requirements. Through thoughtful and strategic implementation of this SAP, it is envisioned that statewide safety efforts can be better coordinated and equipped to address a diverse and complex assortment of highway-rail grade crossing safety issues across Wyoming.

The mission statement below guides all WYDOT activities:

Provide a safe, high quality, and efficient transportation system.

Realizing the vision of the mission statement above requires leadership by WYDOT, coordinated action across all agencies and with the aid of all highway-rail grade crossing safety stakeholders, and broad public awareness.

1.1 Scope

The planning process employed to develop the Wyoming SAP during 2020-2021 included the following elements:

- **Assess current planning and programs statewide that target highway-rail grade crossing safety and investment (see Section 2.0 of this SAP for more details).**
- **Assess the current process used by WYDOT to identify and prioritize highway-rail grade crossing safety investments (see Section 2.0 of this SAP for more details).**
- **Conduct data analysis** that presents the results of a robust analysis of 10 years of available Federal Railroad Administration (FRA) accident/incident data for the years 2011 to 2020 inclusive and state highway-rail grade crossing inventory data that evaluates the general highway-rail grade crossing environment statewide in terms of strengths, vulnerabilities, and challenges in highway-rail grade crossing safety (see Section 3.0 of this SAP for more details).
- **Assess the current highway-rail grade crossing environment generally and provide an overview of the state rail network (see Section 3.0 of this SAP for more details).**
- **Conduct a risk assessment** of the statewide highway-rail grade crossing network through an analysis of accident/incident and safety data compared to crossing features and characteristics including items such as highway and railroad traffic volumes and speeds, existing warning devices, crossing geometry, and other considerations (see Section 4.0 of this SAP for more details).

- **Conduct stakeholder and public outreach and coordination** with rail safety stakeholders, including the development of a project website and a public survey, and a virtual stakeholder meeting held in conjunction with outreach for the companion 2021 Wyoming Statewide Rail Plan (SRP). The purpose of the outreach was to acquire inputs for the development of the SAP and to seek partners to help WYDOT implement the actions of the SAP. Stakeholder meetings were held virtually and included participation by representatives from WYDOT; FRA; Federal Highway Administration; various cities, municipalities, tribes, and law enforcement agencies statewide; and multiple railroads operating in the state (*see Section 5.0 of this SAP for more details*).
- **Identify the highest-priority highway-rail grade crossing safety challenges in the state in terms of key areas of need / emphasis areas** (*see Section 6.0 of this SAP for more details*).
- **Develop an action plan** to identify goals and objectives for addressing highway-rail grade crossing safety challenges, create an implementation plan WYDOT and its partners will undertake for accomplishing goals and objectives and to identify process and metrics for measuring progress during the 4-year horizon of the SAP (2022-2025), and identify challenges to meeting goals and objectives. The implemented actions will address key safety challenges and solutions related to the “4Es” of highway-rail grade crossing safety – engineering, education, enforcement, and emergency services (*see Section 7.0 of this SAP for more details*).
- **Consider next steps** by providing an overview of the short-term actions (for the 4-year horizon for this SAP [2022-2025]) and long-term actions (2026-2029) that will be undertaken to assist WYDOT in achieving the goals and objectives of this SAP (*see Section 8.0 of this SAP for more details*).

1.2 Goals and Objectives

As identified during the data and risk analysis and the stakeholder outreach conducted for development of the SAP, the highest priority highway-rail grade crossing safety needs and challenges in Wyoming and related key areas of need/emphasis areas include:

- **Urban Crossings:** Locations where principal roadways – often the city’s main street which doubles as a United States or state highway – intersect with rail lines in the center of many cities in Wyoming present unique challenges. These crossings often have much higher traffic volumes than rural roads and other minor city streets and are also much more likely to have commercial accesses, private driveways, and intersections with public roadways near the crossing. These crossings are also more likely to host pedestrian and bicycle traffic.
- **Rural Crossings:** Rural crossings present their own unique challenges. In many cases, the highway approach speed at rural crossings is higher than in urban areas, increasing the importance of advance warning signs and clear sight distances to ensure that motorists are prepared to stop for an oncoming train. Sight distances may be limited by terrain or tight curvature on the approach to the crossing.

Through the development of this SAP, WYDOT established a series of goals and objectives and related strategies designed to improve safety for the key areas of need/emphasis areas identified through the safety analysis. Each is based on federal guidance to establish goals that are **Smart, Measurable, Agreed-upon, Realistic, and Time-bound (SMART)**. WYDOT’s SAP goals include the following:

- Goal 1: Review Every Incident at or Near a Highway-Rail Grade Crossing
- Goal 2: Address Driver Expectations
- Goal 3: 100% Manual on Uniform Traffic Control Devices (MUTCD) Compliance

- Goal 4: Ensure Crossing Surface Safety

Specific measures of progress for each goal are detailed further within this SAP. Specific actions and related strategies identified to achieve the goals are also provided in further detail in the SAP. For each action, the SAP proposes a series of specific items for WYDOT and other rail safety stakeholders to pursue. The actions described in the SAP include:

- Action 1: Develop Enhanced Statewide Grade Crossing Inventory
- Action 2: Address Highest-Priority Highway-Rail Grade Crossings
- Action 3: Continue to Request and Receive Incident Reports
- Action 4: Enhance Ongoing Coordination between Rail Safety Stakeholders
- Action 5: Continue Monthly Coordination with Railroads

2.0 Statewide Highway-Rail Grade Crossing Safety Efforts

2.1 Highway-Rail Grade Crossing Planning

2.1.1 Statewide Safety Programs

Wyoming has 384 public highway at-grade rail crossings, as of December 2020. This number will fluctuate in the future as new crossings may be established, local governments may abandon a public alignment over a crossing, or crossings may be otherwise closed or consolidated. There are also 243 grade separations throughout the state. Finally, there are 736 private at-grade crossings within the state.

Private crossings are typically identified with stop signs (not crossbucks) and at least one sign stating that access across the crossing is subject to landowner approval. Typically, train horns are not sounded at private crossings. Public crossings, by contrast, are identified with advance warning signs, pavement markings on hard surface approaches, and either crossbucks (passive warning devices) or flashing lights with or without automatic gates (active warning devices) activated by the electronic detection of approaching trains.

Hazard elimination is handled under WYDOT's Planning Program. With nearly 400 public at-grade crossings across the state, projects must be carefully selected and refined. Crossing concerns are forwarded to the agency by railroads, state and local maintenance personnel, or local governments. These are consolidated and slated for annual diagnostic review. Annual diagnostic reviews are conducted with railroads, typically in spring, and additional diagnostic reviews are conducted individually as needed. From these field reviews, projects are further refined. For candidate projects, requests for cost estimates are then sent to the railroads. Projects are ultimately refined based on available funding, feasibility, and relative need.

At-grade crossing improvements due to highway reconstruction are handled through WYDOT's Highway Development Program. Railroad separations are handled under WYDOT's Bridge Program. Railroad flagging, right-of-entry, and real estate are handled under WYDOT's Right of Way Program. Permanent crossing closures, consolidations, and private to public conversions are coordinated by the Planning Program.

Railroad quiet zones are also handled under WYDOT's Planning Program and are considered by WYDOT as quality-of-life rather than safety or hazard elimination projects. WYDOT cooperates with municipalities that wish to pursue quiet zone implementation and coordinates these activities with the railroads. Quiet zone projects trigger the resurfacing of the railroad grade crossing and upgrades to the crossing warning system components, which can both be beneficial to safety.

2.1.2 Statewide Public Education Programs

WYOMING OPERATION LIFESAVER

Operation Lifesaver, Inc. is a non-profit public information and education program that since 1972 has helped to prevent and reduce accidents/incidents, injuries, and fatalities and trespassing incidents and improve driver performance over the approximately 300,000 public and private highway-rail grade crossings in the United States (U.S.).¹

¹ <https://oli.org/about-us>

Wyoming Operation Lifesaver is a cooperative effort of the railroads of Wyoming, state agencies, law enforcement, and other organizations to raise awareness of highway-rail grade crossing safety and to reduce highway-rail grade crossing and trespassing fatalities and incidents. Wyoming Operation Lifesaver engages and educates the public and various stakeholders through its website, social media, and free public presentations made by trained Operation Lifesaver presenters.² WYDOT currently serves as the chair of Wyoming Operation Lifesaver.

The Federal Railroad Administration (FRA) awarded grant funding to 21 states (including Wyoming) in 2014 benefitting Operation Lifesaver program activities that are aimed at targeting zero tolerance for grade crossing and trespasser deaths.³ Operation Lifesaver used this funding to support a rail safety campaign to target drivers in Wyoming.

2.1.3 Statewide Highway-Rail Grade Crossing Funding Programs and Administration

WYDOT'S RAILROADS SECTION

Highway-Rail Grade Crossing Program administration is housed within WYDOT's Railroads Section. All data collection, diagnostics, and other functions are handled by one State Railroad Coordinator. One supervisor assists by coordinating monthly teleconferences with Wyoming's Class I railroads, conducting some diagnostic reviews, writing reports, and carrying crossing petitions to the state's transportation commission.

Per the 2021 Wyoming Statewide Rail Plan, railroad safety strategies are implemented through the Railroad Crossing Improvement Program (RCIP). WYDOT receives approximately \$1.2 million annually (from the Federal Highway Administration [FHWA]) for the implementation of safety improvements at locations where a public roadway intersects active railroad tracks.⁴ Funds are made available for this program with a match ratio of 90 percent federal to 10 percent state or local match (or potentially a railroad match), with total funding or cash incentives available for crossing consolidation projects.⁵ Depending on the cost of the improvements, approximately four to six safety projects are typically programmed annually in the Wyoming Statewide Transportation Improvement Program (STIP).⁶ There is also funding for crossing surface improvement projects each year. The 2020 STIP lists 17 specific highway-rail crossing improvement projects. Of these, 9 involve crossing protection devices, and 8 involve crossing surfacing.

RCIP projects may include:

- Installation of new or upgraded highway-rail grade crossing signal systems and active warning devices (e.g., upgrade from flashing light signals to flashing light signals and gates).
- Interconnection of highway-rail grade crossing signals with a roadway traffic signal.

² https://wyomingoperationlifesaver.com/html/about_us.htm

³ <https://oli.org/about-us/news/operation-lifesaver-inc-awards-200000-rail-safety-public-education-and-awareness-0>

⁴ https://www.fhwa.dot.gov/legsregs/directives/notices/n4510844/n4510844_t1.cfm

⁵ <http://www.WYDOT.com/transportation/railroads/safety/Default.aspx>

⁶ <http://www.dot.state.wy.us/files/live/sites/wydot/files/shared/Planning/2020%20STIP/FY%202020%20STIP.pdf>

- Highway-rail grade crossing approach and surface improvements.
- Highway-rail grade crossing visibility and roadway geometry improvements.
- Signing and pavement markings.
- Lighting at highway-rail grade crossings.
- Improvements for interface between pedestrian/bicycle paths and railroad grade crossings.
- Highway-rail grade crossing elimination or consolidation.
- Highway-rail grade separation or replacement of grade separation.

An inventory of all highway-rail grade crossings involving public roads is maintained by WYDOT. Information collected for the statewide highway-rail grade crossing inventory is used to calculate hazard ratings for crossings that are then ranked and can help identify potential projects for the RCIP. Potential projects are also identified by accident/incident history (accident/incident reports are requested each year and reviewed by WYDOT) and through requests from roadway authorities, railroads, and WYDOT personnel that have knowledge of driver behavior, changes necessary for pedestrian movements, need for interconnection, or changes in highway or railroad operations. Once potential projects have been identified, projects are prioritized according to the hazard ranking, type of project, and available funding. As required by 23 United States Code 130 (or FHWA Federal Highway – Railroad Grade Crossings [Section 130] Program), at least 50 percent of the funds are to be used for installation of safety devices for the locations on the list of recommended projects.

Summary of Wyoming's Federal Highway-Railroad Grade Crossings (Section 130) Program

Additional detail was provided about FHWA funding for public highway-rail grade crossing improvements in Wyoming, through coordination with WYDOT during the project.

The Section 130 Program provides funding for the elimination of hazards at U.S. highway-rail grade crossings. Since the program's debut in 1987, there has been a significant decrease in fatalities at public highway-rail grade crossings nationwide despite an increase in vehicle miles traveled on roadways and an increase in passengers and freight moved over railroad corridors.⁷ Funding from this program helped to eliminate many safety hazards in Wyoming and other states, largely through the installation and upgrade of protective devices at public highway-rail grade crossings.

As background, **Table 1** provides general details about the Section 130 Program currently administered by Wyoming and managed by WYDOT through the Wyoming RCIP described earlier in this section.

⁷ <https://safety.fhwa.dot.gov/hsip/xings>

Table 1. General Summary of Wyoming’s Federal Highway-Railroad Grade Crossings (Section 130) Program

Background	Description
Program Intent and General Background	<p>This federally funded program improves safety of public highway-rail grade crossings.</p> <p>The Federal Highway Administration distributes Section 130 funds, and the Wyoming Department of Transportation administers those funds.</p> <p>Typical upgrades include enhancements to existing grade crossing active warning infrastructure (i.e., adding gates to a crossing with flashing light signals) or improvements that upgrade a passive grade crossing with active warning devices (i.e., installing flashing light signals).</p>
Average Length of Time for Acceptance Decision and Award of Funding	The Wyoming Department of Transportation identifies projects at least 1 year in advance. As of December 2020, all projects through 2021 have been identified and WYDOT is in the process of identifying projects for 2022.
Program’s Annual Funding Level	Approximately \$1.2 million annually.
For More Information	<p>Railroads Section</p> <p>Wyoming Department of Transportation</p> <p>5300 Bishop Boulevard</p> <p>Cheyenne, WY 57501</p>

2.2 Assessment of Current Process to Identify and Prioritize Highway-Rail Grade Crossing Investments

The primary source of WYDOT’s crossing improvement funding is provided through the RCIP. The combination of \$1.2 Million in federal funding through the Section 130 program in addition to the required 10 percent state or local match results in just over \$1.3 Million in grade crossing improvement funding annually. This translates into approximately four to six public crossing safety improvement projects selected each year as identified in the STIP.

Crossing improvement project types typically selected by WYDOT include the following:

- **Flashing Light Signals:** These devices function as a visual warning to motorists signaling an approaching train. Flashing light signals are installed in pairs on the sign masts and in some cases are also installed on cantilever systems where visibility of the flashing light system is a concern (e.g., multi-lane approaches, adjacent parking, and other visual barriers).
- **Gates:** Automatic gates function as a physical barrier preventing motorists from traversing the tracks. WYDOT typically installs gates in tandem with flashing lights.
- **Crossing Surface Upgrades:** WYDOT also pursues upgrades to the crossing surface as another form of improvement project. Deteriorating crossing surfaces pose safety concerns for pedestrians, bicyclists, and motorists alike.
- **Crossing Closures:** The consolidation and closure of rail crossings is an effective approach for reducing the potential highway-rail accidents/incidents.

2.2.1 Current Crossing Improvement Prioritization Process

WYDOT's current project prioritization and selection process begins with four primary avenues of initial project identification:

- **Public Authority Request:** Public authorities (e.g., cities, counties) with jurisdiction over the roadways at the crossings are often aware of specific safety issues that may be addressed through crossing safety improvements. WYDOT is alerted to these issues through direct communication from the public authorities.
- **Railroad Identification:** Individual operating railroads are also aware of potential safety concerns through their own internal reporting of near misses. WYDOT frequently coordinates with railroads operating throughout the state and is made aware of specific crossings or corridors where safety has become a concern.
- **Routine Safety Performance Review:** Projects may be identified through routine safety performance review by WYDOT highway-rail safety staff, through regular review of highway-rail grade crossing performance statewide, as a follow-up to accidents/incidents, or upon notification of possible issues from local citizens or roadway users.
- **Planned STIP Projects:** WYDOT frequently identifies potential crossing improvements that may be coordinated with other roadway reconstruction projects programmed in the STIP. This approach reduces the overall cost of improvement implementation.

WYDOT staff also conduct routine field diagnostic reviews of crossings to collect updated crossing characteristic information and to identify potential safety issues. While WYDOT has adopted a hazard rating formula and ranking process to assess the potential risk at crossings throughout the state and to identify and prioritize crossing improvement projects, it does not currently rely solely on such a model. Rather, projects are mainly selected using a combination of engineering and planning judgment and identification of projects that can be efficiently combined with compatible planned and programmed transportation infrastructure projects such as roadway reconstruction projects.

The Section 130 program allows for a great degree of freedom to state departments of transportation (DOTs) to determine the most appropriate means of selecting and prioritizing projects. As noted in the FHWA's *Highway-Railway Grade Crossing Action Plan and Project Prioritization Noteworthy Practices*⁸, most state DOTs fall into one of three categories of project prioritization:

- **Process driven:** Under a process driven approach, projects are selected predominantly through coordination with stakeholders such as local governments and railroads.
- **Data driven:** A data driven approach relies on established formulas to identify grade crossings with the highest risk levels in order to prioritize their selection.
- **Hybrid:** This approach uses a combination of the previous two approaches, typically beginning with a data driven risk formula to create a preliminary list of high-risk crossings relying on the judgment of department staff and coordination with stakeholders to select projects within this list.

⁸ FHWA Highway-Rail Grade Crossing Action Plan and Project Prioritization Noteworthy Practices:

<https://safety.fhwa.dot.gov/hsip/xings/fhwas16075/>

2.2.2 Hazard Index Models

This SAP recommends that WYDOT continue the use of a hazard rating formula as part of its project prioritization process. While not required under the Section 130 program requirements, the inclusion of such a model or formula carries many advantages. It provides an objective measure of crossing risk which can be beneficial for ensuring transparency throughout the selection process. The use of a model may also highlight the presence of higher-risk crossings that have not been identified through the standard project identification methods. Furthermore, the calculation of individual crossing risk levels in combination with estimated risk reduction factors may be used for benefit-cost analyses to further refine the final project selection. The FHWA's *Railroad-Highway Grade Crossing Handbook* suggests the use of a hazard index or prediction formula as a means of objectively identifying and prioritizing grade crossing improvements. WYDOT's current hazard rating formula is described in Section 4.3.1.

3.0 Data Analysis

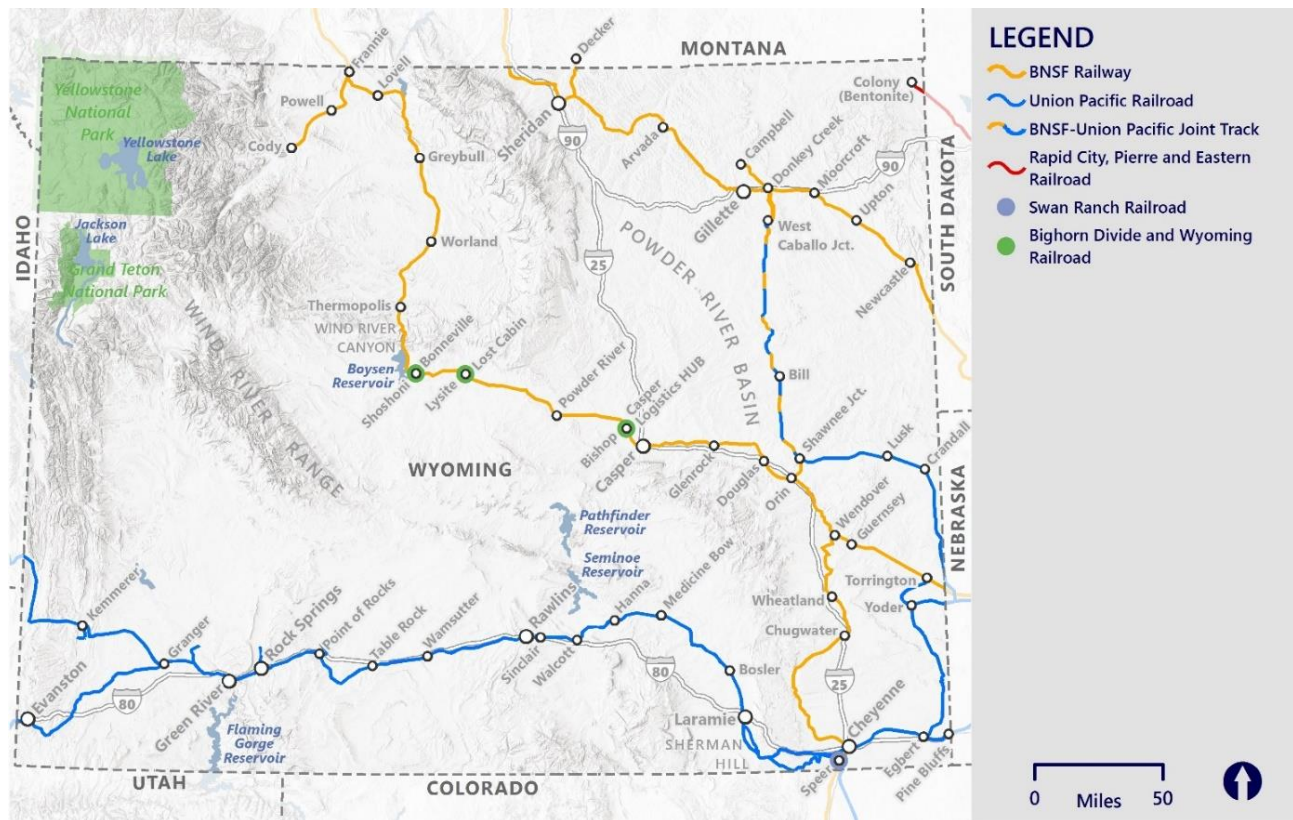
The purpose of this section is to:

- Provide an overview of the ownership and general characteristics of the state rail network, general freight rail traffic flows in terms of average number of trains, and highway-rail grade crossings in Wyoming.
- Identify and describe data sources available for general evaluation of the state’s highway-rail grade crossing environment, related risk factors, and accidents/incidents that have resulted in fatalities, injuries, and accidents.
- Present an analysis of available accident/incident data and state highway-rail grade crossing inventory data that evaluates the general highway-rail grade crossing environment statewide in terms of strengths, vulnerabilities, and challenges in highway-rail grade crossing safety.

3.1 State Rail Network Overview

The Wyoming state rail network is comprised of approximately 1,750 total active rail miles in 2020. Approximately 1,727 rail miles are owned by two Class I or large national railroads. Of the remaining 23 miles, 7 miles are owned by a Class II or regional railroad, and the remaining 16 miles are owned or exclusively operated by Class III or short line railroads. The State of Wyoming itself does not own any rail lines. A map of the state rail network is presented in **Figure 1**.

