Safe Streets for All

Executive Summary
August 2024

SAFETY ACTION PLAN

Box Elder
Innovative Community - Opportunities for All

KLJ

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ES1 - Introduction

In November 2021, the Infrastructure Investment and Jobs Act (IIJA) was signed into law, introducing a range of programs, one of which is the Safe Streets and Roads for All (SS4A) discretionary grant program. This program has been allocated $5 billion dollars in funding over the next five years, spanning through fiscal year 2026. Its primary objective is to support various initiatives aimed at reducing roadway fatalities and severe injuries.

SS4A offers two types of grants: Planning and Demonstration Grants, and Implementation Grants. Planning and Demonstration Grants are intended for creating or updating comprehensive safety action plans and facilitating planning, design, and development activities to support them. On the other hand, Implementation Grants require local jurisdictions to have a safety action plan in place to be eligible for funding. These grants can then be utilized to execute projects and strategies outlined in the safety action plan, encompassing improvements in infrastructure, behavior, and operational safety.

To apply for future Implementation Grants through the SS4A program, the City of Box Elder must adhere to the requirements outlined in the Notice of Funding Opportunities (NOFO) released by the Federal Highway Administration (FHWA) on March 31, 2023. Specifically, the city needs to certify that it possesses an existing plan substantially similar to an Action Plan. The City of Box Elder's Safety Action Plan has been designed to align with the SS4A program's criteria, ensuring eligibility for future funding to implement the plan's recommendations.

BOX ELDER SAFETY ACTION PLAN

The City of Box Elder initiated the development of this Safety Action Plan in response to the announcement of the SS4A program by the United States Department of Transportation (USDOT).

SAFE SYSTEM APPROACH

The Safe System Approach (Figure 1), often referred to simply as the Safe System, is a comprehensive approach to road safety that focuses on designing and managing road systems in a way that reduces the risk of serious crashes and minimizes the severity of injuries when crashes do occur. It is closely related to the SS4A program (Safe Streets for All), as both share a common goal of improving road safety. Figures 1 above and Figure 2 below provide further detail of the *Safe System Approach*.

FIGURE 1 – SAFE SYSTEM APPROACH

Human Vulnerability:

- Recognizing that people are vulnerable to injury in crashes and designing roads and transportation systems to protect all road users, regardless of fault.

Safe Speeds:

- Setting and enforcing speed limits appropriate for road conditions to reduce crash severity.

Safe Vehicles:

- Encouraging the use of safe vehicles equipped with advanced safety features and technologies.

Safe Roads:

- Designing and maintaining roads and infrastructure to minimize crash risk and severity, including measures such as improved signage, better lighting, and effective road markings.

Safe Road Users:

- Promoting safe behaviors among all road users, including drivers, pedestrians, cyclists, and motorcyclists, through education and awareness campaigns.

Post-Crash Care:

- Ensuring that post-crash care and medical services are readily available and efficient to minimize the consequences of crashes.

Safe Mobility for All:

- Prioritizing safe mobility for everyone, with a particular emphasis on vulnerable road users like pedestrians and cyclists.

Key principles of the ***Safe System Approach,*** *shown below in* ***Figure 2,*** include the following:

FIGURE 2 – KEY PRINCIPLES OF THE SAFE SYSTEM APPROACH

	TRADITIONAL APPROACH	SAFE SYSTEM APPROACH
Inherent problem or target?	Crashes	Fatalities and serious injuries
Causes of the problem?	Human behavior	Larger system of factors leading to the context and conditions in which the injury or fatality occurred
Who is responsible?	Individual road users	Agencies and organizations that create the system (e.g., policymakers, planners, engineers)
Underlying intervention approach?	Incremental, reactive treatment where crashes have occurred	Proactive, systemic approach to create a safe road network and system
What is the safety goal?	An optimal reduction in fatalities and serious injuries based on previous trends	Zero fatalities and serious injuries is the only morally acceptable target

*Adapted from a figure created by the Towards Zero Foundation (http://www.towardszerofoundation.org/thesafesystem/)

SAFETY ACTION PLAN PROCESS – BOX ELDER PLAN DEVELOPMENT

The following outlines the key steps undertaken as part of the Safety Action Plan for the City of Box Elder.

1. **Data Review**
   - ≈ Scrutinize crash data to gain insights into overarching patterns and identify critical areas of concern.
   - ≈ Pinpoint locations with a high incidence of injuries and accidents involving pedestrians and bicyclists.
2. **Safety Analysis**
   - ≈ Employ a tiered approach that factors in crash rates, crashes per mile, and places special emphasis on underserved communities and schools.

3. **Public Engagement**
   - ≈ Engage with local stakeholders to grasp the qualitative impact of safety issues.
   - ≈ Validate and augment the existing list of high-crash locations with anecdotal evidence of high-risk areas.
   - ≈ Launch a public survey to gauge public perceptions on safety, highlight specific areas of concern, and solicit recommendations from residents.
   - ≈ Conduct public outreach and awareness campaign within the community to share project objectives, present data analysis, and gather feedback on safety perceptions and areas of concern.
4. **Final Stakeholder Engagement**
   - ≈ Reconnect with stakeholders to present the findings from the safety analysis and obtain preliminary feedback derived from the survey.
5. **Recommendations**
   - ≈ Formulate a comprehensive Safety Action Plan that delineates short- and long-term project recommendations and strategies aimed at diminishing the occurrence of fatal and injury-causing accidents throughout the City.

Vision and Goals

To guide the Safety Action Plan, the project team considered it imperative to thoroughly understand the overarching objectives, goals, and general purposes of previously approved plans and studies. Furthermore, they undertook a detailed examination of Box Elder's existing policies in relation to transportation safety. The team conducted an extensive review of plans at different levels, encompassing the County, regional, and statewide domains, to gain a comprehensive understanding of their individual contributions to Box Elder's safety policy and their roles in shaping the City's transportation policy.

FIGURE 3 – SS4A PLAN GOALS

Ensuring Safety as a Top Priority:	Placing paramount importance on safety in all our transportation endeavors to protect our residents and visitors.
Balanced and Efficient Transportation:	Striving to develop a transportation system that is not only balanced but also highly efficient, accommodating the projected growth in areas slated for expansion and development. This entails providing safe mobility options for everyone.
Accessible Land Use:	Guaranteeing adequate accessibility to all planned land uses, with an unwavering focus on safety for pedestrians, cyclists, and motorists.
Preserving Neighborhood Livability:	Preserving and enhancing the quality of life in our neighborhoods by facilitating the safe and efficient movement of people and goods, ensuring that traffic doesn't compromise safety and livability.
Traffic Management:	Minimizing the impact of commercial and industrial traffic within neighborhoods by maximizing the use of roadways situated outside established residential zones, thus enhancing safety for residents.
Environmental Responsibility:	Guiding the development and utilization of the City's street system to control air pollution, traffic congestion, and associated livability concerns, prioritizing the safety and health of our community.
Infrastructure Maintenance:	Committing to maintaining our infrastructure in optimal condition, with an emphasis on safety-related maintenance and improvements.
Transit Connectivity:	Establishing seamless connections with regionally established transit systems to serve Box Elder residents, with a particular focus on providing safe and convenient transportation options.

ES2 – Equity Considerations and Demographics

The Safety Action Plan process aligns with the Justice40 initiative which helps to ensure that disadvantaged communities which have been traditionally marginalized, underserved, and overburdened by pollution and transportation barriers, receive at least 40% of the benefits from Federal investments Our Safety Action Plan focus on:

- **Historically Disadvantaged Communities**
- **Areas of Persistent Poverty**
- **Transportation Insecurity/Travel Barriers**

Figure 4 on page 7 shows the two census tracts in the Box Elder study area where social justice and equity concerns are documented.

