Safe Streets for All

July 2024

SAFETY ACTION PLAN

Box Elder

Innovative Community - Opportunities for All

KLJ

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Chapter 1 - Introduction

INTRODUCTION

In November 2021, President Joe Biden signed the Infrastructure Investment and Jobs Act (IIJA) 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). In recent years, Box Elder has been actively addressing roadway safety issues, particularly concerning bicyclists and pedestrians. This focus on safety aligns with the efforts of various other agencies and organizations in the region. Unfortunately, high-profile accidents involving unsafe driving practices and users from unrelated projects tend to highlight safety concerns. The timing of the SS4A program is particularly opportune for the region.

This Action Plan was crafted in accordance with the SS4A program requirements, while also incorporating a local perspective to ensure that each community's distinct needs are addressed and harmonized with ongoing initiatives. It is designed to be a dynamic document that strategically outlines projects and priorities for implementation across the region. Through the projects and strategies outlined in this plan, the

City of Box Elder, along with its partners, is committed to adopting a fresh approach to enhance roadway safety for all multimodal users of Box Elder's highways, streets, and roadways, with the ultimate goal of preventing fatal accidents involving pedestrians, bicyclists, public transportation users, personal conveyance and micromobility users, motorists, and commercial vehicle operators.

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/)

The SS4A program, in alignment with the Safe System Approach, aims to fund transportation projects and initiatives that enhance road safety. It may support various safety measures, including infrastructure improvements, technology upgrades, education campaigns, and law enforcement efforts, all aimed at reducing the number and severity of road accidents.

In summary, the Safe System Approach emphasizes a holistic and proactive approach to road safety, focusing on multiple elements of the transportation system to prevent accidents and minimize their impact. The SS4A program is one avenue through which funding can be allocated to support these safety initiatives and improve road safety outcomes.

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.

This outline illustrates the systematic approach taken in the development of the Box Elder Safety Action Plan. The planning process ensures that it is informed by data, insights from stakeholders, and the perspectives of the public, all with the overarching goal of enhancing safety within the community.

STUDY AREA

Located in the picturesque landscape of South Dakota, the City of Box Elder is a vibrant and rapidly growing community that embodies the spirit of the American West. Nestled within Pennington County and Meade County, just a stone's throw away from the majestic Black Hills, Box Elder has emerged as a thriving city with a unique blend of history, natural beauty, and modern development. The municipal boundary of Box Elder covers approximately 13.6 square miles. With a rich past, a commitment to progress, and a strategic location near Ellsworth Air Force Base, Box Elder has become a dynamic hub of activity, drawing in residents and visitors alike to experience its distinct charm and potential. Figure 3 on the following page provides graphic representation of the Box Elder study area.

Box Elder is one of the fastest growing cities in South Dakota. The City has maintained a strong population growth from 3,428 in 2000 to 12,581 in 2022. This corresponds to an increase of 3.7 times in 22 years. The nearby Ellsworth Airforce Base, with the addition of new military personnel and their families, continues to contribute to area growth. During the same period (2000-2022), the population of South Dakota has increased from 754,844 in 2000 to 909,824 in 2022 which corresponds to an increase by 1.2 times in 22 years.