Figure 1. Wyoming State Rail Network (2020)



Source: HDR, Wyoming Department of Transportation, *Wyoming Statewide Rail Plan* (2021)

Owners of the state rail network in Wyoming by railroad, railroad classification, and approximate rail miles owned is shown in **Table 2**.

Table 2. Railroad Owners in Wyoming by Classification and Approximate Mileage

Railroad	Railroad Classification	Approximate Rail Miles Owned in Wyoming
BNSF Railway (BNSF)	Class I	960
Union Pacific Railroad (UP)	Class I	873
Rapid City, Pierre & Eastern Railroad (RCPE)	Class II (regional)	7
Bighorn Divide & Wyoming (BDW)	Class III (short line)	8
Swan Ranch Railroad (SRRR)	Class III (short line)	8

Source: Wyoming Department of Transportation, *Wyoming Statewide Rail Plan (2021)*

There are at present no regularly scheduled long-distance, intercity, commuter rail, or light rail passenger train operations or services within Wyoming.

3.2 Overview of Current Freight Volumes and Movement on the State Rail Network

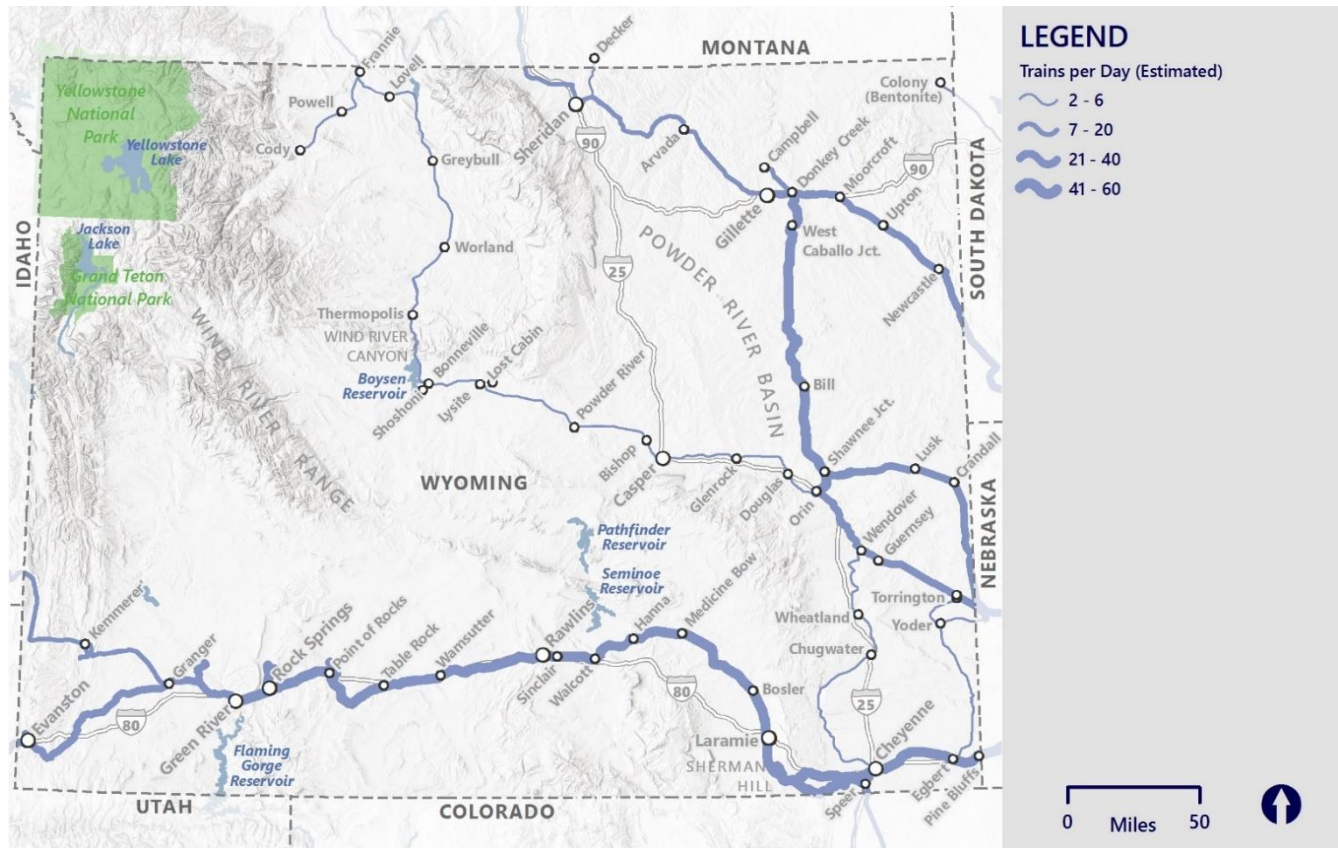
This section provides a general overview of freight volumes and movement by rail in Wyoming to provide additional context of the state rail network and to present additional details on potential conditions and safety risk factors at highway-rail grade crossings statewide.

Figure 2 is a map previously developed for the 2021 Wyoming Statewide Rail Plan that shows the average rail traffic density by rail line for 2019-2020.

Key findings from the 2021 Wyoming Statewide Rail Plan in terms of an analysis of existing (2020) average train volumes by segments of the state rail network revealed:

- The highest number of average daily trains in the state (up to 60 trains per day) is on the UP Overland Route transcontinental mainline across southern Wyoming through Cheyenne, Laramie, Rawlins, Green River, Rock Springs, and Evanston. The majority of traffic on this segment consists of through intermodal, bulk commodity, and general merchandise trains.
- The second highest number of average daily trains in the state (up to 58 trains per day) is over the jointly owned BNSF and UP Orin Line through the Powder River Basin coal fields between Orin and Donkey Creek, Wyoming, which is an approximately 120-mile segment of the state rail network through central Wyoming. The majority of rail traffic on this segment consists of originating movements of Wyoming Powder River Basin coal and counterpart empty trains returning to the mines.
- The UP Powder River Subdivision between South Morrill, Nebraska and Shawnee Junction, Wyoming, had the next highest train density (up to 40 trains per day). Freight handled on this line is almost exclusively coal originating in the Powder River Basin.
- Most of the remaining segments of the state rail network were estimated to have six or fewer trains daily. The majority of traffic on these segments consists of general merchandise trains.

Figure 2. Rail Traffic Density (2019-2020)



Source: HDR, Wyoming Department of Transportation, *Wyoming Statewide Rail Plan* (2021), FRA Highway-Rail Grade Crossing Inventory Reports

3.3 State Highway-Rail Grade Crossing Environment Overview

The state rail network intersects with a comprehensive network of public and private roadways in rural and urban areas statewide. The three types of highway-rail intersections include:

- **Public At-Grade Crossing** – An at-grade crossing of a public roadway with a rail line. Public grade crossings are roadways that are under the jurisdiction of, and maintained by, a public highway authority (e.g., city, county, tribe, or state).
- **Grade Separated Crossing** – An overpass or underpass structure that crosses over or under a rail line, usually eliminating a previous at-grade crossing. Grade separated crossings are typically for public roadways, but can also be for private roadways in select instances.
- **Private At-Grade Crossing** – An at-grade crossing of a private roadway with a rail line. Private grade crossings are on privately owned roadways, such as on a farm, ranch, or in an industrial area, and are intended for use by the owner or by the owner’s invitees. A private crossing is not intended for public use and is not maintained by a public highway authority. The Wyoming Department of Transportation (WYDOT) does not exercise jurisdiction over private at-grade crossings.

There are two types of at-grade highway-rail crossings in the state – passive and active – which vary on the basis of the type of warning devices installed.

A passive highway-rail grade crossing is protected by devices that do not give warning as a result of activation by trains. Passive warning devices at these grade crossings typically include crossbucks, stop or yield signs, and pavement markings only.

An active highway-rail grade crossing is protected by devices that give warning as a result of activation by trains. Active warning devices at these grade crossings typically include bells, flashing lights, and automatic gates.

Some active highway-rail grade crossings may also include one, or both, of these additional features:

- **Constant Warning Time (CWT)** – Equipment that detects the speed and direction of a train as it approaches and measures its distance from a grade crossing in order to activate crossing warning devices within a uniform minimum warning time selected. CWT reduces potential delays to vehicular traffic or the potential for motorists to disregard warning devices at the grade crossing when warning times are inconsistent with varying train speeds.
- **Preemption** – The transfer of normal operation of a traffic control signal to a special control operating mode. In railroad preemption, the railroad warning system preempts the normal operation of the traffic signal and provides a green indication for traffic located on or near the track(s) to allow time for vehicles to clear the track area prior to the arrival of a train.

Table 3 identifies the current number of highway-rail grade crossings by type in Wyoming, as of December 2020.

Table 3. Highway-Rail Grade Crossings by Type in Wyoming (2020)

Highway-Rail Crossing Type	Number
Public At-Grade	384
Private At-Grade	736
Total At-Grade	1,120

Source: FRA, Wyoming Department of Transportation

3.4 Data Analysis Approach

The following sources were used to support the analysis of the highway-rail grade crossing environment, related risk factors, and accident/incident and statewide inventory data for the SAP:

- Federal Railroad Administration (FRA) Accident/Incident Data for a 10-Year Period, 2011-2020, inclusive
 - Data is publicly available from the FRA Office of Safety Analysis website⁹
- FRA Highway-Rail Grade Crossing Inventory Data¹⁰
- Supplemental information maintained by WYDOT staff

⁹ https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/on_the_fly_download.aspx

¹⁰ <https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/DownloadCrossingInventoryData.aspx>

3.5 Data Analysis Results

This section presents the results of a robust analysis of 10 years of available accident/incident data for 2011-2020 inclusive for state highway-rail grade crossing inventory data that evaluates the general highway-rail grade crossing environment statewide in terms of strengths, vulnerabilities, and challenges in highway-rail grade crossing safety. Only public grade crossings are included in this presentation.

3.5.1 Accidents/Incidents by Crossing and Protection Type

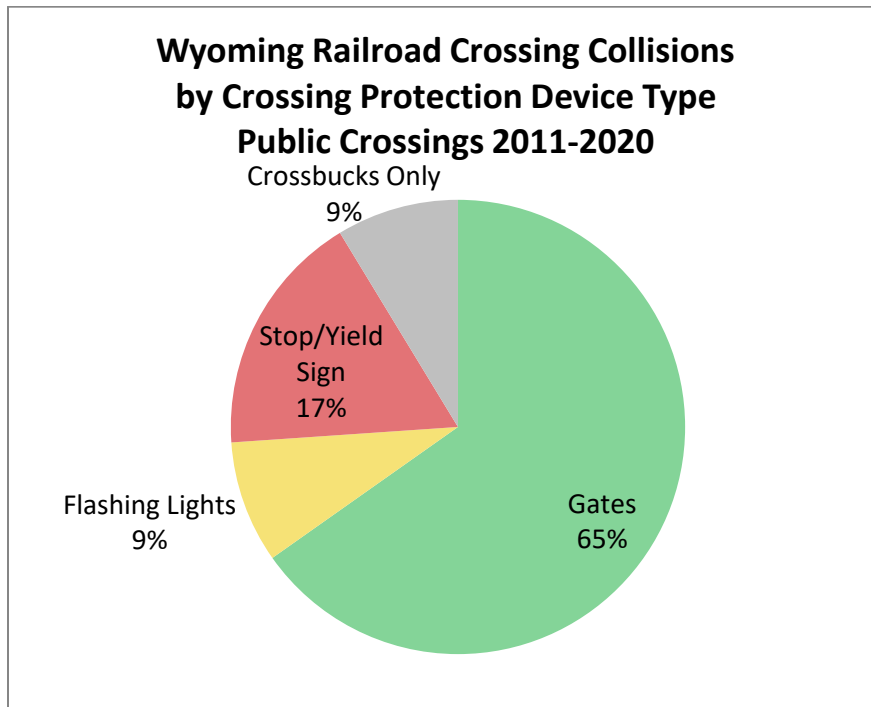
Accidents/incidents at public highway-rail grade crossings were subdivided into four additional categories based on the type of protection provided at the crossing at the time of the incident: passive warning devices with crossbucks only, passive warning devices with stop or yield signs, active warning devices equipped with flashing lights only, and active warning devices with both flashing lights and gates, as shown in **Table 4** and

Figure 3.

Table 4. Accidents/Incidents by Highway-Rail Grade Crossing Protection Type (2011-2020)

Crossing Protection Type	Highway-Rail Accidents/incidents
Passive (Crossbucks Only)	2
Passive (Crossbucks with Stop or Yield Sign)	4
Active with Flashing Lights Only	2
Active with Flashing Lights & Gates	15
Public – Total	23

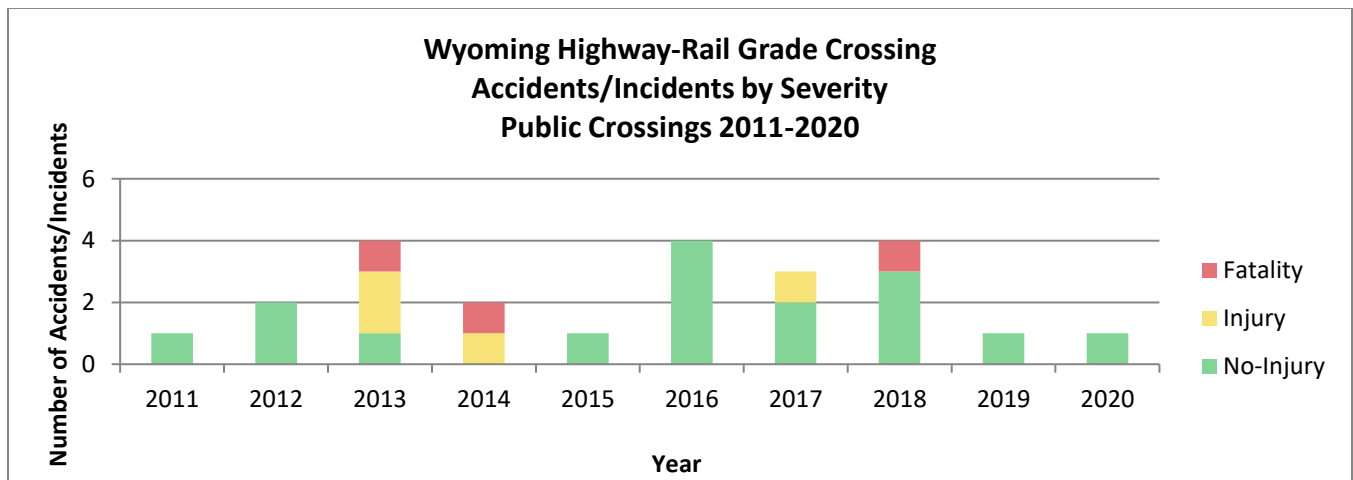
Figure 3. Accidents/Incidents by Highway-Rail Grade Crossing Protection Type



3.5.2 Number of Accidents/Incidents, Fatalities, and Injuries for All Grade Crossing Accidents/Incidents

Figure 4 provides yearly comparisons of statewide highway-rail grade crossing accidents/incidents by severity for public grade crossings. Based on the data, it appears that highway-rail grade crossing incidents are sporadic from year to year, and are neither increasing nor decreasing over the last 10 years.

Figure 4. Yearly Highway-Rail Grade Crossing Accidents/Incidents by Severity for Public Crossings



3.5.3 Presentation of 10-Year Trends (2011-2020)

Table 5 provides a summary of the data for the 10-year period (2011-2020) for various emphasis areas of the study's focus with regard to highway-rail grade crossings in terms of location, crossing type, and severity of accidents/incidents. Most accidents/incidents result in property damage only (PDO) with no human casualties.

Table 5. Highway-Rail Grade Crossing Accident/Incident Totals for Public Crossings Only

Public Crossings Only											
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Property Damage Only (PDO)	1	2	1	0	1	4	2	3	1	1	17
Injury	0	0	2	1	0	0	1	0	0	0	3
Fatality	0	0	1	1	0	0	0	1	0	0	3
Total	1	2	4	2	1	4	3	4	1	1	23

3.5.4 Accidents/Incidents by County

Total accidents/incidents and severity were evaluated for each county to assist in the previous analysis of highest concentrations of highway-rail grade crossing accident/incident locations. The comparison is provided in **Figure 5**.

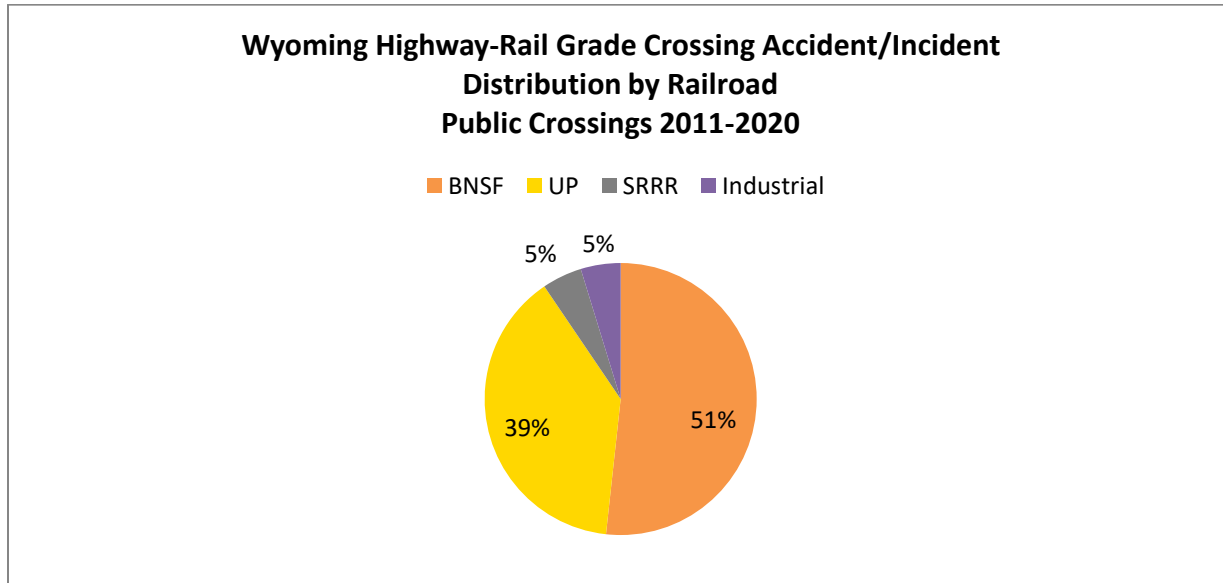
Figure 5. Wyoming Highway-Rail Grade Crossing Accident/Incident Severity by County



3.5.5 Accidents/Incidents by Railroad

The highway-rail accident/incident data distribution by railroad is represented in **Figure 6**.

Figure 6. Highway-Rail Grade Crossing Accident/Incident Distribution by Railroad

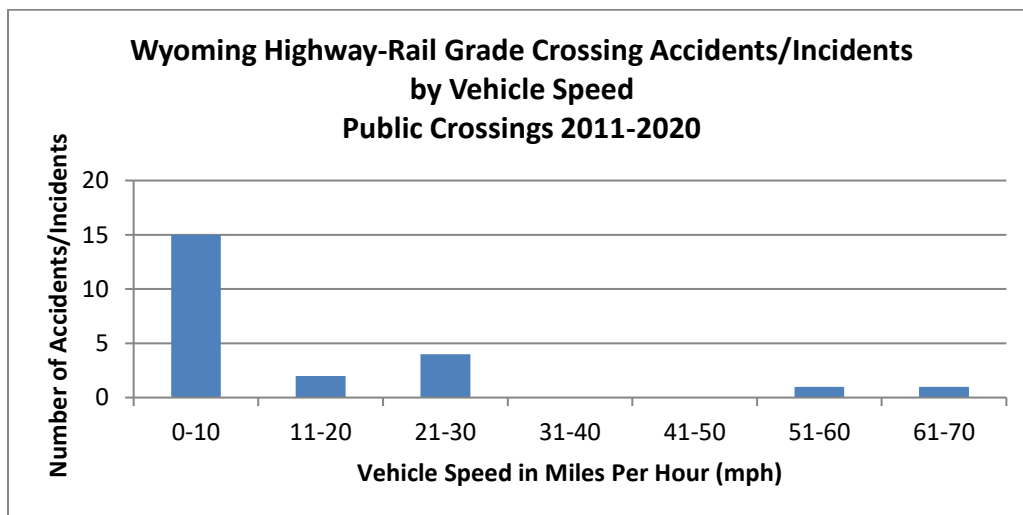


BNSF and UP make up the largest proportion of rail miles and experience higher train volumes compared to other rail carriers in Wyoming and experience the largest proportion of accidents/incidents among railroads statewide.

3.5.6 Crossing Accidents/Incidents by Vehicle Speed

Figure 7 provides a summary of the most common vehicle speeds reported during accidents/incidents at highway-rail grade crossings. As is evident by the data, most vehicles involved in a highway-rail grade crossing accident/incident are travelling 10 miles per hour (mph) or less. Nearly one third of accidents/incidents involved vehicles stopped on a crossing prior to the arrival of a train.

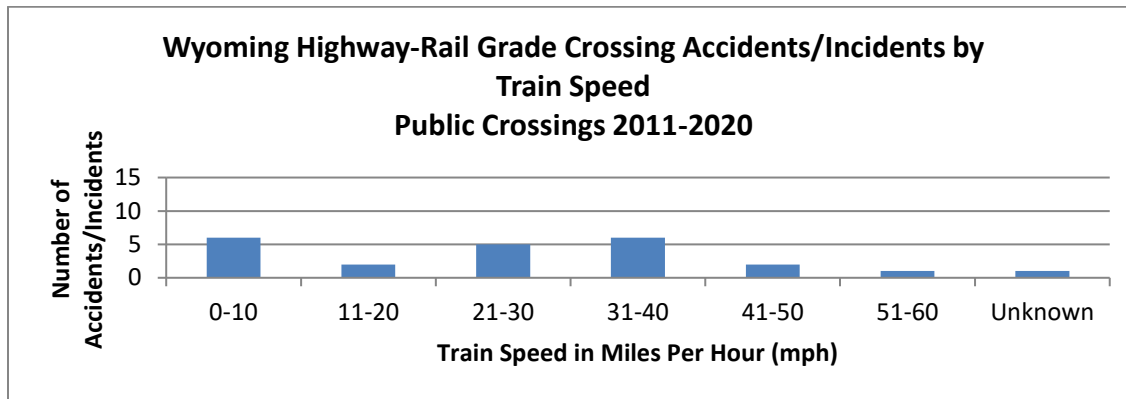
Figure 7. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Vehicle Speed



3.5.7 Crossing Accidents/Incidents by Train Speed

Figure 8 provides a summary of the most common train speeds recorded or estimated during accidents/incidents at highway-rail grade crossings. Trains moving at high speeds require a considerable distance to come to a stop due to momentum. However, trains moving at 20 mph or less are likely able to stop within half the range of vision short of an obstruction. Accidents/incidents involving a low speed train often involve a highway user crossing in front of or striking a train at the last possible second, which leaves inadequate time for the train to brake.