In particular, according to the 2020 Census, census tract 115 (which is synonymous with CEJST tract #4610301150) is a *low-income opportunity zone* consisting of approximately 2.6 square miles and a population of approximately 630 residents. This is a target area for immediate attention for economic and community development and may have unique transportation needs. According to CEJST, this tract is identified as disadvantaged based on the following qualifiers:

- Low income
- Housing Cost
- Proximity to Superfund Sites
- High School Education
- Regarding the category for *Transportation Barriers*, while not ranked above the 90th percentile, Census Tract 115 currently ranks at the 81st percentile, indicating that some of the population (likely the low-income population) in Census Tract 115 are currently underserved.

DEMOGRAPHICS

A full demographic review of the City of Box Elder was conducted as part of the SS4A study. Details of the review are provided in the full report.

BASELINE INFORMATION

Land development patterns and areas of growth within Box Elder's city limits were documented as part of the SS4A study. Figure 5 on page 8 shows new developments within Box Elder. Increasing housing demand goes hand in hand with commercial and industrial development. Growth is particularly evident in the vicinity of the western boundary of the Box Elder city limits / eastern boundary of the Rapid City municipal limits. Additionally, Figure 6 on page 9 shows Box Elder Schools, Parks and Proposed Sidewalks and Trails. Full baseline conditions analysis is available in the full SS4A report.