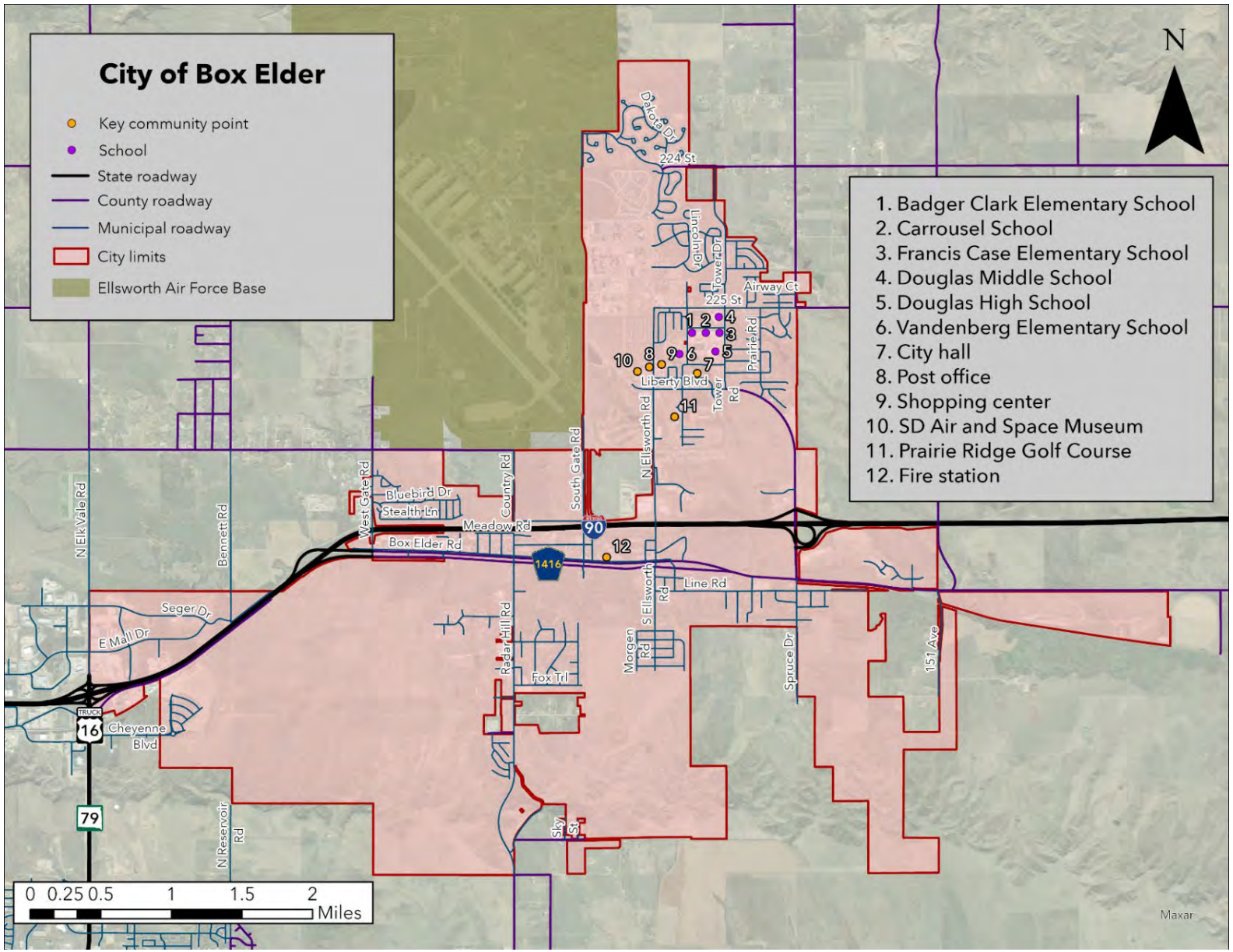
Ellsworth Air Force Base is a major economic driver in the area, contributing significantly to the local economy. Ellsworth Air Force Base provides numerous jobs to both military personnel and civilian employees. Socio-economic factors of Ellsworth include the following:

- In 2022:
  - Approximately 3,300 active-duty personnel / 1000 civilian personnel
  - Approximately 3,500 dependents
  - $193,300,000 military payroll
  - $50,200,000 civilian payroll
  - 4,100 jobs
  - $ 20,900,000 annual contract expenditures to the local area.
  - Total economic impact of the EAFB was $488,600,000.

The influx of personnel is estimated to require 1,011 additional housing units, 39 additional public service professionals in Meade and Pennington Counties - which include 25 firefighters, nine (9) law enforcement personnel, and five (5) medical professionals.

Ellsworth Air Force Base is not expanding its housing, which may be a catalyst prompting new personnel and families to settle in and around Box Elder. Ellsworth Air Force Base plans to welcome 4,000 new personnel and families in the upcoming years, which will spark a surge in demand for housing, education, commerce, and services. This influx of workforce and residents to the already established City of Box Elder will boost the local economy while enhancing the community culture with diverse perspectives and experiences. This has led to the development of essential infrastructure and services that benefit both military personnel and residents.

FIGURE 3 – CITY OF BOX ELDER



Traffic on Interstate 90 will likely not be significantly impacted, although the highways around Ellsworth Air Force Base could experience a noticeable increase in volume and congestion. The potential increase in congestion is also being addressed by the recent Pennington County Master Transportation Plan, as well as plans to expand capacity on the Highway 1416 Radar Hill Road Corridor.