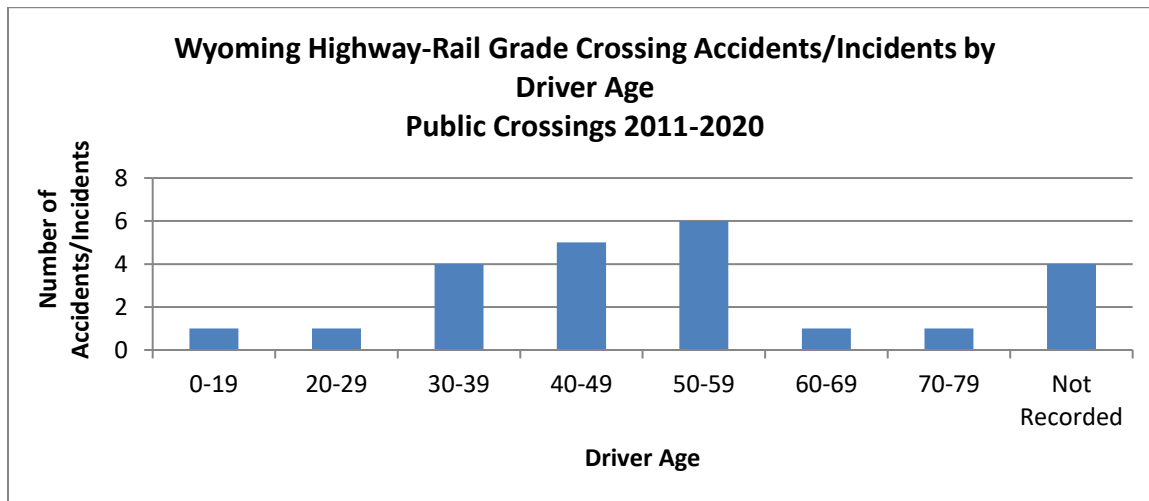
Figure 8. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Train Speed



3.5.8 Crossing Accidents/Incidents by Driver Age

Figure 9 provides a comparison of the age of drivers most commonly involved in highway-rail grade crossing accidents/incidents. In Wyoming, the rates of highway-rail grade crossing accidents/incidents are highest among adults between the ages of 30 and 59. Wyoming’s population pyramid in 2010 reflected the majority of the population falling between these ages.¹¹ People between the ages of 50 and 54 were the most numerous out of any cohort.

Figure 9. Wyoming Injury-Related Highway-Rail Grade Crossing Accidents/Incidents by Driver Age



¹¹ <http://eadiv.state.wy.us/pop/Pyramids.pdf>

3.5.9 Crossing Accidents/Incidents by Driver Behavior Type

Figure 10 and Figure 11 describe driver behavior patterns associated with accidents/incidents.

Nearly 70 percent of all accidents/incidents at public highway-rail grade crossings in Wyoming are a result of drivers failing to stop as a train is approaching or occupying the crossing. Nearly one third of all accidents/incidents involved a highway user striking a piece of rail equipment, rather than a piece of rail equipment striking the highway user. In these cases, drivers are failing to yield despite a train or other on-track equipment already occupying the crossing.

Figure 10. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Driver Behavior Type

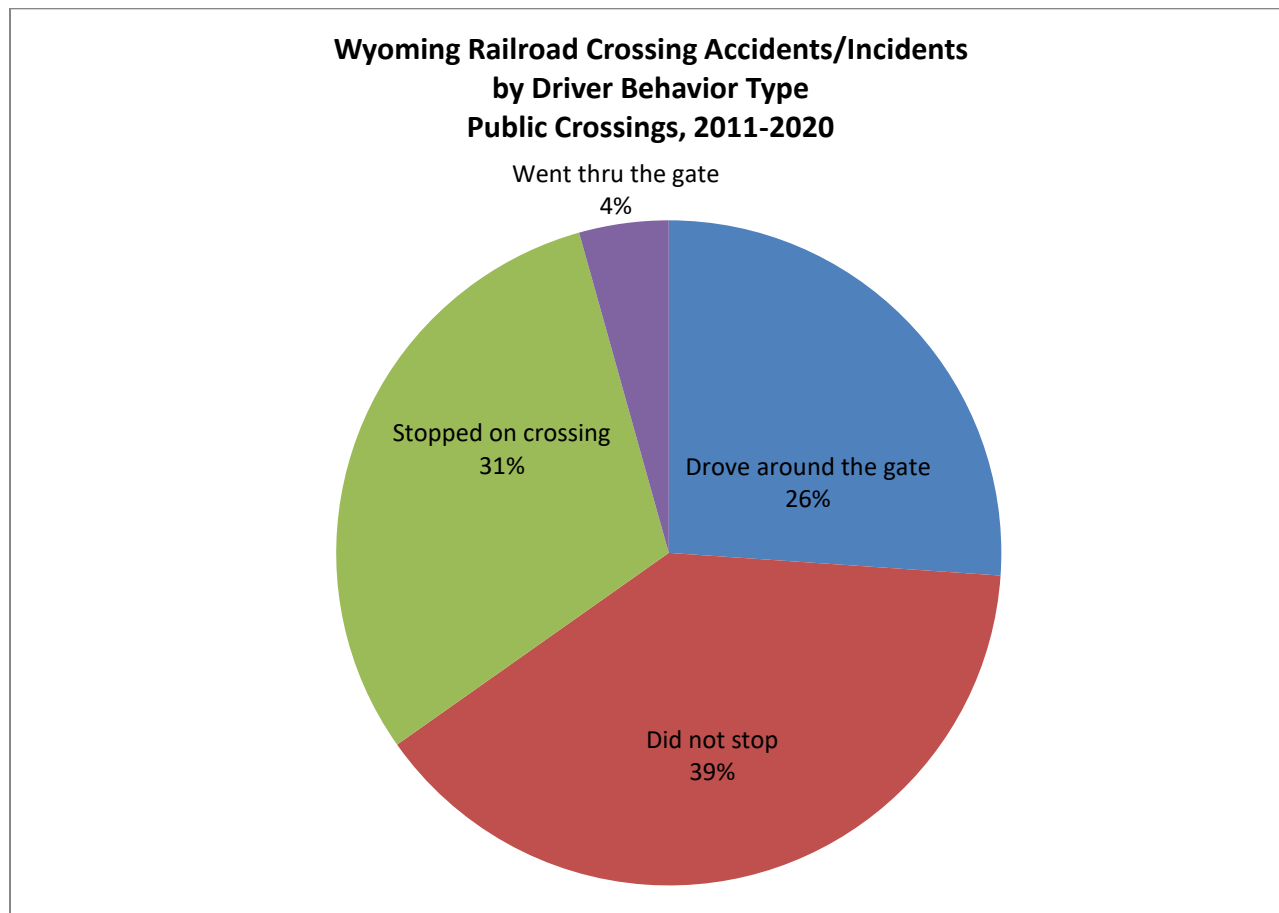
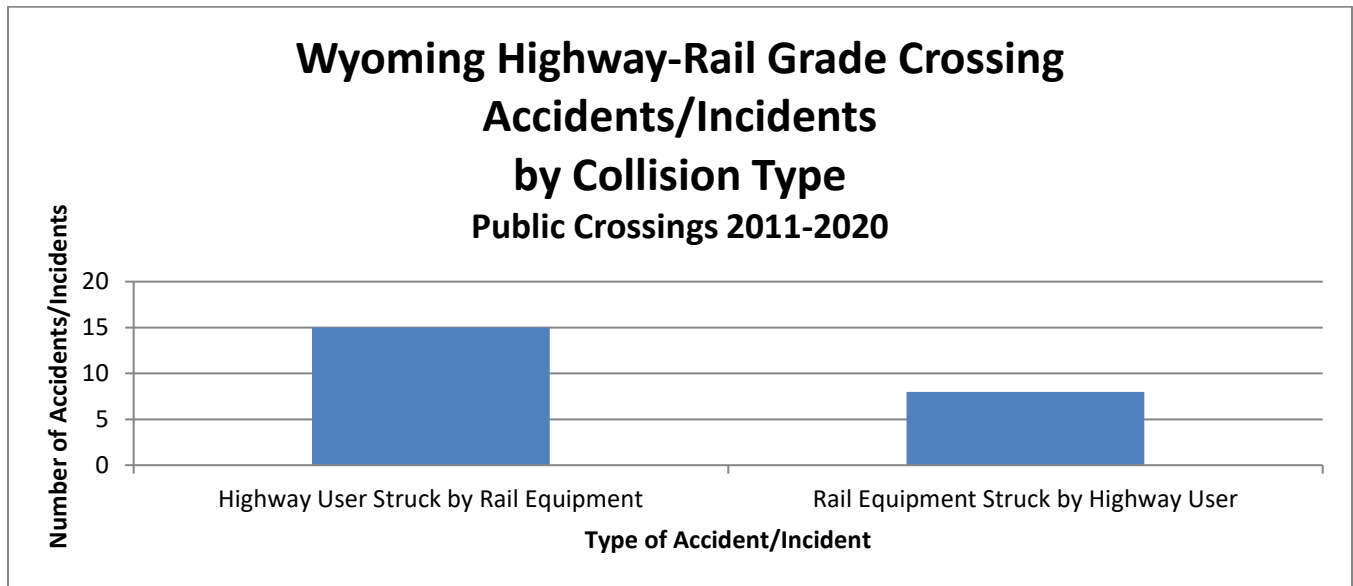


Figure 11. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Collision Type



3.5.10 Crossing Accidents/Incidents by Hour of Day Versus Vehicle Traffic

Table 6 displays accident/incident occurrences over the course of a 24-hour period and months out of the year for 23 public highway-rail grade crossing accidents/incidents that occurred over the 10-year study period. The table identifies which times of day experience the most accidents/incidents. Overall, vast majority of highway-rail accidents/incidents occurred between the hours of 6:00 in the morning (AM) and 6:00 in the evening (PM) (20 out of 23 accidents/incidents). The highest number of accidents/incidents (7) occurred in the month of August while no accidents/incidents occurred in the months of February or September.

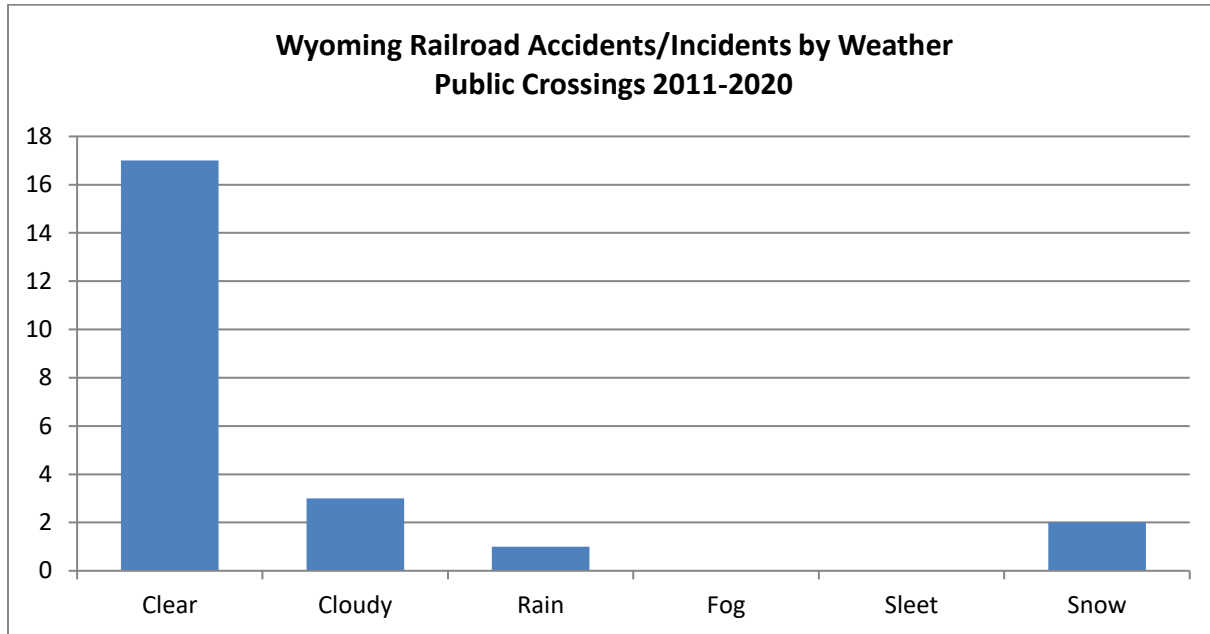
Table 6. Highway-Rail Grade Crossing Accidents/Incidents by Time of Day and Month

Time	January	February	March	April	May	June	July	August	September	October	November	December	Total	
Midnight - 3:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	4.3%
3:00 AM - 6:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	4.3%
6:00 AM - 9:00 AM	0	0	0	2	1	1	0	0	0	0	0	0	4	17.4%
9:00 AM - 12:00 PM	0	0	1	0	0	2	0	2	0	0	1	1	7	30.4%
12:00 PM - 3:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	8.7%
3:00 PM - 6:00 PM	0	0	1	0	1	0	1	3	0	1	0	0	7	30.4%
6:00 PM - 9:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	4.3%
9:00 PM - Midnight	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total	1	0	2	2	2	3	1	7	0	2	2	1	23	100.0%
	4.3%	0.0%	8.7%	8.7%	8.7%	13.0%	4.3%	30.4%	0.0%	8.7%	8.7%	4.3%		

3.5.11 Crossing Accidents/Incidents by Weather Conditions

A summary of weather conditions most commonly reported during highway-rail grade crossing accidents/incidents are provided in **Figure 12**. Over 91 percent of highway-rail grade crossing related accidents/incidents occur during clear or cloudy weather with no inclement road conditions. No accidents/incidents occurred during foggy weather which could have impacted visibility.

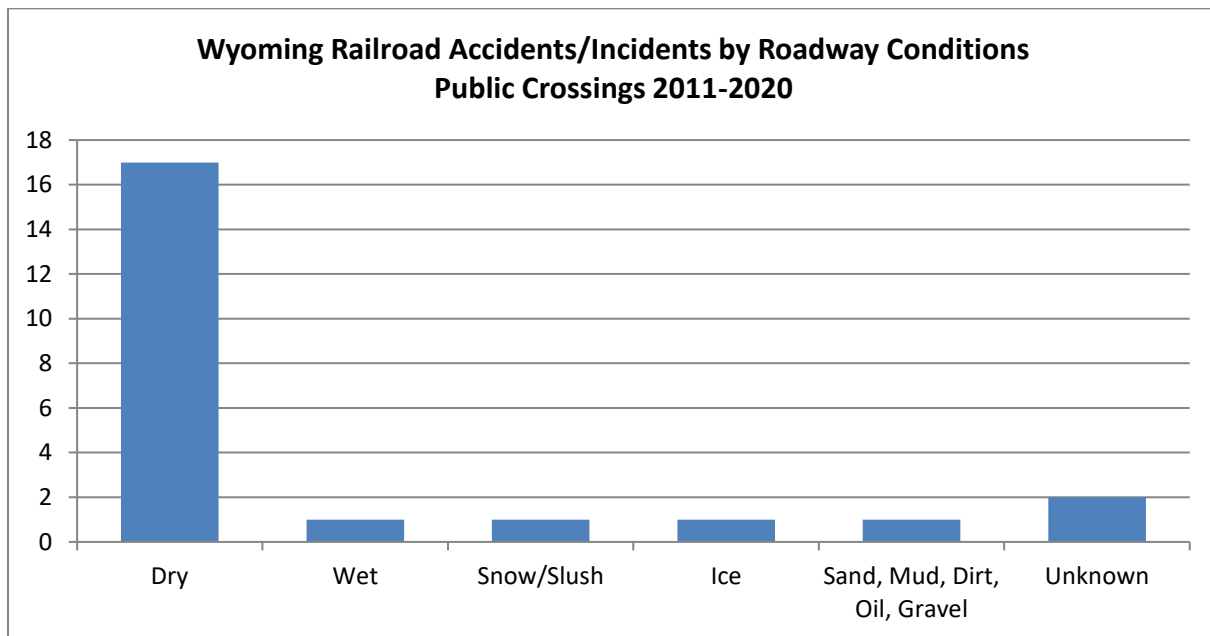
Figure 12. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Weather



3.5.12 Crossing Accidents/Incidents by Roadway Conditions

Figure 13 shows the summary of highway-rail grade crossing accidents/incidents related to roadway conditions. Most accidents/incidents took place during dry roadway conditions.

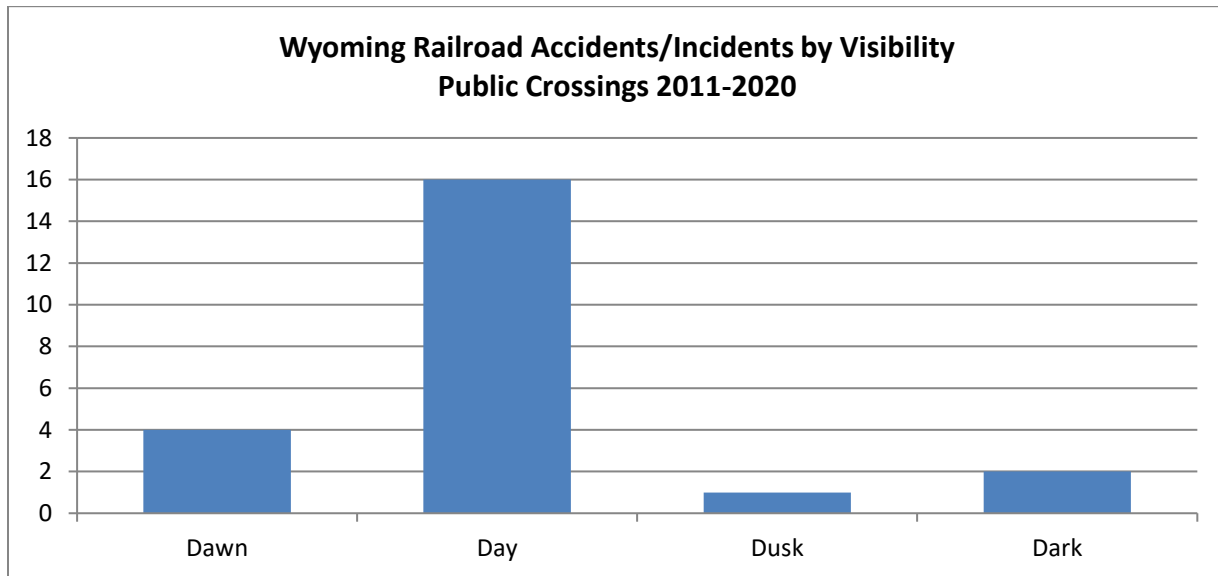
Figure 13. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Roadway Conditions



3.5.13 Crossing Accidents/Incidents by Visibility

Figure 14 shows that most highway-rail grade crossing accidents/incidents occurred during high visibility daytime hours, which corresponds with the data in **Table 6** in that most accidents/incidents were found to occur between 6:00 AM and 6:00 PM.

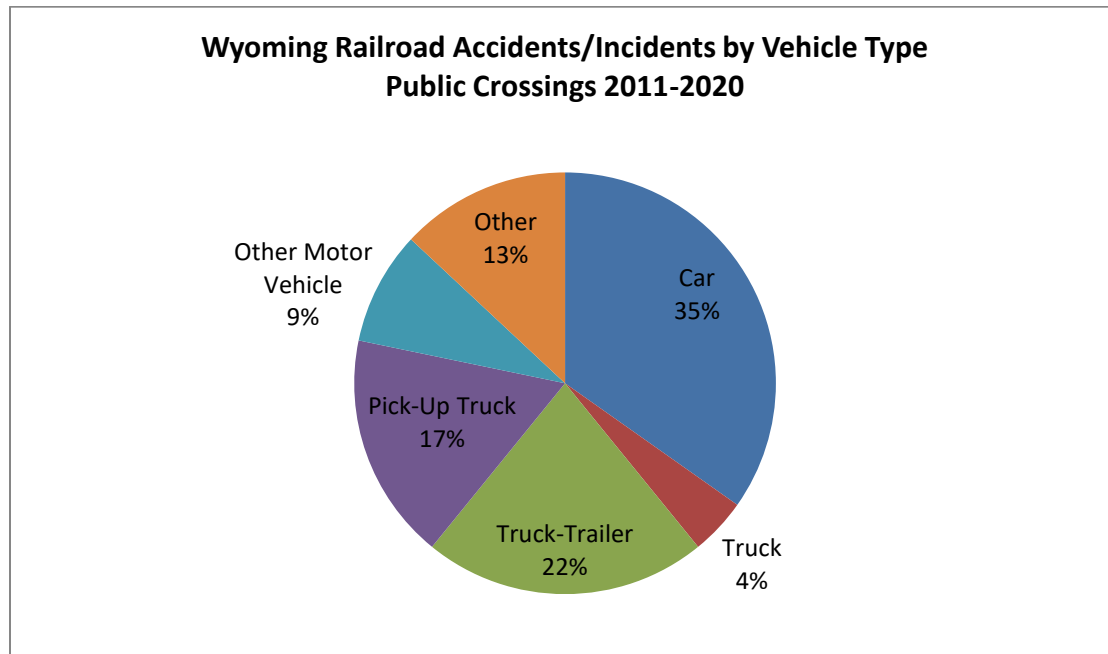
Figure 14. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Visibility



3.5.14 Crossing Accidents/Incidents by Vehicle Type

A summary of highway-rail grade crossing accidents/incidents by vehicle type is presented in **Figure 15**. Most vehicles involved with highway-rail accidents/incidents consist of a passenger car (35 percent), pick-up truck (17 percent) or truck-trailer (22 percent). Vehicle types with zero accidents/incidents attributed to them over the 10-year period were bus, school bus, and motorcycle.

Figure 15. Wyoming Highway-Rail Grade Crossing Accidents/Incidents by Vehicle Type



3.5.15 Crossing Accidents/Incidents by Location Typology

Accidents/incidents at highway-rail grade crossings were also analyzed based on the roadway description and classification assigned to them in the FRA highway-rail grade crossing inventory. As **Table 7** indicates, most accidents/incidents occurred on rural local roads and collectors, followed by urban arterials. No specific type of roadway showed a notable increase over the 10-year period.