FIGURE 4 – PROJECT AREA CENSUS TRACTS

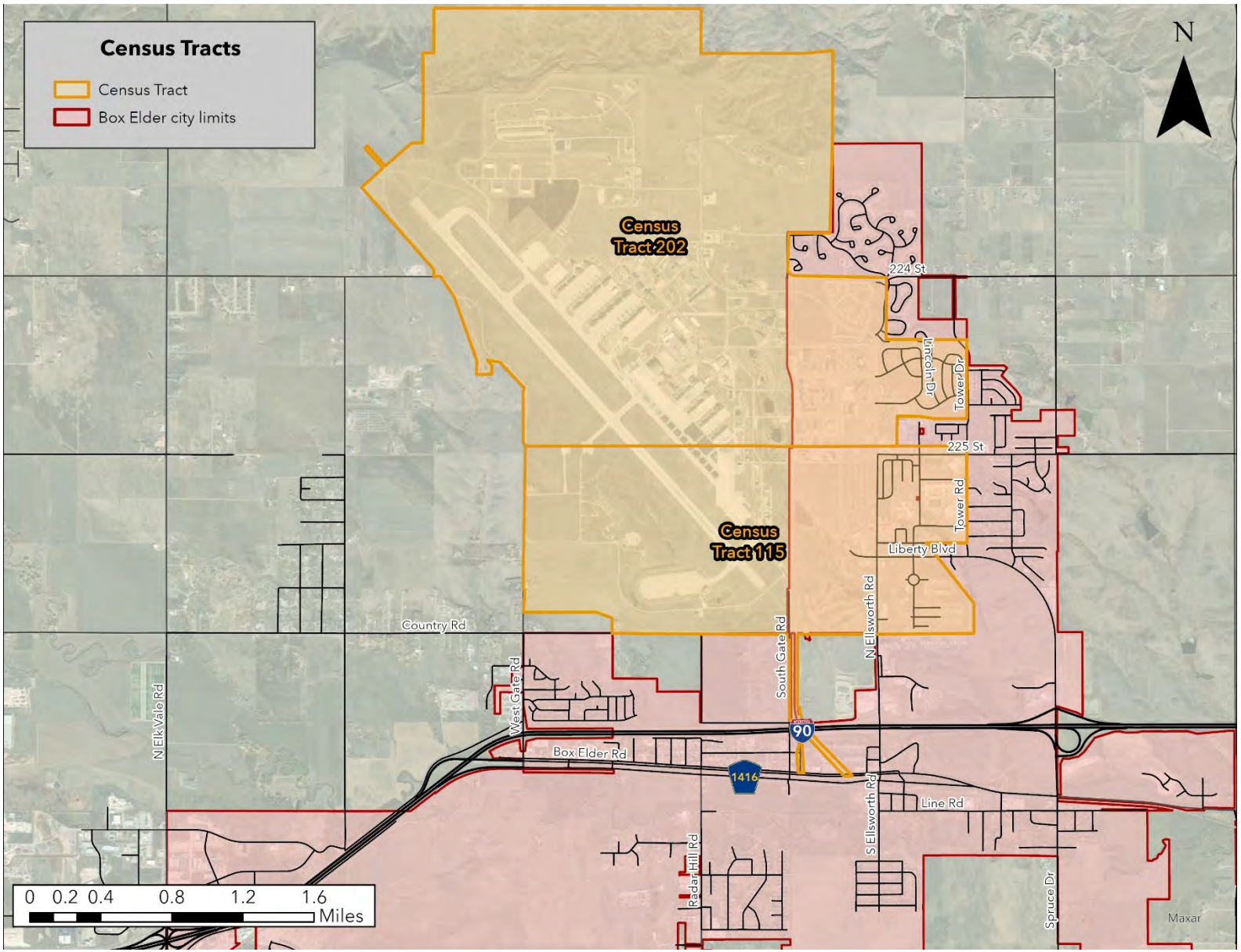


FIGURE 5 – BOX ELDER AREAS OF DEVELOPMENT AND CONSTRUCTION

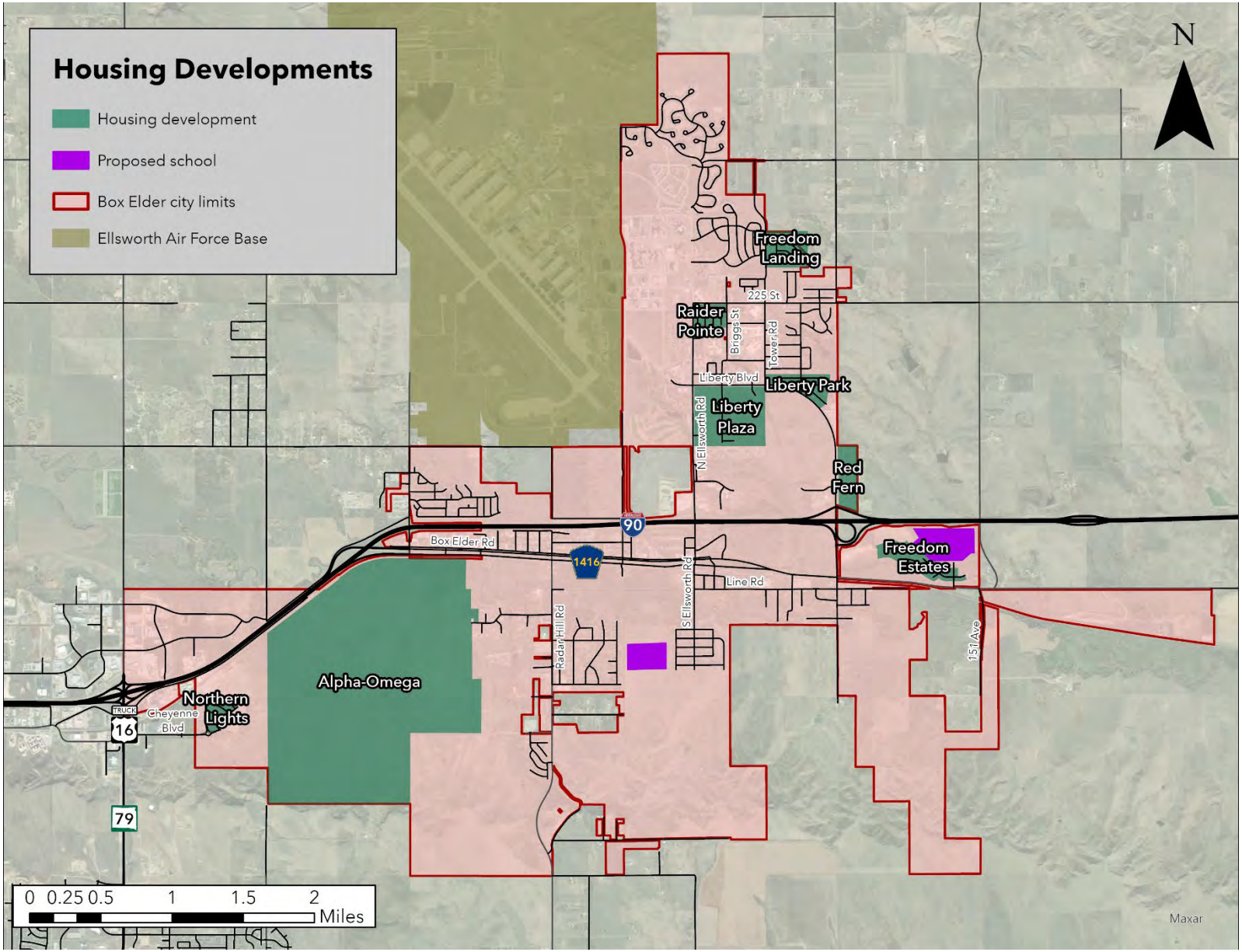
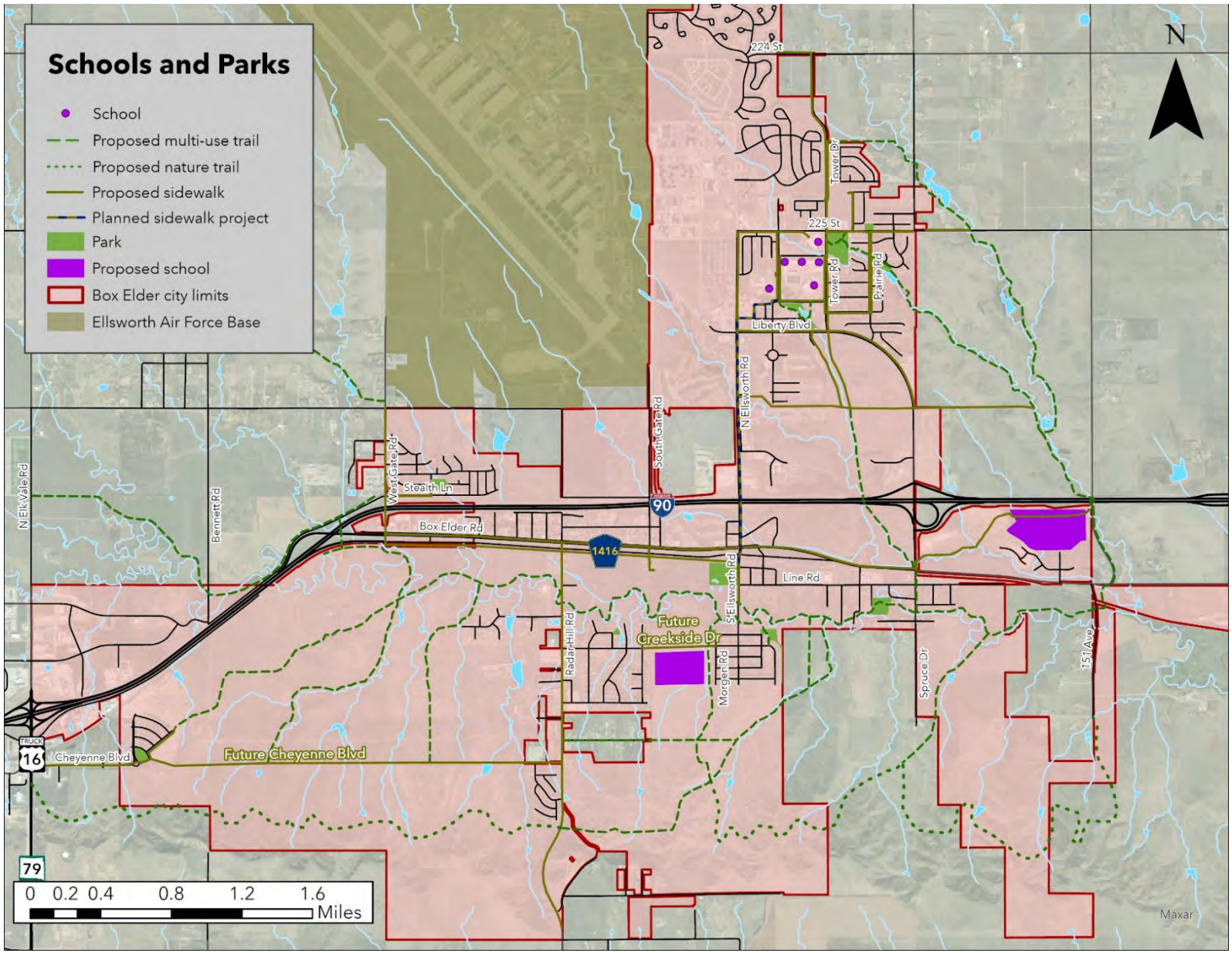


FIGURE 6 – BOX ELDER SCHOOLS, PARKS AND PROPOSED SIDEWALKS AND TRAILS



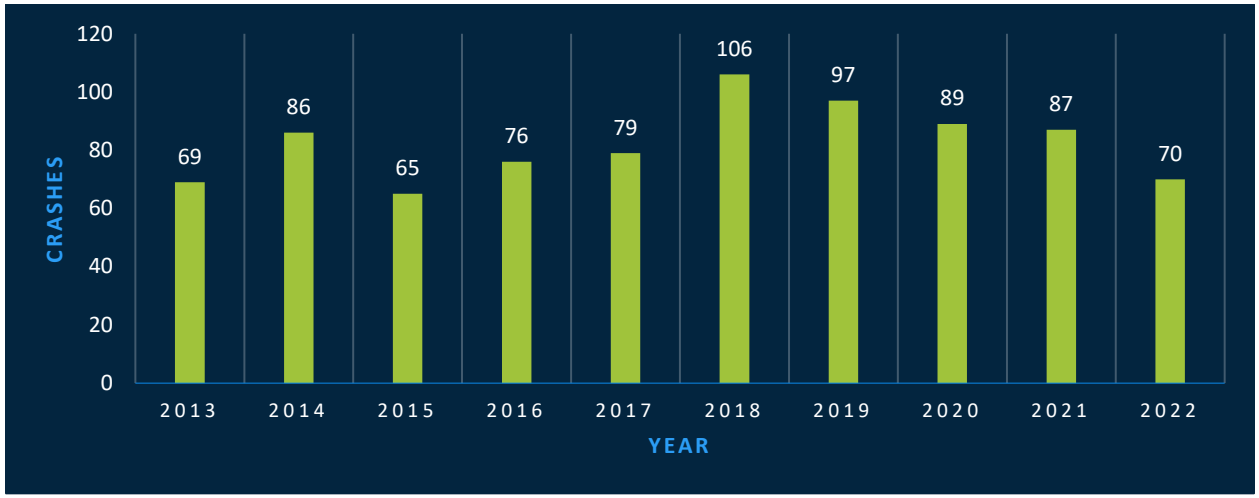
ES3- Safety Analysis

An examination of transportation safety constitutes an essential component of the transportation planning process. Improving transportation safety necessitates more than just repairing roads or increasing police patrols. To achieve optimal effectiveness, safety enhancements must encompass the "four Es" of transportation safety: Education, Enforcement, Engineering, and Emergency Services. The ultimate objective of safety analysis is to enhance the safety of all users of the transportation system and work toward accomplishing the mission of the South Dakota Strategic Highway Safety Plan (SHSP): saving lives and reducing severe injuries.

HISTORICAL CRASH ANALYSIS

The management of crash records in South Dakota is overseen by the South Dakota Department of Public Safety (SDDPS). Various law enforcement agencies throughout the state are responsible for reporting crashes to the SDDPS. A dataset spanning ten years, from January 1, 2013, through December 31, 2022, was requested from the SDDPS to support the analysis of traffic crash trends within the study area. Over this ten-year analysis period, Box Elder experienced 824 reported crashes, with 285 of those occurring on its municipal roads. The ten-year crash summary by year is presented in **Figure 7**.

FIGURE 7 - TEN YEAR CRASH SUMMARY (JAN 2013 – DEC 2022)



The data shows mostly fluctuations in the number of crashes over the years. For example, there is a noticeable increase from 2014 to 2018, where the number of crashes goes from 86 to 106. The year 2018 stands out with the highest number of crashes, reaching 106. Despite the fluctuations, the data shows crashes have been generally decreasing since 2018. The figures in the most recent years (2020, 2021, and 2022) seem to be within a relatively consistent range for total number of crashes per year.

The high-level crash trends from the ten-year analysis period are discussed below, with more detailed information provided later in the section.

- ≈ There were 824 crashes reported, which corresponds to 82.4 crashes per year.
- ≈ There were 7 fatal crash incidents.
- ≈ There were 32 Incapacitating crash incidents.
- ≈ There were 7 and 2 crash incidents involving pedestrians and bicyclists, respectively.
- ≈ There were 419 crashes that occurred at intersections.
- ≈ There were 62 crashes involving collisions with wild animals.
- ≈ There were 74 crashes involving a motorist under the influence of alcohol.
- ≈ October (12%), December (11%), and February (10%) represents the months with the highest number of crashes.

Fatal and Incapacitating Crashes

The location of all the fatal and incapacitating injury crashes within the study area is shown in **Figure 8** on the next page. Most of the crashes resulting in fatality or incapacitating injury were along I-90 and Highway 1416.

Crashes Involving Non-Motorists

From 2013 to 2022, there were two crashes (.24%) involving bicyclists and eight crashes (.98%) involving pedestrians. The majority of these crash types were on principle roadways or associated intersections of principle roadways. Of the total 92,664 crashes statewide during the same period, 545 (.59%) involved pedestrians and 344 (.37%) involved bicyclists. Refer to Figure 9 on page 13 which shows the locations of bicycle and pedestrian related crashes.

FIGURE 8 – FATAL AND INCAPACITATING CRASHES

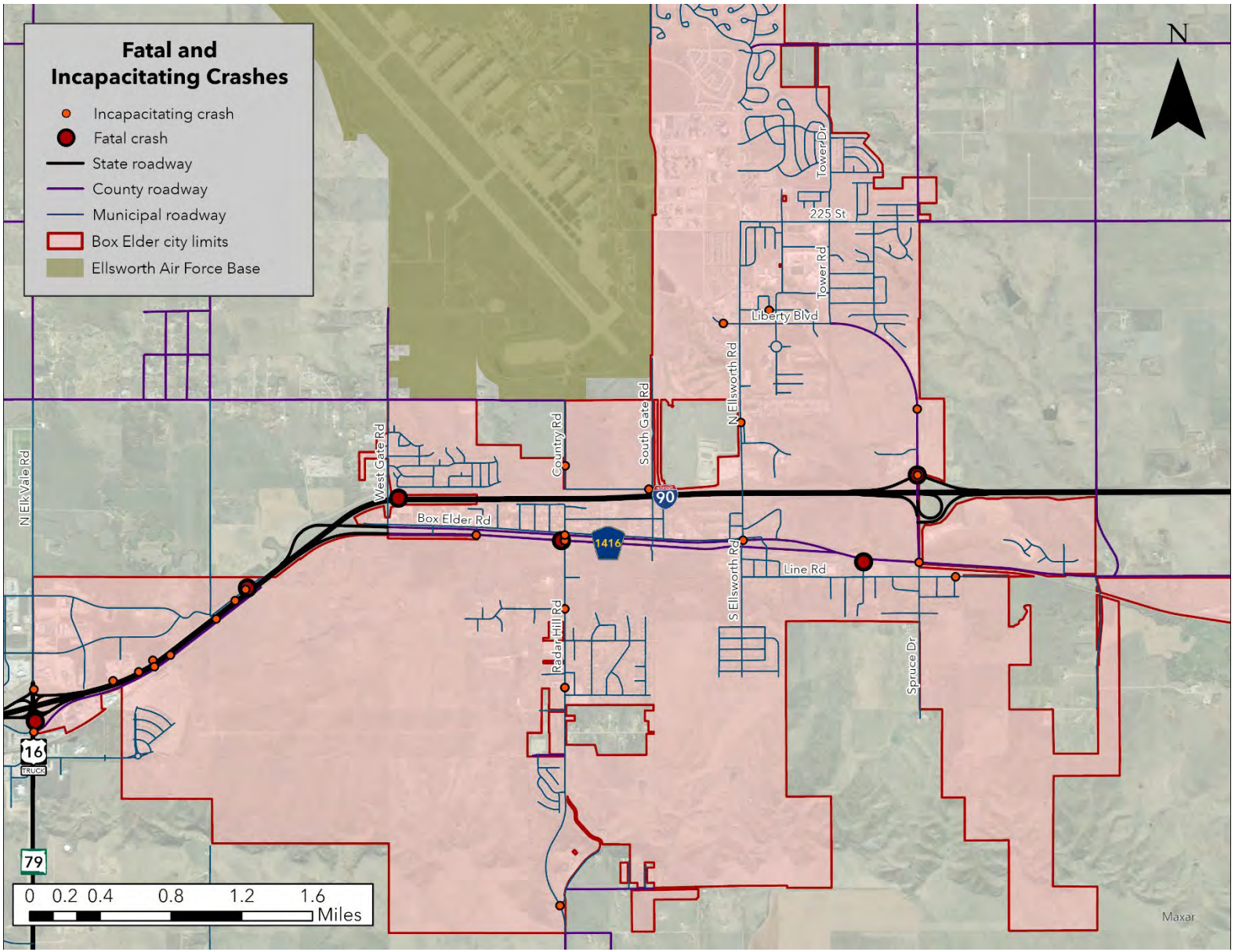
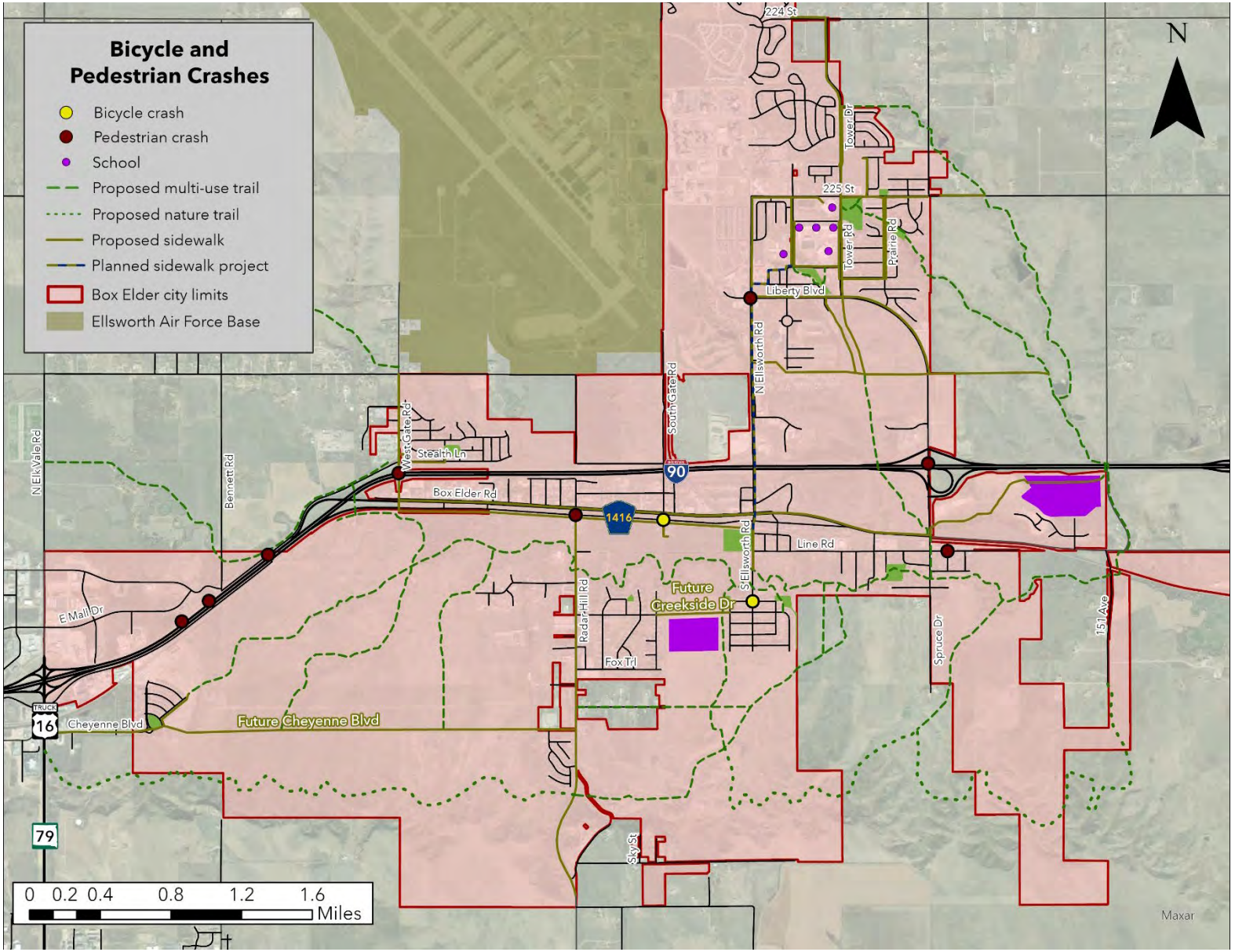