Table 7. Highway-Rail Grade Crossing Accidents/Incidents by Location Typology and Year

Year	Rural	Urban
2011	1	0
2012	1	1
2013	2	2
2014	2	0
2015	1	0
2016	2	2
2017	1	2
2018	3	1
2019	0	1
2020	1	0
Roadway Total	14	9

3.6 Identification of Crossings That Have Experienced Recent Accidents/Incidents

3.6.1 Crossings That Have Experienced At Least One Accident/Incident Within the Previous Three Years

Based on a review of available FRA accident/incident data, within the previous 3 years there were 6 accidents/incidents at public highway-rail grade crossings and 10 accidents/incidents at private highway-rail grade crossings. None of the crossings identified experienced multiple accidents/incidents within the previous 3 years.

Table 8 provides a summary of the public highway-rail grade crossings that experienced accidents/incidents during the previous 3 years, based on information contained within the publicly available FRA Accident/Incident Data.

Table 9 provides a summary of the private highway-rail grade crossings that experienced accidents/incidents within the previous 3 years, based on information contained within the publicly available FRA Accident/Incident Data.

Table 8. Public Highway-Rail Grade Crossing Accident/Incident Locations

Year	DOT#	Highway Name	Railroad	Subdivision	County	No. of Incidents	Type of Protection
2018	245526D	Federal Road	BNSF	Front Range	Laramie	1	Mast Flashers
2018	816316S	CR 61	UP	Yoder	Goshen	1	Yield Signs
2018	810478Y	WY 412	UP	Evanston	Uinta	1	Gates
2018	089331L	CR 703	BNSF	Casper	Natrona	1	Gates
2019	089209U	West C Street	BNSF	Valley	Goshen	1	Gates
2020	188641D	WY-270	UP	Powder River	Niobrara	1	Gates

Table 9. Private Highway-Rail Grade Crossing Accident/Incident Locations

Year	DOT#	Highway Name	Railroad	Subdivision	County	No. of Incidents	Type of Protection
2018	440926G	Private	UP	Laramie	Laramie	1	Stop Signs
2019	089218T	Private	BNSF	Valley	Goshen	1	Stop Signs
2019	090476U	Private	BNSF	Casper	Hot Springs	1	Stop Signs
2019	810482N	Private	UP	Rawlins	Sweetwater	1	Stop Signs
2019	450550S	Private	UP	Rawlins	Sweetwater	1	Stop Signs
2019	920179V	Private	UP	Evanston	Sweetwater	1	Stop Signs
2020	089216E	Private	BNSF	Valley	Goshen	1	Stop Signs
2020	064949C	Private	BNSF	Black Hills	Crook	1	Stop Signs
2020	090862E	Private	BNSF	Casper	Washakie	1	Stop Signs
2020	088722C	Private	BNSF	Orin	Campbell	1	Stop Signs

3.6.2 Crossings That Experienced Multiple Accidents/Incidents within the Previous Five Years

Based on a review of available FRA data, there was only one highway-rail grade crossing location that experienced an accident/incident frequency of two or greater during the previous 5 years. This highway-rail grade crossing was investigated in detail to look at physical and operating characteristics to determine if there are any risk factors that may have influenced the higher accident/incident total.

Table 10 provides a summary of the public highway-rail grade crossing that experienced multiple accidents/incidents during the previous 5 years, based on information contained within the publicly available FRA accident/incident data.

Table 10. Highway-Rail Grade Crossing Multiple Accident/Incident Locations

Year	DOT#	Highway Name	Railroad	Subdivision	County	No. of Incidents	Type of Protection
2016	095112L	Road 2AB	BNSF	Cody	Park	2	Crossbucks*

*Crossing has since been upgraded with active warning devices, including flashing lights and gates

CROSSING 095112L - ROAD 2AB (PARK COUNTY)¹²

Crossing 095112L, Road 2AB in Park County, near Cody, experienced two accidents/incidents in 2016. Located on the BNSF Cody Subdivision, this crossing is rural in character with a relatively low average annual daily traffic volume (approximately 870 vehicles per day, including 4 school buses). On a typical day, up to two freight trains may operate either eastbound or westbound. Road 2AB connects a low-density residential area to highway US 14 Alternate, which leads to the nearby town of Cody. The roadway surface is a paved, two-lane highway with two-way traffic. The roadway is roughly perpendicular to the track, and the highway speed limit is 45 mph.

The first accident/incident took place on May 26, 2016 at 4:23 PM. A westbound local freight train moving at a speed of 25 mph struck a motor vehicle that failed to stop at the crossbucks as the train was approaching. The maximum authorized speed for trains was 25 mph. Fortunately, this accident/incident did not result in any injuries despite the driver being in the vehicle when it was struck by the train. An estimated \$1,500 in vehicle property damage and delay of interstate commerce occurred as a result of the accident/incident. The three crew members of the train were uninjured and no hazardous materials were released.

The second accident/incident at 095112L, Road 2AB occurred on November 17, 2016 at 10:05 AM. An eastbound local freight train moving at 25 mph struck a motor vehicle that failed to stop at the crossbucks as the train was approaching. The maximum authorized speed for trains was 25 mph. Fortunately, this accident/incident did not result in any injuries despite the driver being in the vehicle when it was struck by the train. An estimated \$1,500 in vehicle property damage and delay of interstate commerce did occur. The three crew members onboard the train were uninjured, and no hazardous materials were released.

While this crossing had only passive warning devices (crossbucks) at the time of both accidents/incidents, this crossing has since been retrofitted with an active warning system consisting of flashing lights and gates. This safety improvement should significantly reduce the risk of accidents/incidents occurring at this crossing in future years.

3.7 Significant Findings from Analysis

Significant findings from the analysis of available FRA highway-rail grade crossing accident/incident data for the 10-year period (2011-2020 inclusive), the statewide highway-rail grade crossing inventory, and the general overview of freight volumes and movement by rail in Wyoming are presented below.

- Because the majority of reported vehicle speeds are 10 mph or less during accidents/incidents, it can be assumed that excessive speeding is not a leading cause of highway-rail grade crossing accidents/incidents in Wyoming.
- Based on the reported driver behavior contributing to the accidents/incidents, 26 percent of highway users drove around gates that were activated and in the down position, 4 percent of highway users drove directly through a gate that was in the down position, and 39 percent of highway users failed to stop at a passive warning device as a train was approaching. This could potentially indicate that these highway users are making the decision to ignore rail warning devices. Furthermore, nearly one third of highway users are striking rail equipment that is already occupying a crossing before the highway user, rather than a highway user occupying a crossing prior to the arrival of approaching rail equipment.

¹² FRA Highway-Rail Grade Crossing Inventory Accident Reports, Crossing 095112L

- Most of the accidents/incidents at public highway-rail grade crossings in Wyoming are generally occurring at rail crossings on rural collectors and rural local roads.

4.0 Risk Assessment

This purpose of this section is to:

- Perform a conceptual risk assessment of the statewide highway-rail grade crossing inventory through an analysis of the statewide accident/incident and safety data, consideration of trends, and evaluation of public and financial impacts. The assessment also considers where focused attention and prioritized investment could potentially make a positive impact by reducing accidents/incidents and related public consequences statewide.
- Identify key areas with the highest priority highway-rail grade crossing safety needs and challenges in Wyoming and related emphasis areas for further consideration by statewide stakeholders during development of this SAP.
- Identify and describe potential strategies that have the greatest potential to focus resources that improve safety, minimize deaths and life-changing injuries, and mitigate challenges on the state's highway-rail grade crossing inventory. Strategies address the four E's of safety – engineering, education, enforcement, and emergency services – and considers effective and affordable countermeasures that can be deployed for site-specific locations or widely across the statewide highway-rail grade crossing network.

4.1 Analysis of Statewide Accident/Incident and Safety Data

The following section provides an overview of the various characteristics found at public highway-rail grade crossings throughout Wyoming. The characteristics reviewed include items such as highway and railroad traffic volumes and speeds, existing warning devices, and crossing geometry. This review uses two distinct approaches to generate a better understanding of the characteristics most important to accident/incident prediction. Each of the approaches relied on the use of accident/incident data as recorded in the Federal Railroad Administration's (FRA) accident/incident inventory between 2016 and 2020. After a review of the previous 5 years of accident/incident data as required in the FRA Final Rule, it was noted that 13 accidents/incidents at public crossings have been recorded in Wyoming by the Wyoming Department of Transportation (WYDOT).

The first evaluation approach compares the proportion of crossings with a distinct characteristic to the proportion of accidents/incidents at crossings with that same characteristic. The calculation of this "location quotient" (shown in the equation below) can be used to identify the characteristics that play the largest roles in the risk level at each crossing. For example, if the location quotient for crossings without illumination is found to be higher than the location quotient for crossings with illumination, this indicates that the lack of crossing illumination, independent of other factors, will increase the likelihood of an accident/incident.

$$\text{Location Quotient} = \frac{\text{Crashes at Crossings with Characteristic } X / \text{All Crashes}}{\text{Crossings with Characteristic } X / \text{All Crossings}}$$

In most cases, the volumes of trains and motor vehicles traversing the crossing are the single biggest determinant of crossing risk. To adjust for this fact, the second approach calculates the location quotient using the sum of exposure index points at each crossing. The exposure index (EI in the equation below) is calculated as the average daily highway volume multiplied by the average daily train volumes at each crossing. The exposure index can be conceptualized as the number of opportunities for an accident/incident at each crossing.

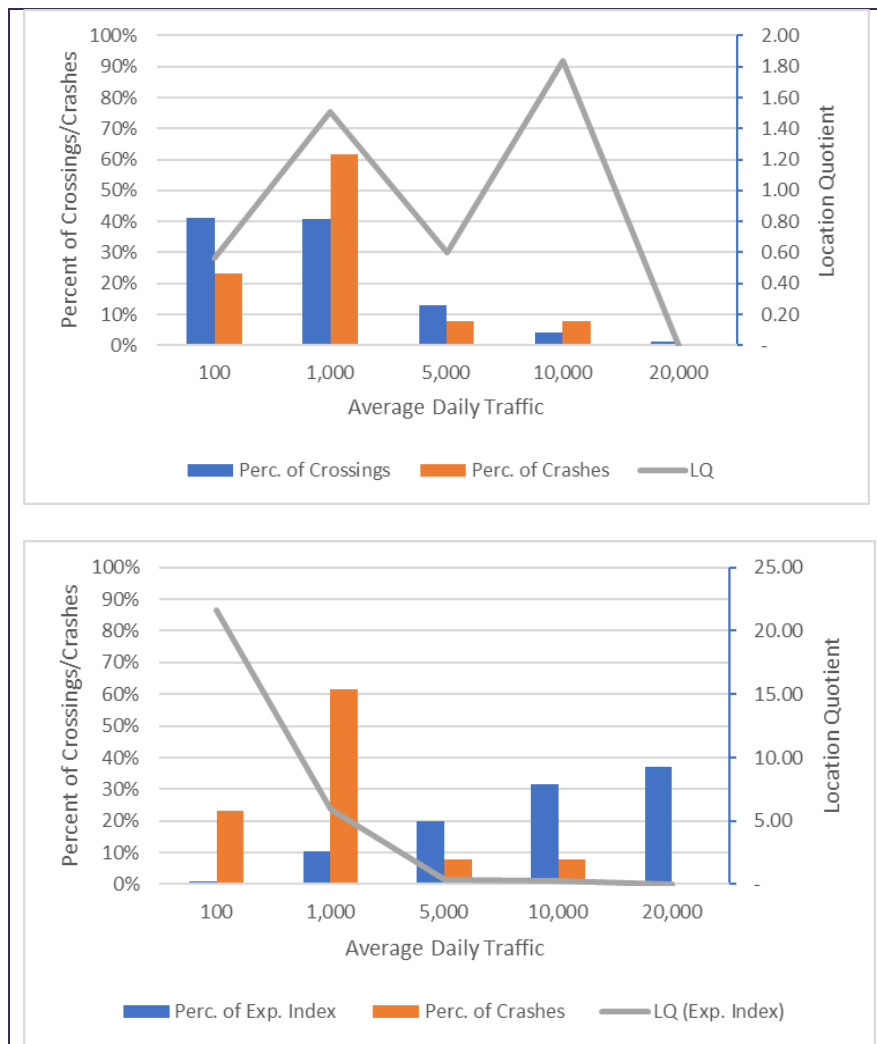
$$Location\ Quotient\ (EI) = \frac{Crashes\ at\ Crossings\ with\ Characteristic\ X / All\ Crashes}{EI\ at\ Crossings\ with\ Characteristic\ X / Sum\ of\ All\ EI}$$

The risk assessments detailed below each include two charts to demonstrate the correlations and levels of risk relative to the amount of overall exposure to the risk factors. The first chart in each analysis is for the Location Quotient and the second chart contains the same data, adjusted for the exposure index.

4.1.1 Average Daily Traffic Volumes

Crossings with between 100 and 1,000 vehicles per day comprise nearly 40 percent of crossings and more than 60 percent of the accidents/incidents throughout Wyoming (**Figure 16**). While exposure index increases with higher daily traffic volumes, the percentage of accidents/incidents relative to exposure index is highest at crossings with the lowest average daily traffic volumes – 100 vehicles per day or less. This may point to a distinct need to focus on safety improvements at rural crossings.

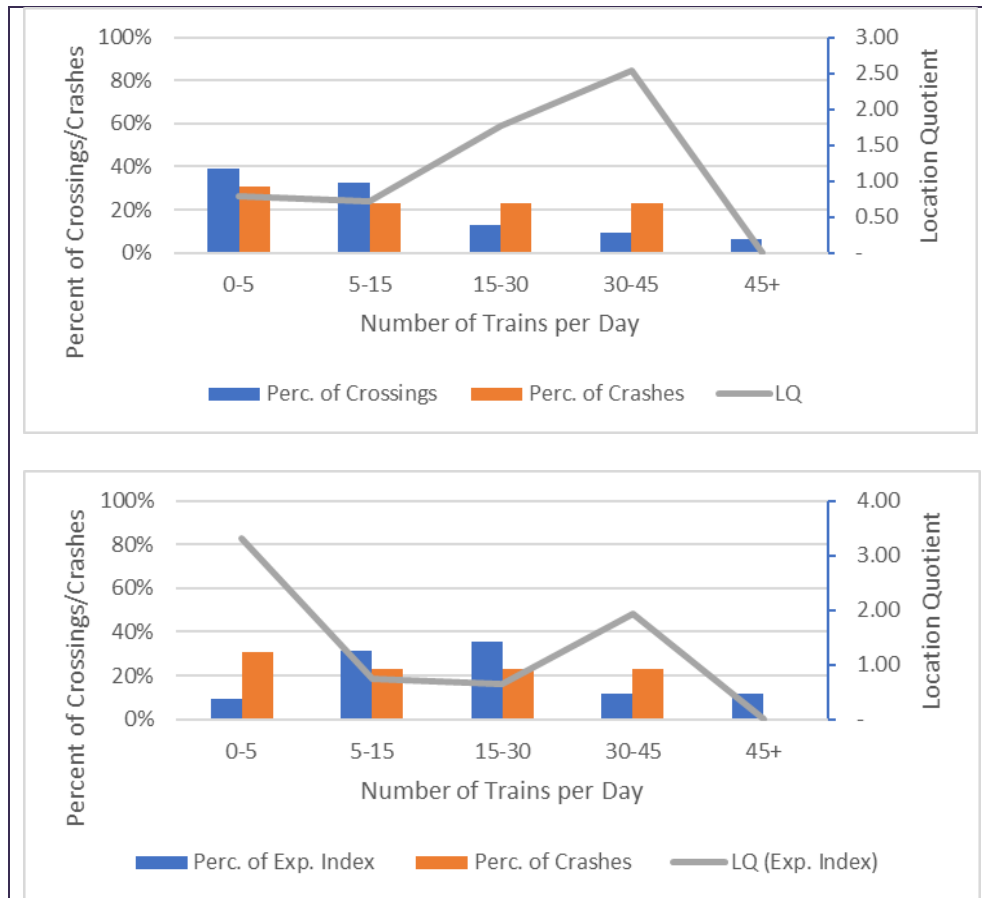
Figure 16. Average Daily Traffic Volumes Risk Assessment



4.1.2 Average Trains Per Day

The results for average trains per day follows a similar pattern to the results for average daily traffic volume. The location quotient for the proportion of crossings rises in correlation with an increase in the average daily train volumes, up to a moderately high number of trains per day (**Figure 17**). However, the percent of accidents/incidents relative to the exposure index is highest at crossings with the lowest average daily train volumes. This may be because highway users do not expect trains at crossings with low train volumes, or may be related to driver behavior associated with lower train speeds on low-volume rail lines.

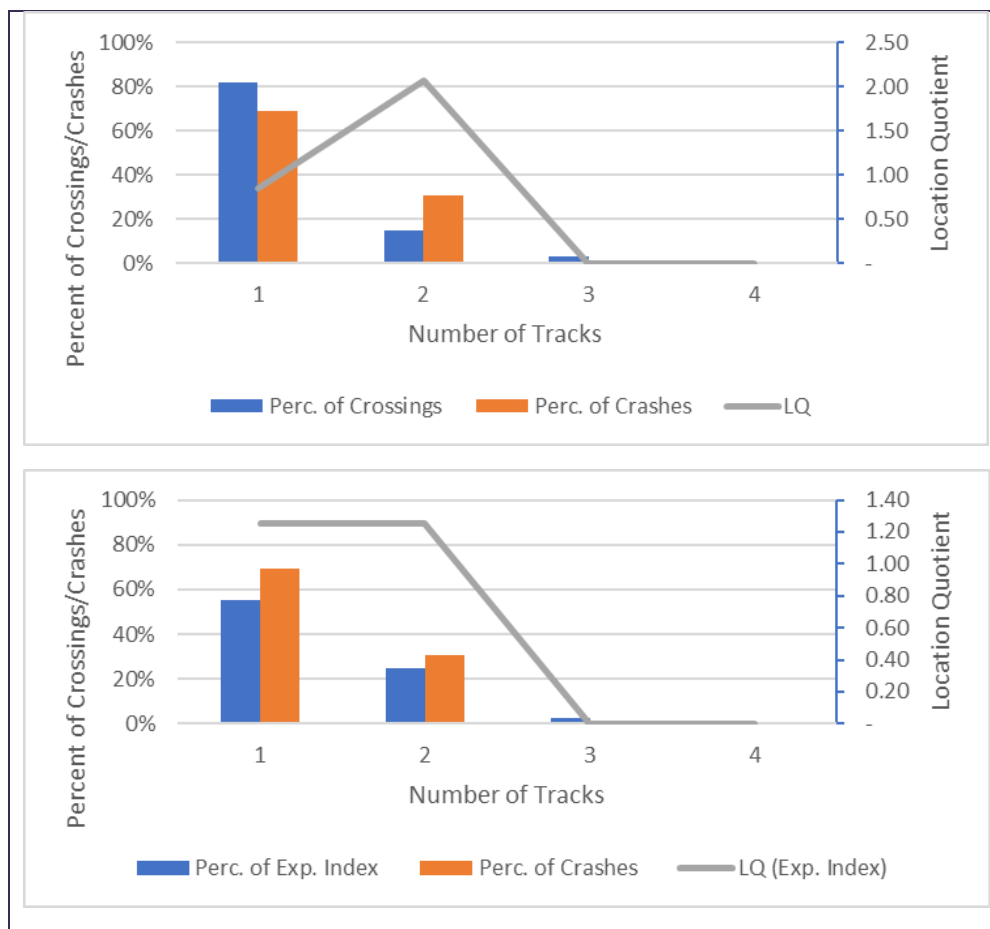
Figure 17. Average Daily Train Volumes Risk Assessment



4.1.3 Number of Main Tracks

The number of main tracks at a crossing can often have an effect on safety, particularly for pedestrians at rail crossings who may begin to cross before they can see or hear if a train is approaching on another track. A common accident/incident scenario can occur when a train passes a crossing and a second train travelling in the opposite direction arrives at the crossing immediately after. A pedestrian or motorist may begin traversing the crossing after the first train is through without realizing that a second train is approaching, as it may be visually and sonically obscured by the first passing train. In Wyoming, with 80 percent of public at-grade crossings having only a single main track, most accidents/incidents are occurring at these crossings. Location quotient indicates a moderately higher risk at crossings with two main tracks, but no accidents/incidents have occurred at crossings with three or more main tracks in the previous 5 years, despite the probability of a higher average number of trains per day at these crossings (**Figure 18**).

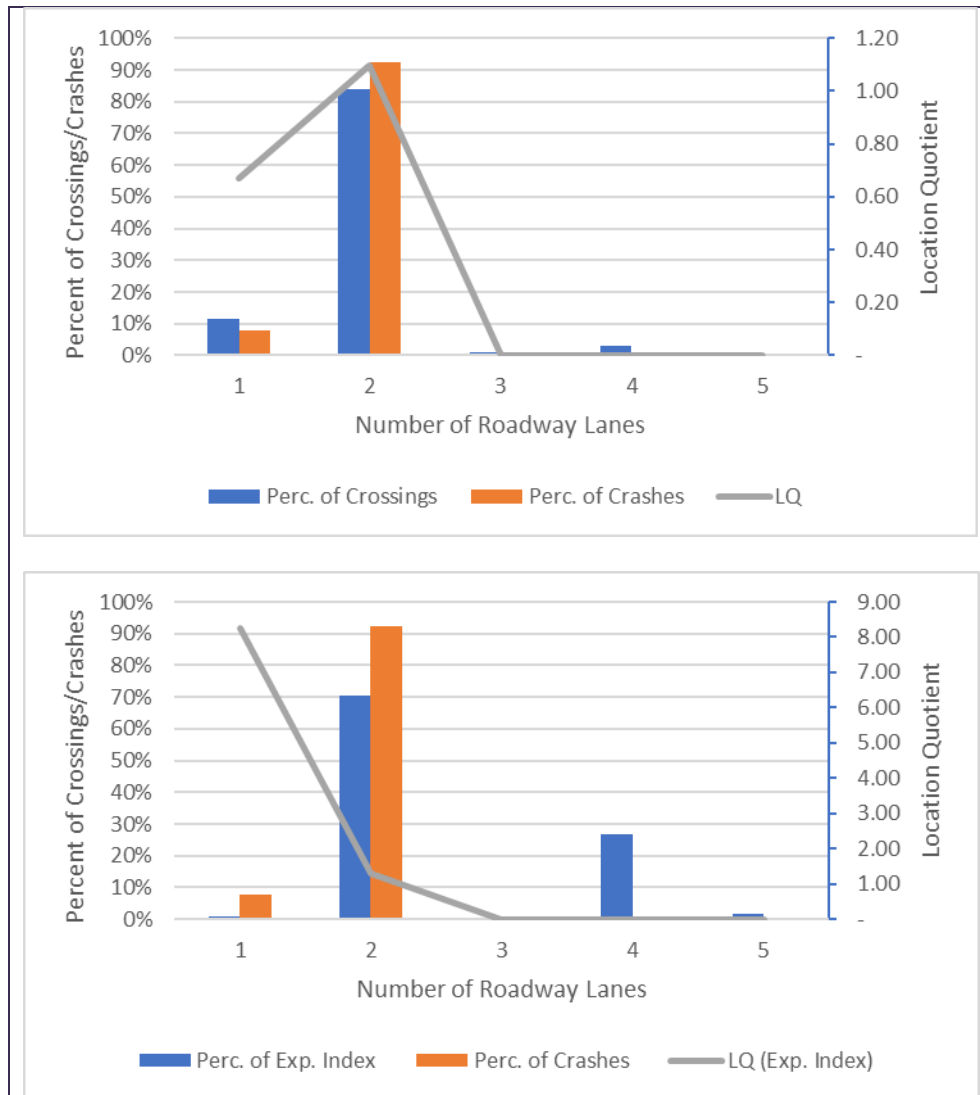
Figure 18. Number of Main Tracks Risk Assessment



4.1.4 Number of Roadway Lanes

The number of roadway lanes does not appear to have an impact on the risk of an accident/incident occurring based on available data in Wyoming (**Figure 19**). Most of the roadways in the state are two-lane roads. Rural, one-lane roads do have a higher percentage of accidents/incidents relative to exposure index.