FIGURE 9 – BICYCLIST/PEDESTRIAN CRASHES



High Frequency Crash Intersections

To assess the safety performance of intersections within the study area, five intersections were identified with the highest number of crashes during the analysis period. 1 summarizes the number of crashes for each high-crash intersection with Figure 10 on page 15 showing the location of the intersections. The intersection of Radar Hill Rd with Highway 1416 experienced the highest number of crashes (102) during the ten-year analysis period. For intersections between municipal roads only, the intersection of Liberty Blvd with Ellsworth Road experienced the highest number of crashes (20), followed by the intersection of Box Elder Rd with South Gate Rd (15).

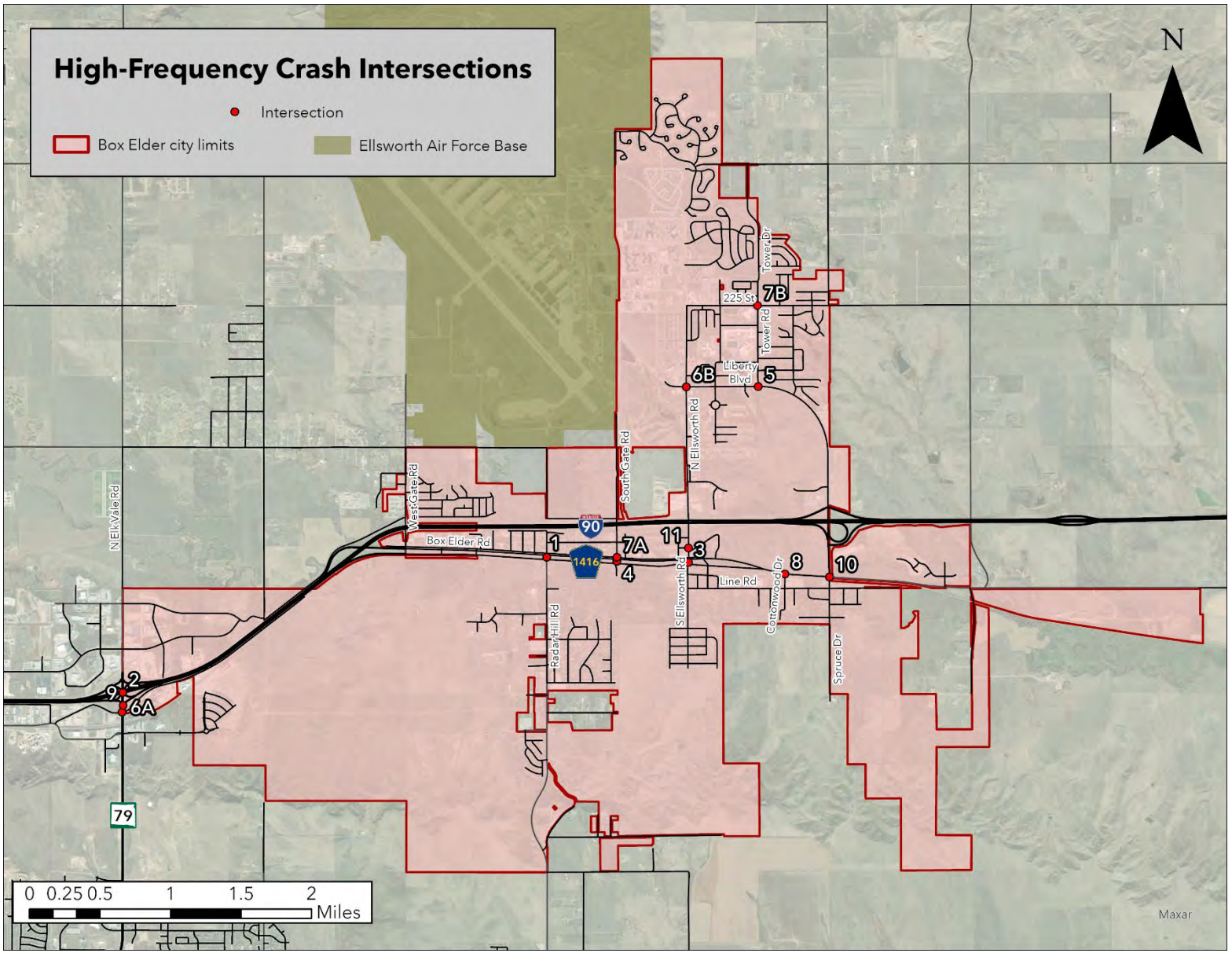
TABLE 1 – HIGH FREQUENCY CRASH INTERSECTIONS (YEAR 2013 TO 2022)

#	INTERSECTION	CRASHES	CRASH SEVERITY TYPE					
			K	A	B	C	PDO	O
1	Highway 1416 & Radar Hill Rd	102	0	7	23	18	53	1
2	I-90 & N Elk Vale Rd	29	0	0	2	4	23	0
3	Highway 1416 & Ellsworth Rd	27	0	1	3	6	17	0
4	Highway 1416 & South Gate Rd	26	0	0	4	3	19	0
5	Tower Rd & Liberty Blvd	21	0	0	8	1	11	1
6A	Edward St & N Elk Vale Rd	20	0	1	4	3	12	0
6B	Liberty Blvd & Ellsworth Rd	20	0	0	0	7	13	0
7A	Box Elder Rd & South Gate Rd	14	0	0	1	5	8	0
7B	225th St & Tower Rd	14	0	0	0	1	13	0
8	Highway 1416 & Cottonwood Dr	10	1	1	3	4	1	0
9	NB Elk Vale Rd & I-90 EB On-ramp	10	1	0	1	1	7	0
10	Highway 1416 & Liberty Blvd	9	0	0	1	2	5	1
11	Ellsworth Rd and Melody Ln	8	0	0	0	2	6	0

K – Fatal, A – Incapacitating Injury, B – Non-incapacitating Injury, C – Possible Injury, PDO – Property Damage Only, O – Other type of Crash

A detailed comprehensive safety analysis of the Box Elder study area is available in the full SS4A plan report.

FIGURE 10 - HIGH FREQUENCY CRASH INTERSECTIONS



ES4 - Community Engagement

Engaging with stakeholders and the broader community was an important aspect for the project team in identifying issues or concerns that community members experience.

STAKEHOLDERS

The following stakeholders participated in developing the Safety Action Plan:

- Douglas School District
- Box Elder Fire and Emergency Services
- Box Elder Emergency Response
- Box Elder Streets Department
- Box Elder Parks Department
- Pennington County
- Rapid City Fire Department
- Ellsworth Airforce Base
- Douglas School District Community Council Member
- Boom Construction and Development, Local Developer
- Hult Homes, Local Developer
- Rapid City Metropolitan Planning Organization
- Interested citizens
- State DOT
- Local Developers
- Engineering Firms

PUBLIC OUTREACH

Once baseline information was gathered from our stakeholder group and initial technical analysis was conducted, the project team sought broader feedback from the public. A project website- was the main avenue to collect feedback. An interactive map (148 responses) and a quick survey question (26 responses) were the two primary ways the public could provide feedback on the website. The map and survey were active in November 2023 through January 2024. Several waves of promotion and outreach were conducted throughout this timeframe and resulted in 522 website views. Key themes identified through the interactive map included: The need for sidewalks and pedestrian facilities; Improved connectivity; Intersection improvements including turn lanes or traffic lights to help with traffic flow and congestion.

Full details of the public engagement plan, stakeholder feedback, survey content results, etc., are provided in the full report and its appendices.

FIGURE 11 - PROJECT WEBSITE

ES5 – Previous Study Recommendations

The project team evaluated and integrated findings from recent related plans and studies which offer relevant guidance to improve safety for the traveling public. The following resources provide additional findings and recommendations regarding Box Elder's growth and its relationship to Safe Streets for All (SS4) related transportation projects.

- Box Elder Master Transportation Study 2018
- Pennington County Comprehensive Plan (2020)
- Rapid City Area Metropolitan Planning Organization (MPO) *Rapid Trip 2045* (2020)
- Exit 63 SDDOT Study (2021)
- Meade County Master Transportation Plan (2022)
- Box Elder High School Traffic Impact Study (2021)
- Box Elder Creekside Elementary School Traffic Impact Study (2022)
- Box Elder Parks Master Plan (2022)
- Box Elder Active Transportation Study (2023)
- Pennington County Master Transportation Plan (2024)
- Highway 1416 and Radar Hill Road Corridor Analysis Study (2024)

A summary of key projects from previous related planning documents is available in the full SS4A plan report. Projects that have not been completed to date are recommended projects to be carried forward from these previous studies and are inventoried in Chapter 6 "SS4A Project Recommendations."

ES6 – SS4A Project Recommendations

CITY OF BOX ELDER COMPLETED PROJECTS – YEARS 2022-2024

City of Box Elder SS4A project staff provided a list of completed projects for the following roads and intersections, by year of completion as follows. Many of the completed projects are ones not identified in previous planning studies and or project identifications.

2022

- Civil Way
- Bennington Dr
- Innovation Way
- Main St
- Kenai Dr
- Winner Ave
- Spirit Dr
- Bull Run
- Antietam

2023

- Northern Lights Blvd extension
- Yorktown Blvd concrete section
- Constitution Blvd to Liberty Park Dr (loop at east end)
- Liberty Park Dr to Constitution
- Shem Dr
- Dorchester Ave
- McGriff Way
- Reagan Ave – East of Liberty Blvd

2024

- Yorktown Blvd tar section
- Vicksburg St
- Bennington Dr
- Gettysburg Dr
- Bushnell Ct
- Prairie Rd.

NEW SS4A PROJECT IDENTIFICATION/RECOMMENDATIONS

As development occurs and traffic patterns evolve in the vicinity of identified candidate projects, in efforts to improve multimodal transportation safety, city staff should continue to heavily weigh crash history and examine mitigation strategies. Consulting with a qualified transportation engineer is applicable as an engineer can provide guidance on capacity, environmental factors, right-of-way constraints, and jurisdictional requirements for intersection, corridor, and pedestrian/bicycle facility projects.

The following *metrics* were considered for project identification:

- ≈ Potential project is located at or near a high crash frequency or fatal/incapacitating injury intersection or road corridor.
- ≈ Documented occurrences of severe crashes and/or fatalities, especially those involving pedestrians and bicyclists.
- ≈ Addresses demographics currently experiencing cited US DOT *Justice40 Initiative* and other known transportation safety and/or equity disparities.

Based on the crash analysis in Chapter 3 and public engagement comments found in this report, in addition to carrying forward projects reviewed and identified in previous planning studies, reports, and traffic impact analyses, the following intersections, roadways, and pedestrian/bicycle projects have been identified. With several projects, alternatives to mitigate existing safety issues are provided. Projects include those shown in **Table 2** and **Figure 12**. For details specific to the identified SS4A study *High Frequency Crash Locations (HFCL)*, refer back to the safety analysis in Chapter 3 of this study.

In addition to the roadway and intersection recommendations, construction of new sidewalks and multi-use paths to accommodate both pedestrians and bicyclists is highly recommended. The 2022 Box Elder Parks and Open Space Master Plan identifies numerous sidewalk and trail improvements that close system gaps within the community and connect schools and parks. These will extend into new areas and fill in short gaps in the current sidewalk system, improving both accessibility and safety. Multiuse Pathway and Sidewalk projects are also listed in **Table 2** and **Figure 12.**

Short-Term Project Prioritization

Several of the projects identified for short-term actions are recommended as priority SS4A safety projects. These projects are priority recommendations based on:

1. The *metrics* used for project identification
2. The recurrence of a project being identified in multiple previous planning documents since 2018
3. Geographic overlap with identified intersection, roadway, and pedestrian/bicycle projects

The following descriptions highlight several of the highest priority SS4A projects for the City of Box Elder (Also refer to **Table 2** and **Figure 12**).