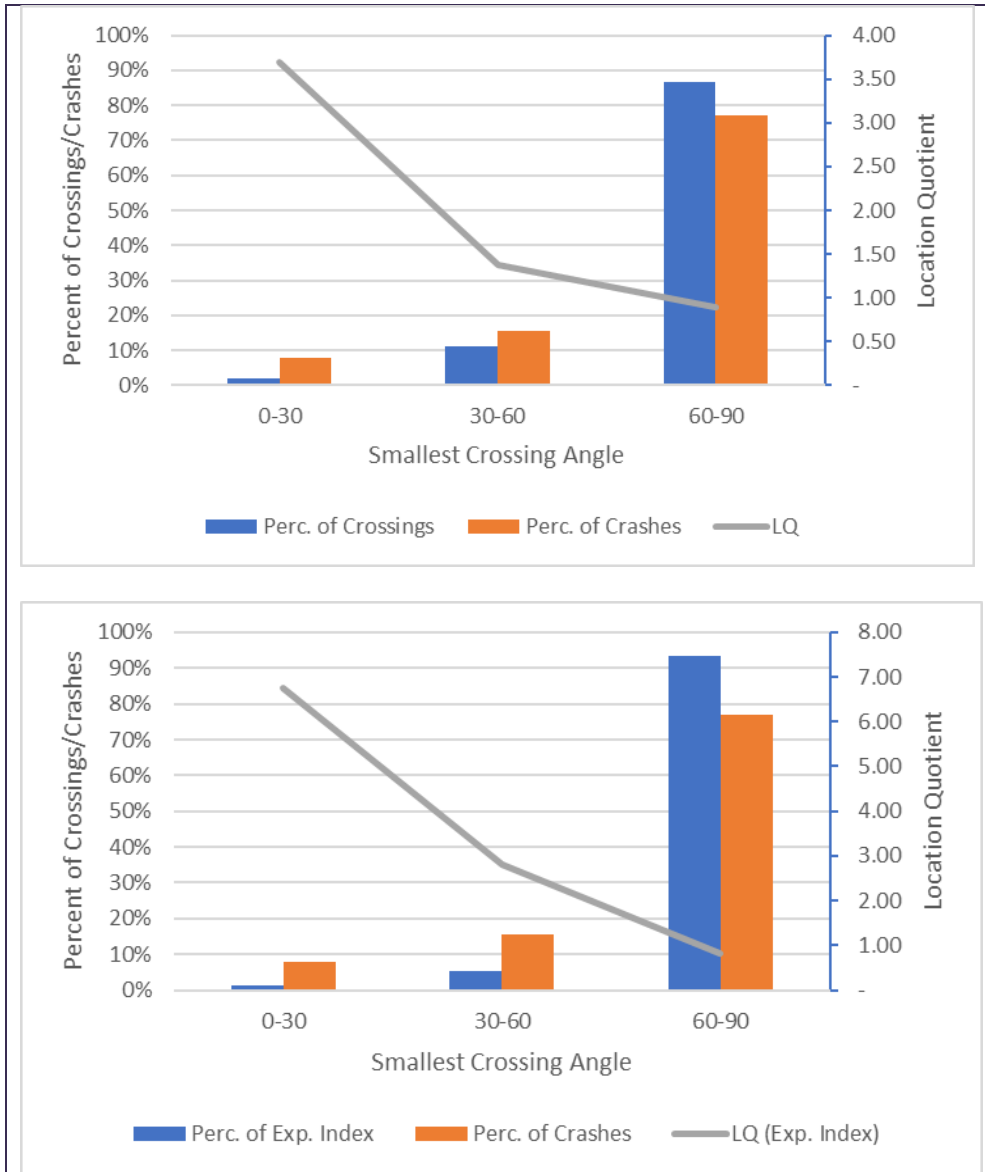
Figure 19. Roadway Lanes Risk Assessment



4.1.5 Roadway Geometry

Roadway geometry can impact highway users' ability to see and identify an approaching train. Crossings with higher skew are more prone to accidents/incidents than crossings where the roadway and the railway are perpendicular (90 degrees) or near perpendicular (**Figure 20**). Though high-skew crossings are relatively uncommon, they require special attention to mitigate risk.

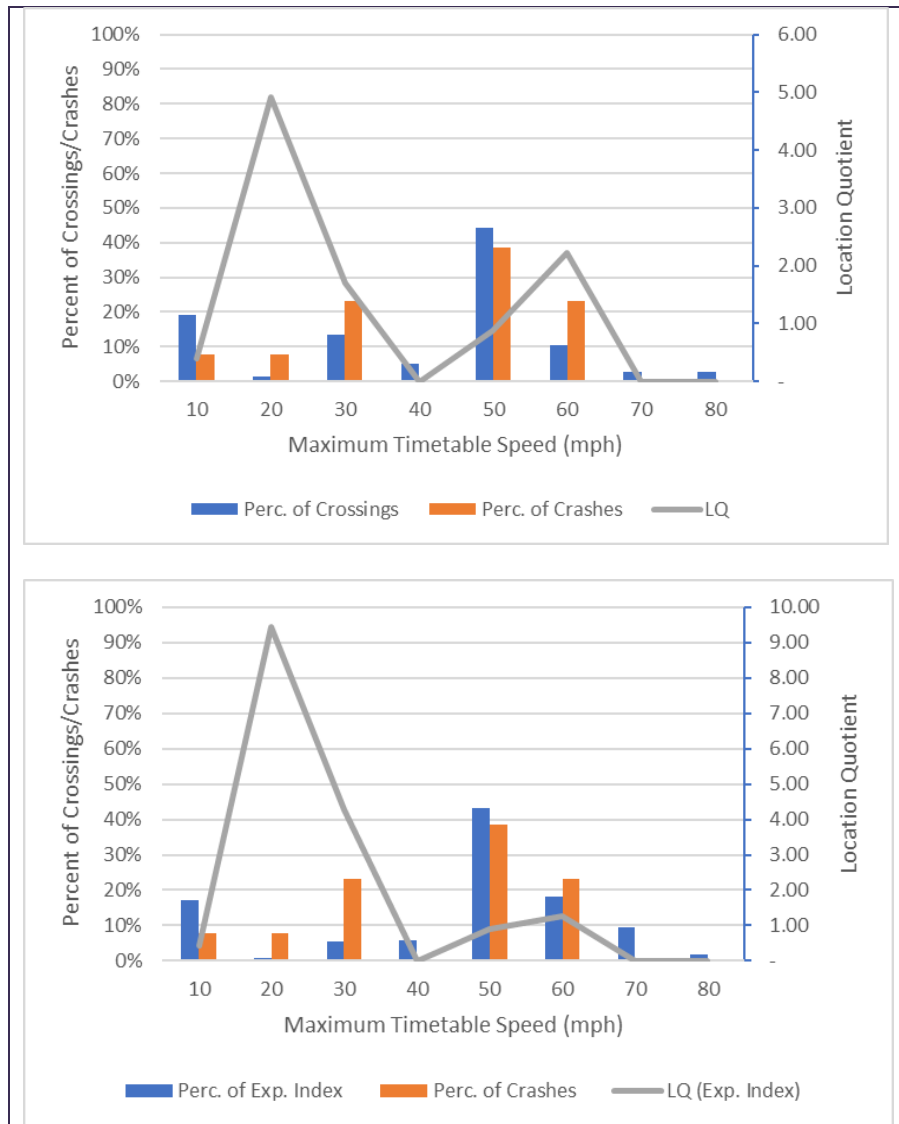
Figure 20. Horizontal Roadway Geometry Risk Assessment



4.1.6 Maximum Railroad Timetable Speed

Higher train speeds are typically associated with a greater potential for highway-rail grade crossing accidents/incidents and also higher accident severity. However, a review of the exposure index location quotient reveals that the percentage of accidents/incidents at crossings in the 10 to 20 miles per hour (mph) timetable speed category greatly exceeds the percentage of the exposure index for crossings with railroad timetable speeds in that range¹³ (Figure 21). This may be due to highway users’ belief that they have time to “beat” a slow-moving train before it arrives at the crossing.

Figure 21. Maximum Railroad Timetable Speed Risk Assessment

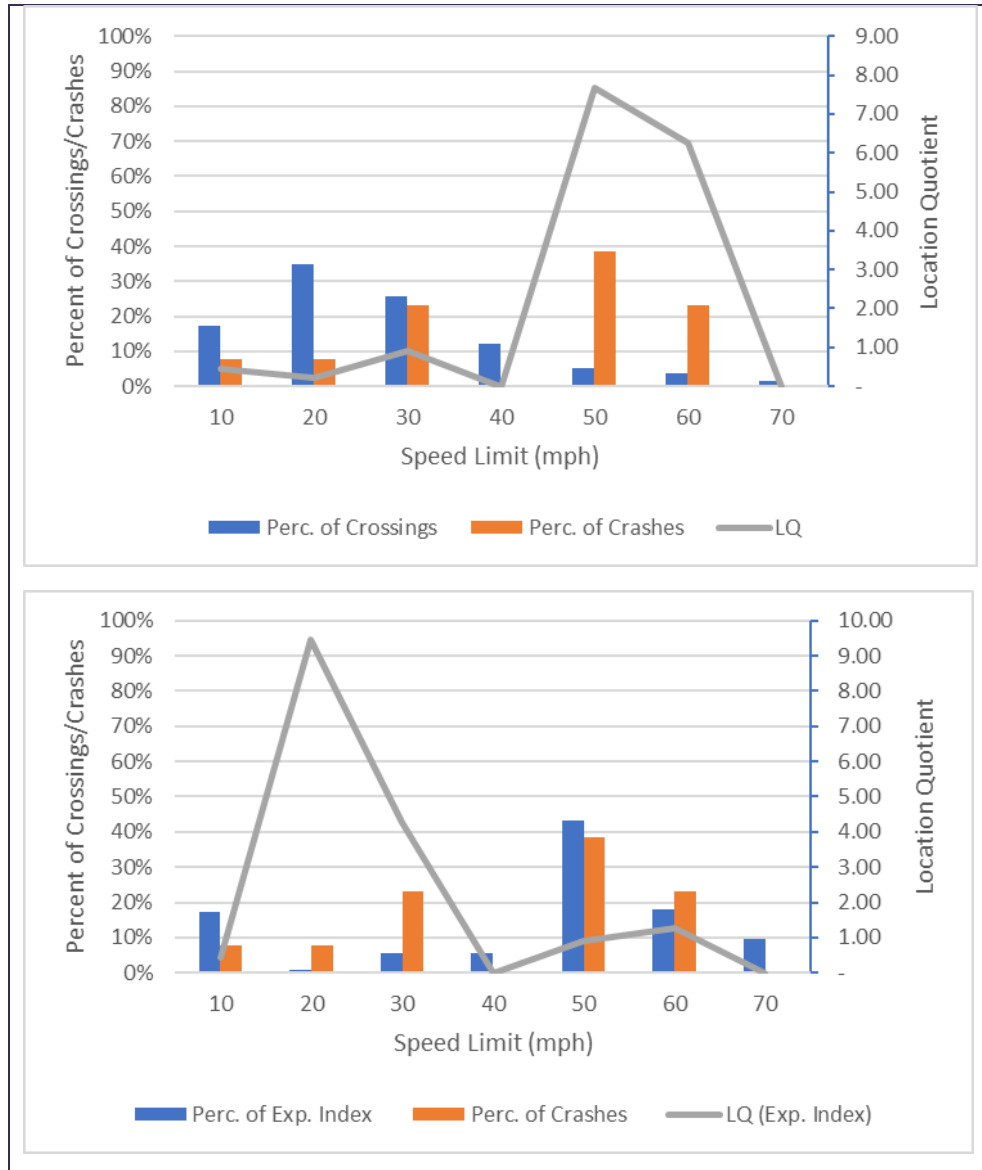


¹³ Maximum railroad timetable speeds used in the analysis were identified in the publicly available FRA Grade Crossing Inventory Database

4.1.7 Highway Speed Limit

Higher speeds are typically associated with a greater potential for highway-rail grade crossing accidents/incidents and also higher accident severity. However, the results below do not show completely consistent results. For the crossing analysis, the highest number of accidents/incidents in Wyoming are occurring at crossings with a highway speed limit in the 40 to 50 mph range. However, a review of the exposure index location quotient reveals that the percentage of accidents/incidents at crossings in the 10 to 20 mph category greatly exceeds the percentage of the exposure index for crossings with highway speed limits in that range (**Figure 22**).

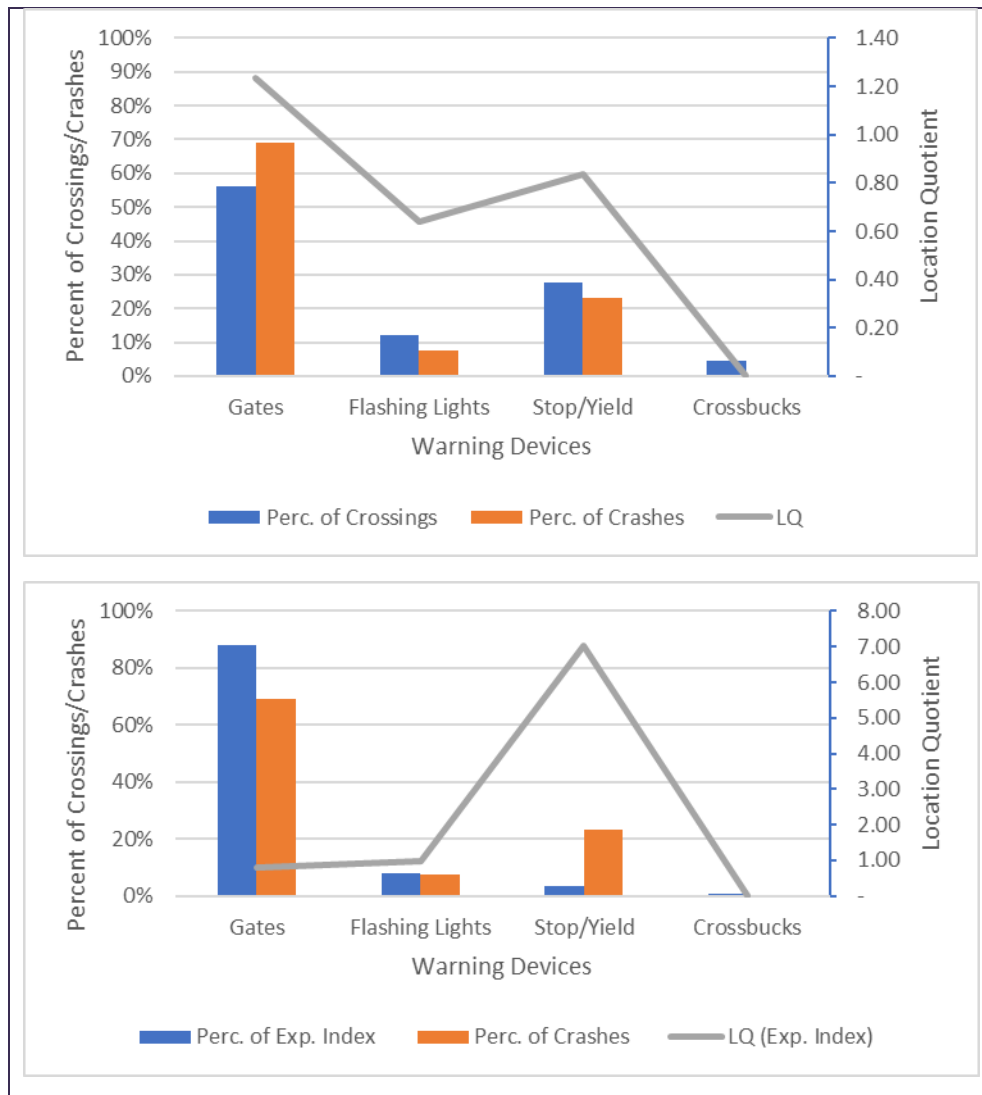
Figure 22. Highway Speed Limit Risk Assessment



4.1.8 Warning Device

The existing warning devices installed at each crossing were grouped into the following categories: gates, flashing lights only, stop or yield signs, and crossbucks only. Nearly 68 percent of crossings throughout the state are equipped with active warning devices consisting of train-activated flashing lights and bells, with or without automatic gates. The remaining crossings are equipped only with stop, yield, and/or crossbuck signage. Traditionally, hazard index models award a lower level of risk to crossings equipped with active warning devices. In Wyoming, most accidents/incidents are occurring at crossings equipped with active warning devices. However, crossings equipped with stop or yield signs experience the highest percentage of accidents/incidents relative to the percentage of the exposure index for crossings in that category (**Figure 23**).

Figure 23. Warning Device Risk Assessment



4.2 Evaluation of Public and Financial Impacts

Improvements to Wyoming's highway-rail grade crossings must examine several different factors, including the expected project cost, as well as the likely safety and operational benefits generated for each kind of highway-rail grade crossing improvement. Other considerations should include the effectiveness of the highway-rail grade crossing improvement in reducing accidents/incidents, improving pedestrian and motorist safety, and the overall impacts on travel, such as reducing delays.

As discussed in the Section 4.1, average daily traffic volumes, train volume (average trains per day), roadway geometry, and maximum railroad timetable speed are highway-railroad grade crossing characteristics of significance within Wyoming. Nationwide, train volumes and revenue ton-miles transported have also been climbing in recent years since the Great Recession of 2008, though they continue to be tempered by recurring recessionary periods, global events, and fluctuating regional demand for individual commodities. These are important factors to consider when evaluating public and financial impacts of potential highway-rail grade crossing improvements and investments.

Any potential future increases in train volumes are likely to impact crossing occupancy time by trains at existing highway-rail grade crossings. An increase in grade crossing delay and crossing occupancy times often leads to:

- Decreased public safety due to higher exposure at highway-rail grade crossings, resulting in potential increases in fatalities, injuries, and property damage from accidents/incidents.
- Increased delay to emergency vehicles at highway-rail grade crossings, resulting in decreased mobility and response times for emergency medical response.
- Increased motor vehicle delay at highway-rail grade crossings, resulting in decreased productivity and efficiency, while increasing vehicle operating costs of the public.
- Increased motor vehicle emissions from idling, higher fuel consumption, and increased environmental noise pollution.

4.2.1 Potential Improvements

State and local governments have the responsibility of enforcing traffic laws at highway-rail grade crossings; this is often done by improving or setting the standards for highway-rail grade crossings for public roadways crossing railroads. Nearly 68 percent of Wyoming's public highway-rail grade crossings are already equipped with active protective devices such as flashing light signals and/or gates. The remaining crossings are equipped only with passive warning devices, including crossbucks and stop or yield signs.

Potential improvements like enhanced signage and warning devices are relatively low cost, and have a high potential for informing motorists and pedestrians of the possible approach of a train.

Traditionally, highway-rail grade crossings have been viewed as areas of safety concern, and improvements made to many highway-rail grade crossings benefit motor vehicles and motorists. When there are opportunities to improve a highway-rail grade crossing for the benefit of pedestrians, or to mitigate potential trespassing issues, it should be addressed to improve the overall safety on or near highway-rail grade crossings.

Roadway illumination is also an effective opportunity to increase the motorist awareness at highway-rail grade crossing locations at night, at a relatively low cost.

Another engineering solution is to construct a grade separation structure of the railroad and highway at the crossing location. This option is relatively costly and complex, and in urban areas may have negative impacts on the social fabric of neighborhoods and the quality-of-life of nearby residents. Areas with high motor vehicle traffic and/or high average daily occupancy times from trains occupying the crossings (e.g., slow-moving or stopped trains and/or high volume of trains) make good candidates for grade separations. To be more cost-effective, crossing consolidation in which one or more existing crossings is closed and/or grade separated may be pursued as well.

It is railroad policy to not increase the number of active highway-rail grade crossings on their respective systems. When there is a need for the installation of a new highway-rail grade crossing, railroads typically require that two crossings be closed for every new crossing opened. The public jurisdiction involved then must undergo a process to determine which, if any, existing crossings could potentially be closed. This form of consolidation may also be an option to improve safety by choosing new crossing locations with better site conditions.

4.3 Identification of Public Highway-Rail Grade Crossings at High-Risk for Accidents/Incidents

This section summarizes the application of WYDOT's established hazard rating formula and ranking process to Wyoming's public highway-rail grade crossing inventory data in order to identify preliminary key areas of need/emphasis areas for further consideration by WYDOT and other stakeholders.

The hazard rating formula assigns an estimated hazard rating based on multiple factors, including average annual daily traffic, the total number of trains per day that travel through each crossing, the number of tracks at each crossing, the number of roadway lanes at each crossing, sight distance, roadway geometry, the maximum railroad timetable speed, and the style and functionality of warning devices, signage, and channelization in place at each crossing.