1. **Highway 1416 & Radar Hill Rd** (Intersection Project ID #6; Roadway Project ID #7.3)
   The highest crash intersection within Box Elder, there were 102 total crashes (seven incapacitating, 23 non-incapacitating, 18 possible injury, 53 non-injury and one other type crashes) reported for the intersection during the analysis period. **There is overlap for both intersection and road corridor improvements that have been identified in multiple recent studies.**
2. **I-90 & N Elk Vale Rd** (Intersection Project ID #'s 5, 7, 11, 16)

TABLE 2 – SS4A PROJECT RECOMMENDATIONS

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation** (Short / Mid / Long Term)	**Project Status** (Incomplete / In Progress)
Intersection Projects						
1	225th Street and Briggs Street – Widen 225th Street to install east-west left turn lanes. Optionally, the addition of a northbound left turn lane.	**Yes**	Box Elder Master Transportation Study	2018	Short Term	Incomplete
2	Briggs Steet and Villa Drive – Provide channelization and delineators to "T" Villa Drive into Briggs Street. Optionally, curb and gutter may be used.	No			Short Term	Incomplete
3	Briggs Street and Patriot Drive – Remove stop sign from east approach.	No			Short Term	Incomplete
4	Exit 63 Interchange - diverging diamond interchange configuration on I-90 at Exit 63 (Highway 1416)	No	Rapid City MPO Rapid Trip 2045 (2020) + Exit 63 SDDOT Study (2021)	2020 / 2021	Short Term	In-Progress
5	I-90 Service Rd S & US Hwy 16 Bypass - high crash intersection identified for an Intersection Safety Improvement Project in 2028 with a Rough Order Magnitude (ROM) cost estimate of $600k.	**Yes**	Pennington County MTP	2024	Short Term (2028)	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation** (Short / Mid / Long Term)	**Project Status** (Incomplete / In Progress)
Intersection Projects						
6	**High Frequency Crash Intersection (HFCI) #1 - Highway 1416 & Radar Hill Rd -** The intersection is being reviewed as part of the Highway 1416 and Radar Hill Road Traffic and Corridor Analysis Study, being completed along with this Safety Action Plan.	**Yes**	Highway 1416 and Radar Hill Road Corridor Analysis Study (2024) + **NEW: SS4A (2024)**	2024	Short Term	Incomplete
7	**HFCI #2 - Interstate 90 and N Elk Vale Rd -** The potential alternatives to mitigate the safety issues include: » Optimize the signal timing and coordination to minimize abrupt stops and starts, thereby lowering the chances of rear-end accidents. » Review the timing of signal phases, particularly during transitions, and fine-tune them to encourage consistent and predictable traffic movement. » Use Intelligent Traffic System (ITS) technologies to monitor traffic movement and give real-time data to motorists, enabling them to make educated decisions. » Organize public awareness initiatives to educate motorists about the unique aspects of the SPUI and the importance of keeping safe distances between vehicles.	**Yes**	**NEW: SS4A (2024)**	2024	Short Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	Project Name & Description	SS4A Related - High Priority Recommendation (Yes / No)	Project Source	Project Identification Year	Project Time Frame Recommendation (Short / Mid / Long Term)	Project Status (Incomplete / In Progress)
Intersection Projects						
8	**HFCI # 3 - Highway 1416 and Ellsworth Rd -** The intersection is being reviewed as part of the Highway 1416 and Radar Hill Road Traffic and Corridor Analysis Study, being completed along with this Safety Action Plan.	**Yes**	Highway 1416 and Radar Hill Road Corridor Analysis Study (2024) + **NEW: SS4A (2024)**	2024	Short Term	Incomplete
9	**HFCI # 4 - Highway 1416 & South Gate Rd -** The intersection is being reviewed as part of the Highway 1416 and Radar Hill Road Traffic and Corridor Analysis Study, being completed along with this Safety Action Plan.	**Yes**	Highway 1416 and Radar Hill Road Corridor Analysis Study (2024) + **NEW: SS4A (2024)**	2024	Short Term	Incomplete
10	**HFCI # 5 - Tower Rd and Liberty Blvd -** The potential alternatives to mitigate the safety issues include: » Installation of advanced warning systems such as flashing lights. » Installation of enhanced warning signage such as prominent signage ahead the curve. » Adjustment of the timing of the traffic signal to allow for a more gradual transition between green, yellow, and red phases. » Enhancement of the lighting at the intersection, especially around the curve, to improve visibility during low light conditions. » Adjustments to the road design to improve visibility.	**Yes**	Box Elder Master Transportation Study (2018) + **NEW: SS4A (2024)**	2024	Short Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation** (Short / Mid / Long Term)	**Project Status** (Incomplete / In Progress)
Intersection Projects						
11	**HFCI # 6A - Edward St/Interstate 90 Service Rd and N Elk Vale Rd.** The potential alternatives to mitigate the safety issues include monitoring the traffic volumes to analyze if the intersection meets warrant for signal. If so, an upgrade to the existing traffic control may be required.	**Yes**	**NEW: SS4A (2024)**	2024	Short Term	Incomplete
12	**HFCI # 6B - Liberty Blvd at Ellsworth Rd -** Ellsworth Rd at Liberty Blvd - High Crash Intersection identified (Pennington Co. MTP) for an Intersection Safety Improvement Project beginning in 2029 or after with a ROM cost of approximately $750k. Potential Roundabout project ($2m).	No	Box Elder Active Transportation Study (2023)+ Pennington County MTP (2024) + **NEW: SS4A (2024)**	2023 / 2024	Long Term	Incomplete
13	**HFCI # 7A - Box Elder Rd and South Gate Rd** The potential alternatives to mitigate the safety issues include the reconfiguration of the downstream intersection of Highway 1416 with Commercial Gate Rd.	No	Highway 1416 and Radar Hill Road Corridor Analysis Study (2024) + **NEW: SS4A (2024)**	2024	Long Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation** (Short / Mid / Long Term)	**Project Status** (Incomplete / In Progress)
Intersection Projects						
14	**HFCI # 7B - Highway 1416 and Cottonwood Dr -** The potential alternatives to mitigate the safety issues include: » Implementation of prominent signage well in advance of the intersection to alert drivers of the upcoming stop, emphasizing the need to yield. » Changing the traffic control from an all-way stop control to side-street stop control if the traffic volumes do not meet warrants for all-way-stops and/or signal, and there were no historic crash trends that triggered the all-way-stop control at the intersection. » Monitoring the traffic volumes to analyze if the intersection meets warrant for signal or a roundabout. If so, an upgrade to the existing traffic control may be required.	**Yes**	Box Elder Master Transportation Study (2018) + **NEW: SS4A (2024)**	2024	Short Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	Project Name & Description	SS4A Related - High Priority Recommendation (Yes / No)	Project Source	Project Identification Year	Project Time Frame Recommendation (Short / Mid / Long Term)	Project Status (Incomplete / In Progress)
Intersection Projects						
15	**HFCI # 8 - Highway 1416 and Cottonwood Dr - Fatality -** The potential alternatives to mitigate the safety issues include: » Installing active warning systems such as lights and gates to alert motorists of approaching trains, reducing the risk of collisions. » Enhancing road markings and signage to clearly indicate the presence of a railroad crossing and emphasize the importance of yielding to oncoming trains. » Collaborating with Canadian Pacific Railroad to explore options for additional safety measures, such as improved visibility for train engineers or train speed reductions.	Yes	NEW: SS4A (2024)	2024	Short Term	Incomplete
16	**HFCI # 9 - N Elk Vale Rd Northbound and Interstate 90 Eastbound Interchange on Ramp - Fatality -** The potential alternatives to mitigate the safety issues include: » Utilizing speed enforcement cameras to encourage motorists to slow down and improve control. » Enhancing signage, pavement markings, and lane delineation can provide clearer guidance to drivers, reducing the likelihood of sudden lane changes or confusion near the interchange.	Yes	NEW: SS4A (2024)	2024	Short Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	Project Name & Description	SS4A Related - High Priority Recommendation (Yes / No)	Project Source	Project Identification Year	Project Time Frame Recommendation (Short / Mid / Long Term)	Project Status (Incomplete / In Progress)