4.3.1 Description of Wyoming Hazard Rating Formula

The complete Wyoming hazard rating formula is shown below:

$$\text{Hazard Rating} = [\text{ADT Vehicles}] \times [\text{ADT Trains}] \times [T] \times [P] \times \left[\frac{\text{VD Needed}}{\text{VD Actual}} \right] \times \left[\frac{\text{TD Needed}}{\text{TD Actual}} \right] \quad \text{where:}$$

ADT Vehicles = Average Daily Highway Traffic Volumes

ADT Trains = Average Daily Train Volumes

T = Multi-Track Factor, the sum of:

Main Tracks Subfactor = 1.0

Side-Tracks Subfactor = 0.3

P = Protection Factor:

None = 10

Crossbucks = 9

Yield Signs = 8

Stop Signs = 6

Mast-Mounted Flashing Lights = 4

Cantilever-Mounted Flashing Lights = 3

Gates and Flashing Lights = 1.5

Gates and Flashing Lights, with Medians or Channelization = 1

Sight Distance:

[VD Needed / VD Actual] = Vehicle's stopping distance needed divided by the vehicle's actual sight distance to a crossing.

[TD Needed / TD Actual] = Train's imminent distance to the crossing divided by the distance at which the approaching train is visible to the driver of a road vehicle.

Using the hazard rating formula above results in a rating whereby each crossing can be ranked, representing the theoretical level of risk associated with each public highway-rail grade crossing in the state.

4.3.2 Hazard Rating Model Results

The top 10 highest-ranking public at-grade crossings according to the hazard rating formula are shown in **Table 11**.

Four of the top 10 highest-ranking crossings are located on BNSF Railway's Black Hills subdivision in northeastern Wyoming, which has train speeds of up to 60 mph and moderately high rail traffic volumes. Only 2 of the 10 crossings listed each had a single accident/incident in the previous 5 years. No crossings that experienced multiple accidents/incidents rank highly according to this index. The highest-ranking crossing is an urban main street crossing located in Newcastle, Wyoming. This crossing ranked highly because of moderately high train volumes and a high average daily traffic count. This crossing is equipped with active warning devices, including flashing lights and automatic gates.

The hazard rating model, by design, prioritizes those crossings that have risk factors including high average daily highway traffic volumes, high average daily train volumes, and multiple tracks. However, these crossings are today overwhelmingly equipped with the highest level of at-grade crossing protection countermeasures available, with active warning devices and many also with four-quadrant gates, medians, or channelization.

Table 11. Top 10 Highest-Ranking Public At-Grade Crossings Statewide per Hazard Rating Formula

DOT#	Roadway	City	Railroad	Subdivision	Hazard Rank	Five-Year Accident/Incident Count
064920E	Main Street	Newcastle	BNSF	Black Hills	1	0
064975S	Brooks Avenue	Gillette	BNSF	Black Hills	2	1
104171R	5 th Street	Sheridan	BNSF	Big Horn	3	0
089208M	Main Street	Torrington	BNSF	Valley	4	0
817675L	North Main Street	Pine Bluffs	UP	Sidney	5	0
089209U	West C Street	Torrington	BNSF	Valley	6	1
064976Y	Burma Avenue	Gillette	BNSF	Black Hills	7	0
817677A	CR 159	Pine Bluffs	UP	Sidney	8	0
095034G	Antelope Road	Wright	BNSF	Orin	9	0
064958B	Adon Road	Rozet	BNSF	Black Hills	10	0

4.4 Identification of Private Highway-Rail Grade Crossings at High-Risk for Accidents/Incidents

Wyoming does not exercise jurisdiction over private highway-rail grade crossings. However, WYDOT understands that accidents/incidents can and do occur at private highway-rail grade crossings. With nearly twice as many private highway-rail grade crossings than public highway-rail grade crossings in the state, and with many such crossings inaccessible from public right-of-way, the same level of data collection and analysis conducted for public highway-rail grade crossings cannot be applied to private crossings.

Some factors that may generally lead to increased risk at private at-grade crossings include:

- Lack of active warning devices.
- Unpaved roadways with poorly engineered approach geometry, possibly resulting in a hump or skew condition.
- Train horns, which are typically not sounded when trains are approaching private crossings.
- Potentially longer emergency response times in the event of an accident/incident.

Mitigating factors that generally reduce risk at private at-grade crossings include:

- Signage that differs from that which is seen at public at-grade crossings, potentially increasing driver attention.
- Low average daily vehicular traffic, which reduces the overall exposure index.
- Vehicle speeds, which are typically lower on private roadways.

5.0 Stakeholder and Public Engagement

This section identifies and describes the stakeholder and public coordination and engagement approach employed during the development of this Wyoming State Action Plan (SAP), related stakeholder input received to support completion of the SAP, and general conclusions regarding the inputs. Public engagement was conducted in conjunction with the public engagement process for the concurrently developed 2021 Wyoming Statewide Rail Plan (SRP).

5.1 Process for Stakeholder Involvement in State Action Plan Development

The SAP/SRP stakeholder engagement process included the following activities:

- Online Public Survey
- Virtual Stakeholder Meeting

5.1.1 Online Public Survey

The project team engaged members of the public to solicit input via an online public survey which was promoted largely through social media posts on WYDOT's Facebook page. The survey was hosted between September 28 and November 30, 2020. In total, the public survey gathered 184 individual responses. A verbatim record of the individual responses received regarding highway-rail grade crossing topics is provided in **Appendix A** of this SAP.

SURVEY QUESTIONS:

Questions 1-4 requested demographic and optional contact information from respondents.

Question 5: "What investments could be made to enhance the efficiency, capacity and safety on the Wyoming state rail network? (applies to freight and passenger rail systems)"

Question 6: "Provide your input on possible investments that improve the freight rail network, enhance rail access, and catalyze economic and industrial development."

Question 7: "Please rank the importance of the following strategies to improve safety at highway-rail grade crossings. (1 - not important whatsoever to 5 - extremely important)"

Question 8: "What opportunities do you see for grade crossing improvements in Wyoming?"

Question 9: "Where specifically are there safety concerns as it relates to the railroad system and the public?"

Questions 10-14 were asked regarding the potential for passenger rail service development for inclusion in the Statewide Rail Plan, and Question 15 asked for any additional general comments

5.1.2 Virtual Stakeholder Meeting

A stakeholder outreach meeting was held virtually on October 28, 2020, to educate stakeholders regarding the state rail planning and state highway-rail grade crossing safety planning processes, obtain input for developing a Rail Vision, and provide a forum for discussing specific rail issues in the state. Participants included representatives from the railroads, representatives of state and local agencies, and other stakeholders and interested parties.

In addition to a discussion of general rail safety and economic development trends, highway-rail grade crossing safety was discussed. A high-level summary of the highway-rail grade crossing safety data analysis that was performed as part of the development of this plan was presented.

5.2 General Conclusions from Stakeholder Engagement Process

Inputs received during the stakeholder outreach process generally acknowledged the importance of highway-rail grade crossing safety in Wyoming. Inputs also considered the needs and opportunities for identifying improvements that decrease deaths and life changing injuries by addressing strategies inclusive of the four E's (engineering, education, enforcement, and emergency services) of highway-rail grade crossing safety for each of the preliminary key areas of need/emphasis areas.

These general conclusions from the stakeholder engagement include:

- Stakeholders support a range of potential options improve safety at highway-rail grade crossings, including:
 - Crossing approach and surface improvements
 - Upgrading of passive grade crossings (those with crossbucks and stop or yield sign only) to active grade crossings with the installation of active warning devices (e.g., flashing light signals, gates, etc.)
 - Upgrading of active warning devices at existing active crossings
 - Line of sight improvements
 - Education and promotion of rail safety
 - Grade-crossing closure, consolidation, or separation
 - Improvement for pedestrian/bicycle paths at crossings

Of these options, education and promotion of rail safety was the most popular, while grade crossing closure, consolidation, or separation was the least popular.

- Numerous stakeholders responding to the online public survey identified one specific grade crossing location in Wyoming as problematic: **5th Street in Sheridan (DOT #104171R)**. This is the third highest ranked crossing in the state according to the data-driven applied hazard rating formula. This crossing was identified because it is a major city street as well as a state highway, providing a connection between Sheridan's central business district and Interstate 25. One stakeholder noted that this street is the most direct route for them to access the city's hospital. The crossing is situated at the south end of the BNSF Railway yard in Sheridan, where it has been observed that all trains stop to change crews. Some trains may also pick up or drop off railcars in the yard, which requires multiple back-and-forth movements over the crossing. As a result, trains are slowing, stopping, and resuming movement in the vicinity of the crossing, resulting in lengthy periods of crossing occupancy. There are, according to the FRA Crossing Inventory Report Form for this crossing¹⁴, approximately 14 trains per day at this location as of 2019. A proposal to reroute the rail line away to bypass the City of Sheridan to the north was previously studied.

¹⁴ [FRA Crossing Inventory Report: DOT #104171R](#)

- Stakeholders identified that some highway-rail grade crossings have roadway approaches that are too steep, which exposes truck drivers to the risk of becoming high-centered and trapped on a crossing while fouling the track. One stakeholder noted the crossing at **1st Street in Granger, Wyoming (DOT #810480A)** as a specific location for this concern. WYDOT has secured federal funding through the Consolidated Rail Infrastructure and Safety Improvements (CRISI) FY 2017 grant program administered by the FRA to address issues at this location.
- Another stakeholder suggested that it would be helpful if there was a guide or a map available to truck drivers indicating which crossings in the state pose a risk to semi-trucks.
- Specific crossing locations identified by stakeholders that warrant further review are shown in **Table 12**.

Table 12. Highway-Rail Grade Crossing Locations of Concern Identified by Stakeholders

DOT#	Roadway	City	Railroad	Subdivision	Hazard Rank	Five-Year Accident/ Incident Count
064975S	Brooks Avenue	Gillette	BNSF	Black Hills	2	1
104171R	5 th Street	Sheridan	BNSF	Big Horn	3	0
089268W	A Street	Glendo	BNSF	Canyon	14	0
090867N	Big Horn Avenue	Worland	BNSF	Casper	22	0
810480A	1 st Street	Granger	UP	Evanston	36	0
245696X	West Lincolnway	Cheyenne	BNSF	Cheyenne Downtown Lead	65	0
089425M	5 th Street	Glendo	BNSF	Canyon	117	0
245526D	WY-211	Federal	BNSF	Front Range	264	1

5.3 Stakeholder Involvement in State Action Plan Implementation

The Wyoming Department of Transportation (WYDOT) understands that collaboration and involvement with various public and private stakeholders as partners is essential for any of the actions identified in this SAP to improve highway-rail grade crossing safety statewide to be implemented and effective. Potential roles and responsibilities of non-WYDOT agencies and entities who can potentially partner with WYDOT in the future to implement the action plan are identified in Section 7.0 of this SAP. Although no formal agreements are yet in place, representatives from coordinating partners have had the opportunity to review the action plan in Section 7.0 of this SAP and provide input and comment.

6.0 Highest-Priority Highway-Rail Grade Crossing Safety Challenges Statewide

This section identifies the highest priority highway-rail grade crossing safety needs and challenges in Wyoming and related key areas of need/emphasis areas as preliminarily identified during development of the data and risk assessments undertaken by the Wyoming Department of Transportation (WYDOT), reviewed by stakeholders during outreach conducted for this SAP, and confirmed for development of this SAP's action plan.

6.1 Final Key Areas of Need/Emphasis Areas

After a thorough review of the recent accident/incident history and existing grade crossing characteristics in Wyoming through the risk assessment and in consideration of inputs from stakeholders and the public during outreach, WYDOT confirmed final key areas of need/emphasis areas that would be used to develop goals and objectives for improving highway-rail grade crossing safety statewide and for developing this SAP's action plan. These include:

- **Urban Crossings:** Locations where principal roadways – often the city's main street which doubles as a United States or state highway – intersect with rail lines in the center of many cities in Wyoming present unique challenges. These crossings often have much higher traffic volumes than rural roads and other minor city streets and are also much more likely to have commercial accesses, private driveways, and intersections with public roadways near the crossing. These crossings are also more likely to host pedestrian and bicycle traffic.
- **Rural Crossings:** In a predominantly rural state like Wyoming, rural crossings present their own unique challenges. In many cases, the highway approach speed at rural crossings is higher than in urban areas, increasing the importance of advance warning signs and clear sight distances to ensure that motorists are prepared to stop for an oncoming train. Sight distances may be limited by terrain or tight curvature on the approach to the crossing.

6.2 Identification of Potential Strategies and Improvements

This section identifies and describes potential strategies that have the greatest potential to focus resources that improve safety, minimize fatalities and injuries, and mitigate challenges on the state's highway-rail grade crossing network. Strategies address the four E's of safety – engineering, education, enforcement, and emergency services – and consider effective and affordable countermeasures that can be deployed for site-specific locations or widely across the statewide highway-rail grade crossing network.

6.2.1 Potential Strategies

Many potential strategies are available to address highway-rail safety concerns and to make investments that mitigate risk. WYDOT is currently employing many of these countermeasures and has considered future implementation of others. These potential countermeasures can be considered for systematic deployment across the state highway-rail grade crossing network by WYDOT at those crossings identified as having a statistically higher-risk as well as at locations that do not have a history of accidents/incidents but possess risk factors for potential accidents/incidents.

ENGINEERING

WARNING DEVICE UPGRADES

The gates, flashing light signals, and signage at highway-rail grade crossings are the primary means of alerting highway users that a train will soon be arriving at the crossing. At a minimum, crossings should be equipped with passive signage including crossbucks and stop or yield signs. The installation of active warning devices such as flashing lights increases the visibility of a crossing.

The additional installation of gates provides a physical barrier to prevent motorists from traversing the crossing. This may include the standard two-quadrant gate (one for each direction of vehicular travel), but also the potential for four-quadrant gates (one for each side of the lanes of travel) which completely block the crossings. While more expensive than standard two-quadrant gates, four-quadrant gate systems are more effective at risk reduction with minimal impact to adjacent roadway accesses and infrastructure.

ROADWAY IMPROVEMENTS

Improvements to the highway-rail grade crossing approaches also play a key role in improving crossing safety. Maintaining adequate quality for pavement on the approach and the crossing surface itself helps motorists maintain control of their vehicles while traversing the crossing. Designing crossings to minimize skew and severe grade transitions also allows motorists to more easily view oncoming trains and be able to stop if necessary.

The installation of medians or channelization devices on roadway approaches may also be used in combination with gates and flashing lights to make it more difficult for motorists to circumvent the gates when they are in the down positions. This combination of gates with medians or channelization devices have a similar effect on risk reduction as the four-quadrant gates discussed above but are typically more cost effective.

Additional roadway improvement options include passive and active advance warning signage, transverse rumble strips, and other advance warning systems to alert motorists prior to arriving at crossings.

GRADE SEPARATIONS

It is a common adage in the railroad industry that the safest crossing is no crossing at all. While the cost of a new grade separation project can be substantial, these projects result in a complete elimination of crossing risk. Grade separations should be considered at crossings where standard safety improvements are not sufficient, or where the frequency of the crossing being blocked by trains poses a risk to maintaining access for emergency services.

CROSSING CLOSURES

The closure or consolidation of crossings may also be used to improve safety throughout the state. Potential closures should be thoroughly reviewed to determine the potential impact on traffic and pedestrian circulation as well as the impact to emergency services response times.

EDUCATION

COORDINATION WITH OPERATION LIFESAVER

Operation Lifesaver is a non-profit public safety education and awareness organization that strives to increase awareness of highway-rail grade crossing safety issues. The Wyoming Operation Lifesaver chapter provides statistics and educational materials related to grade crossing safety in Wyoming. Volunteers with the organization

are also available to give educational presentations to groups such as students, professional truck drivers, and company safety programs.

SOCIAL MEDIA OUTREACH

Many state departments of transportation are increasingly relying on social media platforms such as Facebook and Twitter to provide the public with information on roadway construction projects, stakeholder engagement opportunities, and general safety tips. These outlets may also be used to periodically post information regarding best practices for highway-rail grade crossing safety to encourage safe behaviors for motorists and pedestrians.

ENFORCEMENT

COORDINATION WITH LAW ENFORCEMENT

Local law enforcement agencies are often very familiar with the locations of potentially dangerous highway-rail grade crossings. Routine coordination between WYDOT staff and law enforcement agencies helps to ensure that safety issues are identified early. Law enforcement personnel may also be able to assist with safe grade crossing practices through enhanced awareness and periodic enforcement and ticketing efforts.

CAMERA MONITORING

As an alternative to increase law enforcement presence, the installation of closed-circuit television (CCTV) cameras may also function as a deterrent to unsafe behavior at grade crossings. Even if not used to issue tickets or warnings to drivers, the presence of a CCTV camera often has the effect of increase warning device adherence.

EMERGENCY SERVICES

IDENTIFY ROUTINELY BLOCKED CROSSINGS

During day-to-day railroad operations, it is not uncommon for a train to block a crossing while conducting switching at railroad yards or other routing operations. This blockage may negatively impact the response time for emergency responders such as fire, police, and emergency medical services. Coordination with local emergency services provides to identify locations of concern helps WYDOT staff to properly assess the situation and help to identify potential solutions. In some cases, additional coordination with the railroad may reduce or eliminate blocked crossing concerns, while in other cases more complex measures such as grade separations may be the only viable long-term solution.

IDENTIFYING CROSSINGS IN CLOSE PROXIMITY TO SENSITIVE LAND USES

The proximity of highway-rail grade crossings to sensitive land uses such as schools and hospitals should be taken into consideration when evaluating potential crossing safety improvements. In addition to the potential for increased pedestrian activity, these crossings may also need to consider the impact of potential blocked crossing delays as described above. Coordination with stakeholders in these sensitive groups will help to identify safety issues and also provide opportunities for education regarding general crossing safety issues.

7.0 Action Plan

The SAP's action plan outlines the actions that the Wyoming Department of Transportation (WYDOT) and partner stakeholders will undertake to implement the findings and recommendations identified during the development of recent highway-rail grade crossing safety planning. The action plan provides the overall framework for identifying and understanding the highest priority grade crossing safety issues throughout the state, and details the responsible parties, overall timeline, and recommended course of action for each recommendation. The action plan has been developed to comply with applicable federal guidance.

7.1 Goals and Objectives for Addressing Safety Challenges

The Wyoming SAP must include a set of goals and objectives to reflect the aspirations of the agency as it relates to rail safety throughout the state, as per Federal Railroad Administration (FRA)/Federal Highway Administration (FHWA) guidelines. Consistent with other WYDOT safety efforts: the ultimate goal of the SAP is to save lives, reduce serious injuries, and improve safety. Further information about specific goals and objectives of the SAP are outlined below. The specific actions that will be implemented by WYDOT to address these goals and objectives are discussed in the following section.

7.1.1 Goal 1: Review Every Incident at or Near a Highway-Rail Grade Crossing

WYDOT will review every accident or incident that occurs at or near a highway-rail grade crossing. WYDOT will consider the potential for geometric improvements at all public crossings that experience accidents/incidents in the short term, if applicable. In the long term, WYDOT will also consider improvements for highway-rail grade crossing incidents that are unrelated to train operations. These include rear-end accidents/incidents of vehicles required to stop at public crossings, access control issues, and anything else that could potentially occur near a grade crossing and pose a safety risk to railroad equipment and highway users.

7.1.2 Goal 2: Address Driver Expectations and Expand Safety

WYDOT will address driver expectations and expand safety at the state's public highway-rail grade crossings. WYDOT will consider the installation of active warning devices including gates and/or cantilever-mounted flashing lights at public highway-rail grade crossings scoring in the top 70 percent per the state's data-driven hazard rating formula. Currently, approximately 68 percent of Wyoming's public highway-rail grade crossings have active warning devices including flashing lights or gate mechanisms. The general rule of thumb is that crossings should be gated if the crossing's hazard rating is ranked within the top 50 percent. As of 2020, 142 out of 192 crossings scoring in the top 50 percent are equipped with gates.

In the long term, WYDOT can consider expanding consideration of gates and cantilevers for crossings below the hazard ranking threshold that exhibit line-of-sight, school bus traffic, hazardous material traffic, repeated near-miss reports, or other related issues.

7.1.3 Goal 3: 100% MUTCD Compliance

Where applicable, WYDOT strives to achieve 100 percent Manual on Uniform Traffic Control Devices (MUTCD) compliance, including for:

- Two-sided crossbucks.
- Reflecting strips on passive crossings.
- Yield signs at passive crossings.
- Advance warning signage.
- Emergency notification signage.

WYDOT will remain alert to any upcoming changes to the MUTCD and will work to remain in compliance.

7.1.4 Goal 4: Ensure Crossing Surface Safety

WYDOT will ensure highway-rail grade crossing surface safety for highway users by working closely with local railroad maintenance-of-way management and railroad public projects staff to ensure crossing surface replacements take place in a timely manner before the road surface becomes excessively deteriorated and ultimately unsafe.

7.2 Action Plan for Accomplishing Goals and Objectives

The following section provides details on the specific action plan WYDOT will undertake during the 4-year planning horizon (2022-2025) to achieve the goals and objectives described in the previous section. The implemented actions address key safety challenges and solutions related to the four E's of highway-rail grade crossing safety – engineering, education, enforcement, and emergency services.

WYDOT understands that collaboration with various public and private stakeholders as partners is essential for any of the actions to be implemented and effective. Where relevant, the actions specify the potential roles and responsibilities of non-WYDOT agencies and personnel who can potentially partner with WYDOT in the future to implement the action plan. Preliminary roles and responsibilities of partners are presented in the actions below to guide implementation. Although no formal agreements are yet in place, representatives from coordinating partners have had the opportunity to review these actions and provide input and comment.

WYDOT also recognizes that the actions presented in this SAP may be systematically reviewed and adjusted to increase their effectiveness or to address any changes in highway-rail grade crossing risks in the state. Therefore, the presentation below is not an exhaustive list of all actions that may potentially be taken by WYDOT over the 4-year horizon (2022-2025).

7.2.1 Action 1: Develop Enhanced Statewide Grade Crossing Inventory

To comply with current FRA requirements, WYDOT currently maintains an inventory of all highway-rail grade crossings involving public roads throughout the state. This inventory includes information such as the crossing identification number, primary operating railroad, geometric conditions (e.g., number of tracks and travel lanes, crossing angle), crossing location (e.g., latitude and longitude, county, city, street name), average daily highway and rail volumes, and other relevant information. WYDOT inventories public crossings statewide through periodic on-site reviews to maintain up-to-date information.

This action would incorporate additional data points into the statewide highway-rail grade crossing inventory when it is updated by WYDOT during 2022-2025 as a means of enhancing the understanding of safety challenges and to assist the process of identifying and prioritizing grade crossing investments. Future risk analyses may identify one or more of these additional crossing factors as a key indicator of safety concerns. Potential enhanced inventory items WYDOT will consider include, but are not limited to:

- Site photography.
- Railroad-recorded near miss data.
- Average daily school bus volumes.
- Average daily transit vehicle volumes.

7.2.2 Action 2: Continue to Address Highest-Priority Highway-Rail Grade Crossings

WYDOT's current project prioritization and selection process begins with four primary avenues of initial project identification:

- **Public Authority Request:** Public authorities (e.g., cities, counties) with jurisdiction over the roadways at the crossings are often aware of specific safety issues that may be addressed through crossing safety improvements. WYDOT is alerted to these issues through direct communication from the public authorities.
- **Railroad Identification:** Individual operating railroads are also aware of potential safety concerns through their own internal reporting of near misses. WYDOT frequently coordinates with railroads operating throughout the state and is made aware of specific crossings or corridors where safety has become a concern.
- **Routine Safety Performance Review:** Projects may be identified through routine safety performance review by WYDOT highway-rail safety staff, through regular review of highway-rail grade crossing performance statewide, as a follow-up to accidents/incidents, or upon notification of possible issues from local citizens or roadway users.
- **Planned STIP Projects:** WYDOT frequently identifies potential crossing improvements that may be coordinated with roadway reconstruction projects programmed in the Statewide Transportation Improvement Plan (STIP). This approach reduces the overall cost of improvement implementation.

Projects are selected using a combination of engineering judgment and identification of improvements that can be efficiently combined with compatible planned and programmed transportation infrastructure projects such as roadway reconstruction projects. WYDOT staff also conduct routine field diagnostic reviews of crossings to collect updated crossing characteristic information and to identify potential safety issues when reviewing potential projects. WYDOT will continue this process and use its hazard rating formula to help prioritize potential actions.

7.2.3 Action 3: Continue to Request and Receive Incident Reports

WYDOT requests and receives reports of unsafe motorists, unsafe pedestrian actions, accidents/incidents, and other incidents, including near-misses. These reports help inform WYDOT of potential highway-rail grade crossing safety issues and can help WYDOT understand patterns of behavior or recurring issues within the built environment related to highway and rail safety.

7.2.4 Action 4: Enhance Ongoing Coordination between Rail Safety Stakeholders

WYDOT will pursue responsibilities during 2022-2025 for enhanced coordination between state, tribal, and local agencies, road authorities, railroads, the FHWA, and FRA. Class I Railroads BNSF Railway (BNSF) and Union Pacific Railroad (UP) own and operate a significant percentage of the state's rail network, participated in stakeholder outreach during development of the 2021 Statewide Rail Plan and this 2021 SAP, and may continue to be important partners. Other highway-rail grade crossing safety stakeholders may provide input regarding safety issues and opportunities for improvement that may impact highway-rail grade crossing safety. WYDOT will continue efforts to enhance communication and coordination with both the stakeholders responsible for assisting with identification and delivery of highway-rail grade crossing projects and the other key stakeholders whose responsibilities include enforcement, maintenance, emergency management services, and education.

7.2.5 Action 5: Continue Monthly Coordination with Railroads

WYDOT will continue monthly teleconferences as well as quarterly in-person meetings with BNSF and UP. During these meetings, all at-grade and grade-separated crossing projects are reviewed to ensure projects are progressing smoothly.

7.3 Challenges to Meeting Goals and Objectives

While WYDOT is committed to the implementation of these actions to improve safety at highway-rail grade crossings throughout the state, there are considerations that may challenge the ability of WYDOT to meet all the goals and objectives outlined in this SAP. A short description of the primary anticipated challenges is provided below.

7.3.1 Geographic Area

Wyoming comprises a vast geographic area with rail lines spanning the entire state from north to south and east to west. As a result, the time involved in traveling to and from individual highway-rail grade crossing locations for field reviews and meetings with stakeholders may pose a constraint.

7.3.2 Funding Limitations

Federal funding for highway-rail grade crossing improvements is limited and not sufficient to fund all likely highway-rail grade crossing project needs in Wyoming.

7.3.3 WYDOT Resource Limitations

Wyoming currently has only one state railroad coordinator on staff whose responsibilities go beyond the coordination of public highway-rail grade crossing safety and improvements.

8.0 Next Steps Defined as Short-Term and Long-Term Actions

Implementation of the proposed actions of the SAP’s action plan described previously will be the primary responsibility of the Wyoming Department of Transportation (WYDOT). The proposed actions will be implemented in coordination with stakeholders such as the state’s railroads, various public agencies, and Wyoming Operation Lifesaver. **Table 13** below provides an overview of the short-term actions (for the 4-year horizon for this SAP [2022-2025]) and long-term actions (2026-2029) that will be undertaken to assist WYDOT in achieving the goals and objectives of this SAP.

In the short term, WYDOT will continue to monitor complaints, concerns, near-miss reports, and accident/incident inventories at public crossings. This information, coupled with diagnostic reviews with relevant stakeholders, will enable the agency to make the most capable decisions for the use of federal and state funding at public highway-rail grade crossings.

In the long term, WYDOT may expand its review of incidents at public highway-rail grade crossings to include incidents at the crossing not attributable to train movements. Those incidents include rear-ending accidents/incidents related to school and transit busses, as well as vehicles carrying hazardous materials. These evaluations may lead to advance warning or other notifications that can alert highway users to a potential hazard.

Table 13. Short- and Long-Term Action Summary

Actions	Short-Term (1-4 years)	Long-Term (5-8 years)	Responsible Party
Action 1: Develop Enhanced Statewide Highway-Rail Grade Crossing Inventory	Determine what additional data to include in enhanced crossing inventory and begin to collect data. Develop inspection plan to collect enhanced data for all crossings within four years.	Finalize collection of enhanced grade crossing data. Review enhanced data to identify potential risk factors. Continue to consider other potential data to include in the enhanced grade crossing inventory.	WYDOT
Action 2: Continue to Address Highest-Priority Highway-Rail Grade Crossings as Identified by Stakeholder Input and Analysis of Crossing Inventory Data with Hazard Rating Formula	Implement a modified improvement selection approach. The chosen approach should be based on currently available data and used to identify projects for the WYDOT Statewide Transportation Improvement Program (STIP).	Continue to monitor the effectiveness of the modified safety improvement selection process. Periodically review the hazard rating formula to ensure that the resulting risk levels correlate to actual accident/incident data. Consider implementation of additional factors collected in the enhanced crossing inventory.	WYDOT

Actions	Short-Term (1-4 years)	Long-Term (5-8 years)	Responsible Party
Action 3: Continue to Request and Receive Incident Reports	WYDOT will continue to receive or request at-grade crossing unsafe motorist, pedestrian, accident/incident, and incident reports from railroads and public agencies, as appropriate.	Continue to monitor trends and patterns relating to incidents occurring within the state.	WYDOT, Partner agencies
Action 4: Enhance Ongoing Coordination between Rail Safety Stakeholders	Look for opportunities to participate in existing routine rail safety stakeholder discussions. Schedule recurring (e.g. quarterly, biannually) teleconference or webinar meetings with local roadway authorities and jurisdictions, state and tribal agencies, local law enforcement and EMS, railroads, and neighboring state DOTs to discuss rail safety trends, concerns, and best practices and to identify potential opportunities for improvement.	Assess the effectiveness and value of these routine coordination meetings. Consider participation in regional or national grade crossing safety group discussions, committees, or panels.	WYDOT in partnership with rail safety stakeholders
Action 5: Continue Monthly Coordination with Railroads	WYDOT will continue monthly teleconferences as well as quarterly in-person meetings with BNSF Railway and Union Pacific Railroad	Maintain positive and productive relationships with railroads to ensure public projects are accommodated.	WYDOT, Class I Railroads

Each state developing an SAP is mandated under Section 11401 of the Fixing America's Surface Transportation (FAST) Act to designate a state official responsible for managing implementation of the SAP. This mandate was echoed by the Federal Railroad Administration in its Final Rule issued on December 14, 2020.

The state official responsible for managing implementation of the 2021 Wyoming SAP is identified below:

Dan Kline
 Railroads Section
 Wyoming Department of Transportation
 5300 Bishop Blvd.
 Cheyenne, WY 82009

APPENDIX A: PUBLIC SURVEY QUESTIONS AND RESPONSES

For free-response questions, responses documented in this appendix are verbatim.

Question 5: *“What investments could be made to enhance the efficiency, capacity and safety on the Wyoming state rail network? (applies to freight and passenger rail systems)”*

- 42.86 percent of respondents selected “Grade crossing improvements (upgrades to grade crossing signals and surfaces, road/rail separated crossings, etc.)”

Question 6: *“Provide your input on possible investments that improve the freight rail network, enhance rail access, and catalyze economic and industrial development.”*

Comments:

- Investment in passenger rail. Improvements to crossings
- Investments in industrial siting and crossing improvements
- Improvement to grade crossings and highway-rail grade separations

Question 7: *“Please rank the importance of the following strategies to improve safety at highway-rail grade crossings. (1 - not important whatsoever to 5 - extremely important)”*

- Crossing approach and surface improvements – 4.00
- Improvement for pedestrian/bicycle paths at crossings – 3.84
- Upgrading of active warning devices at existing active crossings – 3.80
- Upgrading of passive grade crossings (those with crossbucks and stop or yield sign only) to active grade crossings with the installation of active warning devices (e.g., flashing light signals, gates, etc.) – 3.79
- Grade-crossing closure, consolidation, or separation – 3.57

Question 8: *“What opportunities do you see for grade crossing improvements in Wyoming?”*

Comments:

- Consistent freight delivery. Tourist travel regenerated. Mail and commercial packages delivered with less wear and tear on highways
- Not much
- Employment and safety
- Passenger trains to Utah and Rock Springs
- Improved safety
- More overpasses in cities would be helpful in areas where trains bisect towns
- Make the railroads quit making these extra-long trains, and people will be more patient at crossings

Wyoming Highway-Rail Grade Crossing State Action Plan

- It would be useful for there to be an expansion of quiet zones with the requisite upgrades and/or over or underpasses for crossings through populated areas (i.e., centers of towns/cities)
- None
- I would recommend more silent crossing in our towns
- Employment if we use Wyoming residents only
- Make them smooth and less bumpy
- More tourists
- As a former truck driver, it would be a vast safety improvement to list (i.e., a rail map with approved crossings) what rail crossings a semi can safely cross without becoming high centered. with grade crossings its mostly a gamble whether or not your trailer will make it or not because there is no visible way to tell if the grade on either side is too low
- Smooth them out with concrete that will last more than a season.
- Statewide travel
- Less rail accidents
- I'd like to see elevated crossings in high traffic areas such as 5th street
- None. Most Wyoming people know about the railroad
- more obvious reflective markers, markings
- Lights indication that the crossing may be occupied blocks away to detour traffic early.
- Please let railways pay not tax dollars or investments - or use state retirement to fund as that is a huge waste of funds
- For sure paths across!!! Also maybe car navigation around. To be specific 5th st in Sheridan
- Connecting roadway between crossings. To reduce the need to "race " trains
- Safety improvement
- More lights and barriers.
- Somehow eliminating road grader crossing.
- I would like to see increased public awareness.
- A lot are very rough and are difficult for motorcyclists and bicyclists.
- Implementing 2-Person crew legislation
- As long as a low vehicle won't get stuck in it.
- Contract with local companies to do the work.
- In this state of Wyoming, most injury's and deaths happen at grade crossings that are railroad involved. So any improvement is welcome.
- More bridges or viaducts to eliminate rail crossing conflicts in Laramie County.
- Improve line of sight.
- They need to be more frequent and circumvent the tracks when possible to prevent accidents.

Question 9: *"Where specifically are there safety concerns as it relates to the railroad system and the public?"*

Comments:

- Learning curve and speed of trains
- No more than there ever has been, just do it
- No drop down crossing g guards. But then we dont have active tail on roads
- When SLC first had light rail many accidents occurred. Educating the public is most important aside from maintaining structural integrity of the system as a whole.

Wyoming Highway-Rail Grade Crossing State Action Plan

- 5th street in Sheridan
- Yes, there will be more potential for collision with humans and life stock and vehicles.
- Access for emergency services when trains are blocking main travel corridors in town.
- Extremely long trains delay ambulances and fire engines at crossings. Trains are too long.
- Crossings
- The current numbers of grade crossings combined with the reality of ever longer trains provides a unique challenge to both the industry and the public. With current class 1 railroads operating trains in excess of 10k' can and has caused disruptions to residents and railroads alike in the form of breakdowns impeding emergency vehicles for example. Another would be the tragedy that befell two crew members in October of 2018 when their End-of-Train Device was unable to respond and help actuate emergency braking coming down a grade West of Cheyenne, leading to their untimely demise. I believe it is in the interest of all those affected by rail traffic for the state to look at enacting measures such as regulating items such as length of trains and providing additional funding for improvements to crossings. Another safety concern that should be addressed should be the various carriers' push for one man crews. While technology is able to provide some measure assistance, it is no replacement for a well trained and experienced crews. As tragedies such as that which struck the community of Lac Megantic, a single crew member is noticeably inferior to a multiple person operation. A second crew member is another set of eyes for potential issues, provides alertness in an industry often struck with inconsistent rest and exhaustion, allows the crew to concentrate of specific tasks, and acts as a first responder when incidents occur.
- Safer crossings
- Evansville, WY. Only exit is blocked by train signals that are constantly broken. Limits access to medical, etc. Sheridan, WY the access to the hospital is blocked by train multiple times a day.
- a decent campaign should be held to raise safety awareness. with idiots faces being glued to their phones 90% of the time when they drive now days. trains aren't even a concern until they are turned into confetti. then it turns into why isn't this done or why isn't that done to prevent an idiot from hurting themselves. its hard to educate the unwilling but at least maybe some visual aides of the carnage that a train can do; may save a life or two that have at least a shred of common sense
- Gillette
- Ranch roads along Hwy 59
- Crossing for pedestrians and cyclists.
- Hardin , Mt
- Trains are too long, and getting longer. A crew saving measure by the RR, so very important crossings in town are blocked for several minutes. I.E. Sheridan 5th St crossing fastest route to the hospital.
- Safe sidewalks across track
- In the town of Granger. It is almost impossible to use by heavy, lowboy haul trailers because the four tracks at the crossing are at different grades.
- Gillette has a big problem with limited access around tracks when road switcher is working. Also Glendo is and can be problematic due to the close proximity of only 2 crossings the can and do block access to the community.
- Fifth street crossing in Sheridan
- A better understanding of the dangers around railroad crossings.

Wyoming Highway-Rail Grade Crossing State Action Plan

- Pedestrian access-- in some places rail lines completely separate towns and make it hard for pedestrians
- Poor separation of access to the physical plant and the public
- People are dying on I-80 during winter. Get the truckers off the interstate and out the freight on the railroad. It will save lives.
- Better crossings safety for people and vehicles.
- I live in Worland, Wyoming, and the crossing at Big Horn Ave has long been a concern of mine. I worked on the railroad for 36 years and saw multiple accidents on this crossing.
- West Lincolnway rail crossings in Cheyenne.
- Federal, Wyoming
- Mostly within the city limits of towns

APPENDIX B: WYOMING PUBLIC HIGHWAY-RAIL GRADE CROSSING INVENTORY

The source for this inventory is the Federal Railroad Administration (FRA) Office of Safety Analysis website: <https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/DownloadCrossingInventoryData.aspx> (Highway-Rail Crossing Database Files and Reports) data as amended by the Wyoming Department of Transportation (WYDOT) Railroads Section. This public highway-rail grade crossing inventory includes the crossing DOT number, name of railroad, railroad subdivision, nearest city, and street name.

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
064920E	BNSF	BLACK HILLS	NEWCASTLE	MAIN ST
064921L	BNSF	BLACK HILLS	NEWCASTLE	WALKER AVE
064922T	BNSF	BLACK HILLS	NEWCASTLE	2ND AVENUE
064926V	BNSF	BLACK HILLS	NEWCASTLE	OIL CREEK RD
064933F	BNSF	BLACK HILLS	OSAGE	SKULL CREEK RD
064941X	BNSF	BLACK HILLS	UPTON	THORNTON RD
064944T	BNSF	BLACK HILLS	MOORCROFT	BUFFALO CREEK RD
064947N	BNSF	BLACK HILLS	MOORCROFT	WARBONNET RD
064950W	BNSF	BLACK HILLS	MOORCROFT	SHIPWHEEL RD
064953S	BNSF	BLACK HILLS	MOORCROFT	TEXACO RD
064954Y	BNSF	BLACK HILLS	MOORCROFT	WESSEX RD
064956M	BNSF	BLACK HILLS	ROZET	STEWART RD
064958B	BNSF	BLACK HILLS	ROZET	ADON RD
064960C	BNSF	BLACK HILLS	ROZET	SVALINA RD
064966T	BNSF	BLACK HILLS	GILLETTE	AMERICAN RANCH RD
064969N	BNSF	BLACK HILLS	GILLETTE	POTTER AVE
064970H	BNSF	BLACK HILLS	GILLETTE	GARNER LAKE RD
064975S	BNSF	BLACK HILLS	GILLETTE	BROOKS AVE
064976Y	BNSF	BLACK HILLS	GILLETTE	BURMA AVENUE
064979U	BNSF	CASPER	CASPER	SALT CREEK HWY
064988T	BNSF	GUERNSEY YD, WY	GUERNSEY	QUARRY ROAD
077948H	BNSF	CAMPBELL	ROZET	AMERICAN RANCH RD
086278S	BNSF	CASPER	WORLAND	CHUCKAR DRIVE 211
086338Y	BNSF	CASPER	GREYBULL	5TH ST SO
086364N	BNSF	BIG HORN	PARKMAN	PASS CREEK RD
088727L	BNSF	ORIN	GILLETTE	BRUNSEN ROAD
089201P	BNSF	VALLEY	TORRINGTON	COUNTY ROAD 57
089203D	BNSF	VALLEY	TORRINGTON	COUNTY ROAD 53S
089204K	BNSF	VALLEY	TORRINGTON	COUNTY ROAD 53D
089205S	BNSF	VALLEY	TORRINGTON	LIFT STATION ROAD
089208M	BNSF	VALLEY	TORRINGTON	MAIN ST
089209U	BNSF	VALLEY	TORRINGTON	WEST C STREET
089210N	BNSF	VALLEY	TORRINGTON	RADIO ROAD

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
089211V	BNSF	VALLEY	TORRINGTON	GOLF COURSE ROAD
089214R	BNSF	VALLEY	TORRINGTON	MCKENNA RD
089217L	BNSF	VALLEY	TORRINGTON	COUNTY ROAD 41
089220U	BNSF	VALLEY	LINGLE	COUNTY ROAD 83
089227S	BNSF	VALLEY	LINGLE	WYO 156 MAIN ST
089228Y	BNSF	VALLEY	LINGLE	COUNTY ROAD 31
089237X	BNSF	VALLEY	FORT LARAMIE	STATE HWY 157
089242U	BNSF	VALLEY	FORT LARAMIE	S LARAMIE AVE
089243B	BNSF	VALLEY	FORT LARAMIE	MERRIAM STREET
089251T	BNSF	VALLEY	FORT LARAMIE	WHALEN DAM RD
089268W	BNSF	CANYON	GLENDO	A STREET
089271E	BNSF	CANYON	GLENDO	COLLINS ROAD
089272L	BNSF	CANYON	GLENDO	ELKHORN CRK RD
089280D	BNSF	CANYON	DOUGLAS	BRIDGER CROSSING
089281K	BNSF	CASPER	DOUGLAS	IRVINE ROAD A-1
089291R	BNSF	CASPER	DOUGLAS	ROBIN LANE
089293E	BNSF	CASPER	DOUGLAS	CENTER ST
089301U	BNSF	CASPER	DOUGLAS	ORPHA - ROSS ROAD
089327W	BNSF	CASPER	GLENROCK	COLE CREEK RD
089329K	BNSF	CASPER	GLENROCK	COUNTY LANE RD
089331L	BNSF	CASPER	EVANSVILLE	COUNTY ROAD 703
089336V	BNSF	CASPER	CASPER	STATE HIGHWAY 256
089337C	BNSF	CASPER	CASPER	MYSTERY BRIDGE RD
089340K	BNSF	CASPER	CASPER	EVANS ST
089341S	BNSF	CASPER	CASPER	CURTIS AVE
089342Y	BNSF	CASPER	CASPER	WESTERN AVE
089345U	BNSF	CASPER	CASPER	BRYAN STOCK TRAIL
089364Y	BNSF	BLACK HILLS	UPTON	BUFFALO CREEK RD
089425M	BNSF	CANYON	GLENDO	5TH ST
090454U	BNSF	CASPER	SHOSHONI	TOUGH CREEK RD
090462L	BNSF	CASPER	THERMOPOLIS	SHOSHONE ST
090463T	BNSF	CASPER	THERMOPOLIS	AMORETTI ST
090465G	BNSF	CASPER	THERMOPOLIS	BROADWAY ST
090472S	BNSF	CASPER	THERMOPOLIS	SUNNYSIDE LN
090474F	BNSF	CASPER	THERMOPOLIS	WYO 172
090480J	BNSF	CASPER	KIRBY	MAIN STREET
090484L	BNSF	CASPER	WORLAND	FRIMMEL ROAD
090494S	BNSF	CASPER	WORLAND	SH WY 432
090664J	BNSF	CODY	FRANNIE	CR 3N
090667E	BNSF	CODY	FRANNIE	WY 114
090671U	BNSF	CODY	GARLAND	LANE 7A
090672B	BNSF	CODY	GARLAND	R4
090674P	BNSF	CODY	GARLAND	ROAD 5
090676D	BNSF	CODY	GARLAND	R6