Intersection Projects						
17	**HFCI # 10 - Highway 1416 and Liberty Blvd -** To reduce the crash potential for collision of vehicles with the freight train, the following alternatives may be considered: » Installing active warning systems such as lights and gates to alert motorists of approaching trains, reducing the risk of collisions. » Enhancing road markings and signage to clearly indicate the presence of a railroad crossing and emphasize the importance of yielding to oncoming trains. » Collaborating with Canadian Pacific Railroad to explore options for additional safety measures, such as improved visibility for train engineers or train speed reductions.	Yes	NEW: SS4A (2024)	2024	Short Term	Incomplete
18	**HFCI # 11 - Ellsworth Rd and Melody Ln -** To reduce the risk of rear-end collisions on roadways without turn lanes, the following alternatives may be considered to mitigate the issues: » Implementing road improvements like warning signs or signals to alert drivers of sudden stops or slowdown of a vehicle. » Enforcing laws against tailgating and aggressive driving behavior through law enforcement.	No	NEW: SS4A (2024)	2024	Mid Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Incomplete / In Progress)**
Intersection Projects						
19	Ellsworth Rd at 225th - Potential Roundabout project ($2m).	No	Box Elder Active Transportation Study (2023)	2023	Long Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Roadway Projects						
1	Briggs Street – reconstruct as a 3-lane section when warranted	**Yes**	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Short Term	Incomplete
2	Don Williams Drive – Maintain current function and turn Don Williams Drive over to Douglas School District for operations and maintenance.	**Yes**	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Short Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Roadway Projects						
3	Ellsworth Road – Construct a left turn lane for the bus drop-off facility	**Yes**	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Short Term	Incomplete
4	Tower Road – High Density Crash corridor. Reconstruct as a 3-lane section soon from Liberty Blvd. To Pershing Street	**Yes**	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Short Term	Incomplete
5	Villa Drive – Reconstruct as a 3-lane section when warranted	No	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Mid to Long Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Roadway Projects						
6	225th Steet – Add bus lane at Douglas Middle School. Maintain the current 2-lane section.	**Yes**	Box Elder Master Transportation Study (2018) + **NEW SS4A (2024)**	2018 / 2024	Short Term	Incomplete
7	Hwy 1416 (System Improvement Projects): LOS, traffic control improvements, reconstruction. Approximately two (2) miles of Hwy 1416 from I-90 to 151st Ave has been identified for reconstruction in 2028 with an approximate cost estimate of $24,130,814	**Yes**	Rapid City MPO Rapid Trip 2045 (2020) + Box Elder Creekside Elementary School TIS (2022) + Pennington County MTP (2024) + Highway 1416 and Radar Hill Road Corridor Analysis Study (2024)	2020 / 2022 / 2024	Short Term (2028)	Incomplete
7.1	***Highway 1416 and Liberty Boulevard*** *– once warranted, the implementation of a traffic signal is recommended at this intersection, due to significant improvements in delay and LOS. Spatial constraints due to the proximity to the BNSF railroad, utilities, and wetlands made it difficult to implement the single-lane roundabout alternative.*	**Yes**	Pennington County MTP + **NEW SS4A**	2024	Short Term (2028)	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Roadway Projects						
7.2	***Highway 1416 and S Ellsworth Road*** *– the implementation of a hybrid roundabout is recommended at this intersection, due to significant improvements in delay and LOS. High cost, spatial constraints, public opinion, and construction impacts made the displaced eastbound left-turn alternative a less desirable option. The hybrid roundabout alternative was also shown to be less expensive and expected to be more efficient and safer than the signalized alternative.*	**Yes**	Pennington County MTP + **NEW SS4A**	2024	Short Term (2028)	Incomplete
7.3	***Highway 1416 and Radar Hill Road*** *– the implementation of a 2x1 roundabout with a channelized northbound right-turn lane is recommended at this intersection, due to significant improvements in delay and LOS. The roundabout alternative was also shown to be less expensive and expected to be safer than the signalized alternative.*	**Yes**	Pennington County MTP + **NEW SS4A**	2024	Short Term (2028)	Incomplete
8	150th Ave (Pennington County Line to Eagle Ranch Rd. (Asphalt paving – minor arterial)	No	Rapid City MPO Rapid Trip 2045 (2020) + Meade County MTP (2022)	2020 / 2022	Mid Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Roadway Projects						
9	151st / Antelope Creek Rd. (Pennington County Line to Elk Creek Rd – gravel to pavement conversion)	No	Meade County MTP	2022	Mid to Long Term	Incomplete
10	Country Road - Four (4) miles of Country Road from 143rd to West Gate Road has been identified for future potential capacity needs. It is a long-term project set for 2029 or later, with an ROM of approximately $8m.	No	Pennington County MTP (2024)	2024	Long Term (2029+)	Incomplete
11	Future Cheyenne Blvd - new road construction ($15+m).	No	**NEW: SS4A (2024)**	2024	Long Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	Project Name & Description	SS4A Related - High Priority Recommendation (Yes / No)	Project Source	Project Identification Year	Project Time Frame Recommendation (Short / Mid / Long Term)	Project Status (Complete / In Progress / Not Started)
Bike / Ped Projects						
1	West side of Tower Road, connecting Middle School to Elementary School	Yes	Box Elder Master Transportation Study (2018) + Box Elder Parks and Open Space Master Plan (2022) + Box Elder Active Transportation Study (2023) + NEW SS4A (2024)	2018 / 2022 / 2023 / 2024	Short Term	Incomplete
2	North side of 225th Street – Briggs Street to Hub Road	Yes			Short Term	Incomplete
3	West side of Briggs Street at Patriot Drive intersection	No			Mid Term	Incomplete
4	Ellsworth Road - multiuse pathway (green corridor) and/or sidewalks along east side of road as part of development construction	Yes			Short Term	Incomplete
5	South side of 225th Street as part of development construction	Yes			Short Term	Incomplete
6	Southwest corner of High School parking lot	No			Mid Term	Incomplete
7	One or both sides of Swallow Drive, Meadowlark Drive, and Falcon Drive	No			Mid Term	Incomplete
8	Along proposed 225th Street bus lane	Yes			Short Term	Incomplete
9	Along Tower Road to complete both sides from Liberty Blvd. to Pershing Street	Yes			Mid Term	Incomplete
10	East side of Briggs Street in key locations	No			Mid Term	Incomplete

SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / In Progress / Not Started)**
Bike / Ped Projects						
11	Provisions for pedestrian and bicycle linkages to improve safe mobility (ped/bike crash history) to future and nearby residential development within the Liberty Boulevard/HWY 1416/Ellsworth Rd/South Gate Rd/West Gate Rd/Radar Hill Rd/151st Avenue area intersections	**Yes**	Box Elder High School TIS (2021) + Box Elder Parks and Open Space Master Plan (2022) + Box Elder Active Transportation Study (2023) + **NEW SS4A**	2021 / 2022 / 2023 / 2024	Mid Term	Incomplete
11.1	*North connections across I-90m likely best via 151st Avenue*				Mid Term	Incomplete
11.2	*South/west connections: Pedestrian Crash - it is recommended that a shared use path be provided between the site access to Liberty Boulevard and the Liberty Boulevard/HWY 1416 intersection. Future improvements to the Liberty Boulevard/HWY 1416 intersection should include crosswalks and pedestrian signal phasing (when signalization occurs in the Long-Term Future).*				Mid Term	Incomplete
11.3	*East/west connections: future trail connections along Hwy 1416 major intersections including linkages to the new High School*				Long Term	Incomplete

FIGURE 12 - SS4A PROJECT LOCATIONS