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
090678S	BNSF	CODY	POWELL	HAMILTON ST
090680T	BNSF	CODY	POWELL	DAY ST
090681A	BNSF	CODY	POWELL	BENT ST
090682G	BNSF	CODY	POWELL	BENT ST
090683N	BNSF	CODY	POWELL	FAIR ST
090684V	BNSF	CODY	POWELL	FAIR ST
090686J	BNSF	CODY	POWELL	R10
090687R	BNSF	CODY	POWELL	R11
090688X	BNSF	CODY	RALSTON	COUNTY ROAD 12
090689E	BNSF	CODY	RALSTON	R13
090690Y	BNSF	CODY	RALSTON	US HIGHWAY 14A
090691F	BNSF	CODY	RALSTON	CLARK AVE
090692M	BNSF	CODY	RALSTON	COUNTY ROAD 12
090695H	BNSF	CODY	RALSTON	STATE HWY 294
090697W	BNSF	CODY	RALSTON	CO RD L14
090700C	BNSF	CODY	RALSTON	R19
090702R	BNSF	CODY	RALSTON	L16
090808L	BNSF	CASPER	POWDER RIVER	BACK ROAD
090814P	BNSF	CASPER	POWDER RIVER	BUCKNUM RD
090817K	BNSF	CASPER	CASPER	THIRTY-THREE MILE
090830Y	BNSF	CASPER	BASIN	NORTH ST
090831F	BNSF	CASPER	BASIN	B STREET
090832M	BNSF	CASPER	BASIN	WYOMING AVE
090833U	BNSF	CASPER	BASIN	BIGHORN AVE
090836P	BNSF	CASPER	BASIN	ROAD 28 1/2
090837W	BNSF	CASPER	BASIN	CO LN 46
090842T	BNSF	CASPER	MANDERSON	WYO 31/SHERMAN ST
090851S	BNSF	CASPER	MANDERSON	RAIRDEN LN
090858P	BNSF	CASPER	WORLAND	L 15
090864T	BNSF	CASPER	WORLAND	HOWELL STREET
090866G	BNSF	CASPER	WORLAND	CULBERTSON AVE
090867N	BNSF	CASPER	WORLAND	BIG HORN AVE
090884E	BNSF	CASPER	LYSITE	LYSITE/MONETA RD
090885L	BNSF	CASPER	LYSITE	CR 176
090896Y	BNSF	CASPER	ARMINTO	BUFFALO CREEK RD
091009K	BNSF	CASPER	LOVELL	LANE 22 1/2
091015N	BNSF	CASPER	GREYBULL	CO 26 1/2
091020K	BNSF	CASPER	GREYBULL	CEMETARY
091472V	BNSF	CASPER	WORLAND	DURKEE
091473C	BNSF	CASPER	WORLAND	LANE 6
091476X	BNSF	CASPER	FRANNIE	4TH STREET
091478L	BNSF	CASPER	FRANNIE	L5W
091482B	BNSF	CASPER	DEAVER	ST HWY 114
091483H	BNSF	CASPER	DEAVER	CENTRAL AVE

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
091485W	BNSF	CASPER	DEAVER	LANE 8A
091491A	BNSF	CASPER	COWLEY	ROAD 7A
091494V	BNSF	CASPER	LOVELL	ROAD 9A
091496J	BNSF	CASPER	LOVELL	RD 10
091498X	BNSF	CASPER	LOVELL	HAMPSHIRE AVE
091500W	BNSF	CASPER	LOVELL	SHOSHONE AVE
091503S	BNSF	CASPER	LOVELL	ROAD 12
091506M	BNSF	CASPER	LOVELL	ROAD 13
091508B	BNSF	CASPER	LOVELL	ST HWY 37
091517A	BNSF	CASPER	LOVELL	WYO 14A
091519N	BNSF	CASPER	LOVELL	COUNTY ROAD 20
094496U	BNSF	CODY	FRANNIE	CR 1WA
094497B	BNSF	CODY	POWELL	R8
094739U	BNSF	ORIN	BILL	BILL HALL
094754W	BNSF	ORIN	BILL	ROBINSON ROAD
094840T	BNSF	BLACK HILLS	GILLETTE	LINCOLN
094841A	BNSF	BLACK HILLS	GILLETTE	BUTLERS SPAETH
094881X	BNSF	CASPER	EVANSVILLE	STRAND XING
094931Y	BNSF	CASPER	DOUGLAS	RICHARDS ST
094998F	BNSF	ORIN	WRIGHT	REFINNING RD
095034G	BNSF	ORIN	WRIGHT	ANTELOP ROAD
095092C	BNSF	ORIN	WRIGHT	KEELINE ROAD
095097L	BNSF	BLACK HILLS	GILLETTE	FOOTHILLS BLVD
095103M	BNSF	GUERNSEY YD WY	GUERNSEY	QUARRY ROAD
095107P	BNSF	CASPER	CASPER	HEREFORD LN
095112L	BNSF	CODY	CODY	2AB
098758M	BNSF	BIG HORN	ARVADA	WILD HORSE
098760N	BNSF	BIG HORN	ARVADA	ARVADA-GILLETTE
098763J	BNSF	BIG HORN	ARVADA	ARVADA ROAD
098766E	BNSF	BIG HORN	CLEARMONT	ARVADA-DAVIS RD
098768T	BNSF	BIG HORN	CLEARMONT	LEITER ROAD
098798K	BNSF	DUTCH	SHERIDAN	WYO 336
098799S	BNSF	DUTCH	SHERIDAN	STATE HWY 336
098817M	BNSF	DUTCH	SHERIDAN	TAYLOR ROAD
098818U	BNSF	DUTCH	SHERIDAN	COUNTANT CREEK RD
098824X	BNSF	DUTCH	ACME	LOWER PRAIRE DOG
098836S	BNSF	BIG HORN	GILLETTE	MCKENZIE ROAD
098837Y	BNSF	BIG HORN	GILLETTE	PEACEFUL VALLEY
098839M	BNSF	BIG HORN	GILLETTE	ORIVA HILLS
098841N	BNSF	BIG HORN	GILLETTE	ECHETA RD
098844J	BNSF	BIG HORN	GILLETTE	ECHITA RD
098854P	BNSF	BIG HORN	SHERIDAN	WAKLEY ROAD
098856D	BNSF	BIG HORN	SHERIDAN	COUNTY ROAD
098858S	BNSF	BIG HORN	SHERIDAN	WILDCAT ROAD

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
098863N	BNSF	BIG HORN	SHERIDAN	DUTCH CREEK ROAD
098871F	BNSF	BIG HORN	SHERIDAN	COUNTY ROAD 68
098878D	BNSF	BIG HORN	CLEARMONT	COAL CREEK ROAD
098896B	BNSF	BIG HORN	CLEARMONT	ULM ROAD
098898P	BNSF	BIG HORN	CLEARMONT	MEADE AVE
099010G	BNSF	CODY	RALSTON	L17
099011N	BNSF	CODY	CODY	CR L18
099012V	BNSF	CODY	CODY	L19
099013C	BNSF	CODY	CODY	L20
099022B	BNSF	CODY	CODY	STATE HWY 253
099130X	BNSF	CASPER	THERMOPOLIS	AMORETTI STREET
099131E	BNSF	CASPER	WORLAND	WASHAKIE AVE
099132L	BNSF	CASPER	WORLAND	ROAD L2
099140D	BNSF	CODY	GARLAND	R4
103877K	BNSF	BIG HORN	SHERIDAN	SALE BARN
104137J	BNSF	BIG HORN	SHERIDAN	HWY 339/DECKER R
104141Y	BNSF	BIG HORN	PARKMAN	STATE HWY 343
104150X	BNSF	BIG HORN	RANCHESTER	COUNTY ROAD
104159J	BNSF	BIG HORN	RANCHESTER	KOOI ROAD
104162S	BNSF	BIG HORN	RANCHESTER	COUNTY ROAD
104164F	BNSF	BIG HORN	RANCHESTER	MONARCH ROAD
104166U	BNSF	BIG HORN	RANCHESTER	KLEENBURN ROAD
104171R	BNSF	BIG HORN	SHERIDAN	5TH ST/WYO 336
104173E	BNSF	BIG HORN	SHERIDAN	1ST STREET
188623F	UP	POWDER RIVER	LUSK	NODE ROAD/CR 80
188627H	UP	POWDER RIVER	LUSK	AIRPORT ROAD
188628P	UP	POWDER RIVER	LUSK	GUN CLUB ROAD
188630R	UP	POWDER RIVER	LUSK	3rd Avenue
188632E	UP	POWDER RIVER	LUSK	West Griffith Avenue
188641D	UP	POWDER RIVER	MANVILLE	5th Street/WY 270
188642K	UP	POWDER RIVER	MANVILLE	NELSON ROAD/CR 52
188646M	UP	POWDER RIVER	KEELINE	NORTH JIREH ROAD
188648B	UP	POWDER RIVER	KEELINE	JOSS ROAD/CR 19
188649H	UP	POWDER RIVER	KEELINE	DIVIDE ROAD/WEST KEELINE
188650C	UP	POWDER RIVER	KEELINE	NORTH MAHNKE ROAD/CR 37
188655L	UP	POWDER RIVER	LOST SPRINGS	MAIN STREET
188660H	UP	POWDER RIVER	SHAWNEE	FLAT TOP ROAD/CR 49
188783U	BDW	#N\A	SHOSHONI	US-20 26
188784B	BDW	#N\A	SHOSHONI	FIRST STREET
188785H	BDW	#N\A	SHOSHONI	MUSKRAT ROAD
188786P	BDW	#N\A	SHOSHONI	MAPLE STREET
245470L	BNSF	FRONT RANGE	CHUGWATER	CLAY AVE
245478R	BNSF	FRONT RANGE	SLATER	STATE HWY 314
245483M	BNSF	FRONT RANGE	SLATER	BORDEAUX RD

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
245488W	BNSF	FRONT RANGE	WHEATLAND	COZAD RD
245489D	BNSF	FRONT RANGE	WHEATLAND	COLE RD
245492L	BNSF	FRONT RANGE	WHEATLAND	GILCHRIST ST
245494A	BNSF	FRONT RANGE	WHEATLAND	OAK ST
245496N	BNSF	FRONT RANGE	WHEATLAND	NORTH RD
245497V	BNSF	FRONT RANGE	WHEATLAND	FAIRVIEW RD
245498C	BNSF	FRONT RANGE	WHEATLAND	GRAYROCK RD
245501H	BNSF	FRONT RANGE	WHEATLAND	E LARAMIE RIVER
245503W	BNSF	FRONT RANGE	WHEATLAND	COUNTY ROAD
245506S	BNSF	FRONT RANGE	WHEATLAND	N DWYER RD
245508F	BNSF	FRONT RANGE	WHEATLAND	DWYER ROAD
245515R	BNSF	FRONT RANGE	CHEYENNE	ROUND TOP ROAD
245516X	BNSF	FRONT RANGE	CHEYENNE	SHELLBACK RD
245525W	BNSF	FRONT RANGE	CHEYENNE	CR 109
245526D	BNSF	FRONT RANGE	CHEYENNE	FEDERAL RD
245528S	BNSF	FRONT RANGE	CHEYENNE	WY 211
245533N	BNSF	FRONT RANGE	HORSE CREEK	FISHER CANYON
245534V	BNSF	FRONT RANGE	HORSE CREEK	QUARRY RD
245549K	BNSF	FRONT RANGE	HORSE CREEK	ROAD 103-1
245569W	BNSF	FRONT RANGE	HORSE CREEK	ROAD 106-2
245570R	BNSF	FRONT RANGE	WHEATLAND	COTTONWOOD RD
245572E	BNSF	FRONT RANGE	WHEATLAND	WENDOVER RD
245609S	BNSF	FRONT RANGE	CHUGWATER	COUNTY LINE ROAD
245617J	BNSF	FRONT RANGE	CHEYENNE	COLLEGE DR
245662D	BNSF	FRONT RANGE	HORSE CREEK	JORDAN RANCH RD
245684D	BNSF	FRONT RANGE	CHEYENNE	24TH STREET
245687Y	BNSF	FRONT RANGE	CHEYENNE	DILLION ST
245688F	BNSF	FRONT RANGE	CHEYENNE	24TH STREET
245689M	BNSF	FRONT RANGE	CHEYENNE	23RD STREET
245690G	BNSF	FRONT RANGE	CHEYENNE	22ND STREET
245691N	BNSF	FRONT RANGE	CHEYENNE	21ST STREET
245692V	BNSF	FRONT RANGE	CHEYENNE	20TH STREET
245693C	BNSF	FRONT RANGE	CHEYENNE	19TH STREET
245694J	BNSF	FRONT RANGE	CHEYENNE	18TH STREET
245695R	BNSF	FRONT RANGE	CHEYENNE	17TH STREET
245696X	BNSF	FRONT RANGE	CHEYENNE	LINCOLN WAY
440749E	UP	Solvay Ind Ld	GREEN RIVER	CR 95
441002F	UP	South Pass Ind Ld	ROCK SPRINGS	Industrial Drive
748276J	UP	SIDNEY	PINE BLUFFS	North Main Street
807225M	UP	POCATELLO	OPAL	SOUTH FRONT STREET
807231R	UP	POCATELLO	KEMMERER	WATERFALL ROAD
807292G	UP	POCATELLO	COKEVILLE	EAST MAIN STREET
810213W	UP	LARAMIE	LARAMIE	Two Rivers Road
810217Y	UP	LARAMIE	BOSLER	Howell Road/CR 51

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
810259K	UP	LARAMIE	LARAMIE	MONUMENT ROAD/CR 234
810289C	UP	SIDNEY	CHEYENNE	Campstool Road
810292K	UP	LARAMIE	SINCLAIR	Wyoming Highway 76
810316W	UP	South Pass Ind Ld	ROCK SPRINGS	Springs Drive
810318K	UP	Sweetwater #1 Spur	ROCK SPRINGS	Blairtown Connector Road
810321T	UP	South Pass Ind Ld	ROCK SPRINGS	Grant Street
810323G	UP	EVANSTON SUB	EVANSTON	County Road 111
810353Y	UP	South Pass Ind Ld	ROCK SPRINGS	Bellview Drive
810355M	UP	South Pass Ind Ld	ROCK SPRINGS	Yellowstone Road
810356U	UP	South Pass Ind Ld	ROCK SPRINGS	US 191
810360J	UP	South Pass Ind Ld	ROCK SPRINGS	North Center Street/US 30
810373K	UNK	Stauffer Ind Ld	GREEN RIVER	WY 372
810376F	UP	Jim Bridger Ind Ld	ROCK SPRINGS	CR
810402T	UNK	Stauffer Ind Ld	GREEN RIVER	CR 6
810427N	UP	LARAMIE	LARAMIE	Howe Road/County Road 218
810434Y	UP	LARAMIE	LARAMIE	Sand Creek Road
810436M	UP	LARAMIE	MEDICINE BOW	County Road 115
810437U	UP	LARAMIE	MEDICINE BOW	Medicine Bow McFadden Road
810442R	UP	LARAMIE	CHEYENNE	Harriman Road
810451P	UP	LARAMIE	LARAMIE	Hermosa Road/CR 222
810468T	UP	RAWLINS	RAWLINS	CR 605-FERRIS ROAD
810478Y	UP	EVANSTON	CARTER	WY-412
810480A	UP	EVANSTON	GRANGER	1st Street
810485J	UP	RAWLINS	TABLE ROCK	TABLE ROCK ROAD/CR 55
810490F	UP	RAWLINS	ROCK SPRINGS	BITTER CREEK ROAD/CR 19
810493B	UP	EVANSTON	GRANGER	CR 223
810504L	UP	RAWLINS	ROCK SPRINGS	SALT WELLS ROAD/CR 48
810508N	UP	RAWLINS	TABLE ROCK	TABLE ROCK ROAD/CR 55
810509V	UP	RAWLINS	POINT OF ROCKS	BLACK BUTTES ROAD
810596B	UP	SIDNEY	CHEYENNE	East 15th Street
810600N	UP	LARAMIE	CHEYENNE	Southwest Drive
810602C	UP	LARAMIE	CHEYENNE	CR
810803T	UP	Texas Gulf Soda Ind Ld	GRANGER	CR 11/Texas Gulf Road
810805G	UNK	Stauffer Ind Ld	GREEN RIVER	CR 7
810812S	UP	RELIANCE SPUR	ROCK SPRINGS	RELIANCE ROAD
813424D	UP	Elkol Ind Ld	KEMMERER	CR 304 ELKOL
816025C	UP	YODER	LAGRANGE	ROAD 14
816026J	UP	YODER	LAGRANGE	1ST AVENUE
816027R	UP	YODER	LAGRANGE	5TH AVENUE
816028X	UP	YODER	LAGRANGE	WY 151
816032M	UP	YODER	LAGRANGE	ROAD 55
816034B	UP	YODER	LAGRANGE	ROAD 6
816053F	UP	YODER	ALBIN	COUNTY ROAD 230
816056B	UP	YODER	ALBIN	CHEYENNE AVENUE/WY 216

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
816060R	UP	YODER	ALBIN	COUNTY ROAD 227
816067N	UP	YODER	ALBIN	COUNTY ROAD 223
816068V	UP	YODER	ALBIN	LINDBERGH ROAD/CR 222
816071D	UP	YODER	ALBIN	COUNTY ROAD 221
816074Y	UP	YODER	ALBIN	CR 220
816179M	UP	YODER	ALBIN	CR 161
816189T	UP	YODER	ALBIN	COUNTY ROAD 156
816192B	UP	YODER	ALBIN	COUNTY ROAD 212
816316S	UP	YODER	HUNTLEY	CR 61
816318F	UP	YODER	HUNTLEY	COUNTY ROAD 59
816320G	UP	YODER	HUNTLEY	ROAD 154/COUNTY ROAD 52
816322V	UP	YODER	HUNTLEY	ROAD 55/COUNTY ROAD 173
816323C	UP	YODER	HUNTLEY	WY 92
816324J	UP	YODER	HUNTLEY	ROAD 51/CR 163
816326X	UP	YODER	HUNTLEY	ROAD 49
816328L	UP	YODER	HUNTLEY	ROAD 47
816330M	UP	YODER	YODER	ROAD 45
816331U	UP	YODER	YODER	ROAD 43 NORTH
816334P	UP	YODER	YODER	US 85
816338S	UP	YODER	YODER	LACY STREET
816339Y	UP	YODER	YODER	ROAD 37
816341A	UP	South Torrington Ind Ld	YODER	WY 154
816342G	UP	South Torrington Ind Ld	YODER	CR 35
816343N	UP	South Torrington Ind Ld	YODER	WY 154
816348X	UP	South Torrington Ind Ld	VETERAN	CR 54
816350Y	UP	South Torrington Ind Ld	VETERAN	CR 56
816351F	UP	South Torrington Ind Ld	VETERAN	3RD STREET
816353U	UP	South Torrington Ind Ld	VETERAN	CR 58
816355H	UP	South Torrington Ind Ld	VETERAN	CR 31
816356P	UP	South Torrington Ind Ld	VETERAN	CR 60
816358D	UP	South Torrington Ind Ld	VETERAN	CR 33
816359K	UP	South Torrington Ind Ld	VETERAN	CR 62
816363A	UP	South Torrington Ind Ld	VETERAN	CR 35
816366V	UP	South Torrington Ind Ld	VETERAN	CR 37
816371S	UP	South Torrington Ind Ld	TORRINGTON	WY 154
816372Y	UP	South Torrington Ind Ld	TORRINGTON	CR 39
816374M	UP	South Torrington Ind Ld	TORRINGTON	CR 41
816432F	UP	South Torrington Ind Ld	TORRINGTON	CR 45
816435B	UP	South Torrington Ind Ld	TORRINGTON	CR 66
816436H	UP	South Torrington Ind Ld	TORRINGTON	CR 47
816439D	UP	South Torrington Ind Ld	TORRINGTON	US 85
816440X	UP	South Torrington Ind Ld	TORRINGTON	3RD STREET
816445G	UP	YODER	YODER	WY 154
816446N	UP	YODER	YODER	WY 152

Wyoming Highway-Rail Grade Crossing State Action Plan

Crossing DOT #	Railroad	Railroad Subdivision	Nearest City	Street Name
816450D	UP	YODER	YODER	WY 153
816452S	UP	YODER	HAWK SPRINGS	ROAD 37/COUNTY ROAD 133
816455M	UP	YODER	HAWK SPRINGS	ROAD 40
816457B	UP	YODER	HAWK SPRINGS	ROAD 38 WEST
816459P	UP	YODER	HAWK SPRINGS	ROAD 34 WEST
816466A	UP	YODER	HAWK SPRINGS	US 85
816468N	UP	YODER	HAWK SPRINGS	ROAD 30
816469V	UP	YODER	HAWK SPRINGS	ROAD 28
816473K	UP	YODER	LAGRANGE	ROAD 22
816476F	UP	YODER	LAGRANGE	ROAD 18
817675L	UP	SIDNEY	PINE BLUFFS	North Main Street
817676T	UP	SIDNEY	PINE BLUFFS	County Road 212
817677A	UP	SIDNEY	PINE BLUFFS	County Road 159
817679N	UP	SIDNEY	PINE BLUFFS	CR 154
817681P	UP	SIDNEY	HILLSDALE	County Road 143
817686Y	UP	SIDNEY	HILLSDALE	County Road 136
817688M	UP	SIDNEY	HILLSDALE	County Road 142
848253D	UNK	EXXON IND LD	OPAL	Shute Creek Gas Plant
906025B	UP	Cumberland Ind Ld	KEMMERER	CR 325
906041K	UP	SIDNEY	CHEYENNE	Dunn Avenue
906069B	UP	South Pass Ind Ld	ROCK SPRINGS	Stagecoach Boulevard
906269K	UP	South Pass Ind Ld	ROCK SPRINGS	Industrial Drive
906270E	UP	South Pass Ind Ld	ROCK SPRINGS	WINTON ROAD/CR 66
906274G	UP	South Torrington Ind Ld	TORRINGTON	3RD STREET
909719P	UP	POWDER RIVER	LUSK	ROAD 6
909752P	UP	POWDER RIVER	TORRINGTON	CR 47
909764J	UP	POWDER RIVER	TORRINGTON	ROAD 94
909942T	UP	POWDER RIVER	LUSK	THIRD AVENUE
919164J	BNSF	BLACK HILLS	UPTON	THORNTON ROAD
922139E	UP	POCATELLO	OPAL	South Front Street
922352C	UP	South Pass Ind Ld	ROCK SPRINGS	Killpecker Drive
922353J	UP	South Pass Ind Ld	ROCK SPRINGS	KILLPECKER DRIVE
924339V	UNK	LARAMIE	SINCLAIR	WY 76
924582K	BNSF	CASPER	WORLAND	INDUSTRIAL ROAD
927512F	BNSF	BLACK HILLS	MOORCROFT	YELLOWSTONE AVE
927513M	BNSF	BLACK HILLS	UPTON	BUFFALO CREEK RD
943996M	WSC	EASTERN	TORRINGTON	WYO 156
945803T	SRRR	Cheyenne Logistics Hub	CHEYENNE	Trumpeter Dr
945804A	SRRR	Cheyenne Logistics Hub	CHEYENNE	Tundra Dr
967221A	BNSF	CASPER	DOUGLAS	IRVINE ROAD
967223N	BNSF	CASPER	DOUGLAS	IRVINE ROAD
967668N	SRRR	Cheyenne Logistics Hub	CHEYENNE	Berwick Dr
972574X	UP	South Pass Ind Ld	ROCK SPRINGS	Winton Road