Numerous streets within the city were built in accordance with subdivision ordinances from both Pennington and Meade Counties before Box Elder extended its jurisdiction to these areas. Consequently, these streets exhibit certain shortcomings such as interruptions in their layout, absence of sidewalks, insufficient width to accommodate two-way traffic and on-street parking, and a lack of incorporation of multi-modal transportation options. Although the City of Box Elder has a Strategic Transportation Plan in place, it has not been consistently adhered to. This situation creates the possibility of fragmented transportation networks and zoning conflicts. The Master Transportation Plan is scheduled to be revised in 2025, which aligns with the typical decade-long update cycle for such plans. As part of its strategic planning process, the City is committed to providing safe transportation infrastructure for its residents and visitors. Vision and Goals

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. These documents collectively encompass a variety of components dedicated to establishing a more secure and accessible transportation system. They suggest a wide array of strategies, including structural improvements to enhance mobility options, adjustments to land-use policies, and enhancements in the realms of equity and accessibility.

Vision

The **Safe Street for All** plan envisions an inclusive, accessible, and equitable transportation network prioritizing the safety and well-being of all road users. Embracing a Vision Zero approach, it seeks to eliminate all traffic fatalities and severe injuries by implementing a combination of engineering, education, enforcement, and evaluation measures. Streets will be designed and managed as Complete Streets, accommodating the needs of pedestrians, cyclists, public transit users, and motorists alike, with infrastructure investments targeting high-crash areas and vulnerable populations. A comprehensive education and outreach campaign will raise awareness about safe streets behaviors, while targeted enforcement efforts will further deter unsafe actions. Data driven decision-making and meaningful community engagement will ensure interventions address specific needs and priorities, with a focus on equity and social justice, guiding continuous improvement towards safer, more accessible, and inclusive streets for everyone.

The primary objective of the City of Box Elder is to safeguard the well-being and investments of the public within the community, particularly within the public right-of-way and transportation system. The City is committed to promoting safety in all aspects of their transportation infrastructure and services. The goals include those found in Figure 4 on this page.

In essence, the City of Box Elder's overarching mission is to foster a transportation system that not only supports growth and development but, most importantly, ensures the safety and security of all individuals who use our roadways and public spaces.

FIGURE 4 – 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.

Chapter 2 – Equity Considerations and Demographics

Equity considerations play a crucial role in the development and implementation of safety action plans. It is essential to ensure that safety measures and interventions are not only effective but also fair and just, without any form of discrimination or bias. One of the primary reasons that equity is pivotal in safety planning is the aspect of social justice; it upholds the principle that every individual, regardless of their background, identity, or socioeconomic status, has an equal right to safety. Moreover, equity-focused safety plans aim to reduce disparities, working to ensure that vulnerable or marginalized communities are not disproportionately affected by safety risks, addressing the root causes of these disparities. This approach not only fosters trust within the community but also makes safety plans more effective by tailoring interventions to the specific needs of various groups. Additionally, it aligns with legal and ethical obligations in many jurisdictions, and a failure to consider equity can lead to legal consequences and public backlash. Furthermore, sustainable safety plans necessitate community support and involvement, making an equitable approach a key factor in ensuring long-term sustainability.

Beyond this, equity considerations can drive innovation in safety planning, encouraging adaptations and solutions tailored to different contexts and needs. Ultimately, an equitable approach to safety is integral to public health, economic well-being, human rights, and the overall well-being of communities. It recognizes that everyone has the right to live in a safe environment, and it's the responsibility of authorities to protect this fundamental human right.

While there are many ways to identify and define disadvantaged and underserved populations, for the purposes of this Safety Action Plan, the process aligns with President Biden's Justice40 initiative. The goal of Justiec40 Initiative is 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:

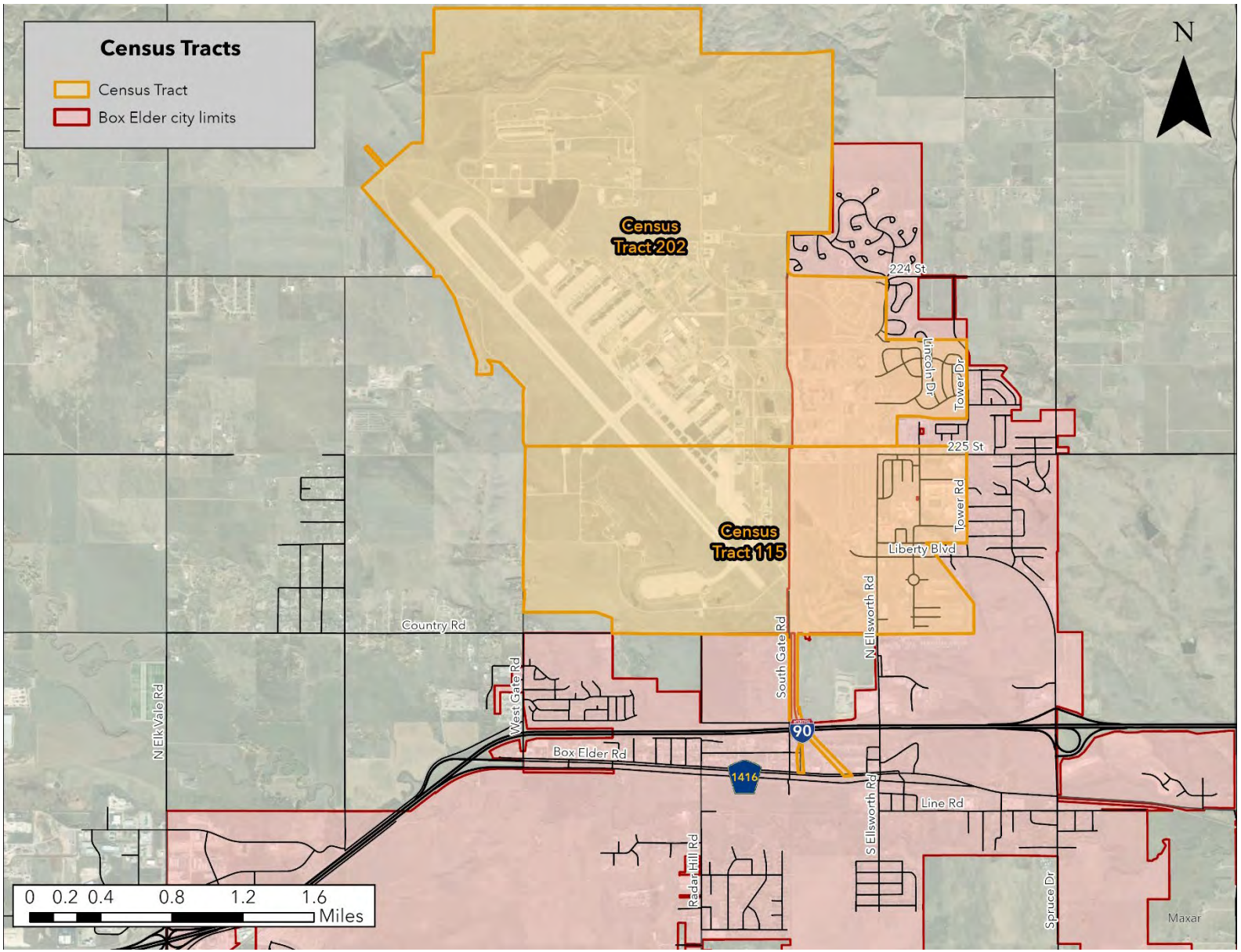
- **Historically Disadvantaged Communities** – A composite measure of Census tracts that experience disadvantages in six key categories: transportation access, health, environmental, economic, resilience, and equity.
- **Areas of Persistent Poverty** – characterized by a range of socioeconomic indicators such as low household income levels, high unemployment rates, limited access to quality education and healthcare, inadequate infrastructure, and lack of economic opportunities. These areas often experience ongoing cycles of economic hardship and face systematic barriers to upward mobility and prosperity.
- **Transportation Insecurity/Travel Barriers** – Census tracts with populations facing high barriers to travel and are unable to regularly and reliably satisfy the travel needed to meet day-to-day needs.

Figure 5 on page 11 shows the two census tracts in the Box Elder study area where social justice and equity concerns are documented. Census tracts 115 and 202 are low-income opportunity zones. This is a target area for immediate attention for economic and community development and may also exhibit unique transportation needs due to the economic and physical conditions of the area.

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:

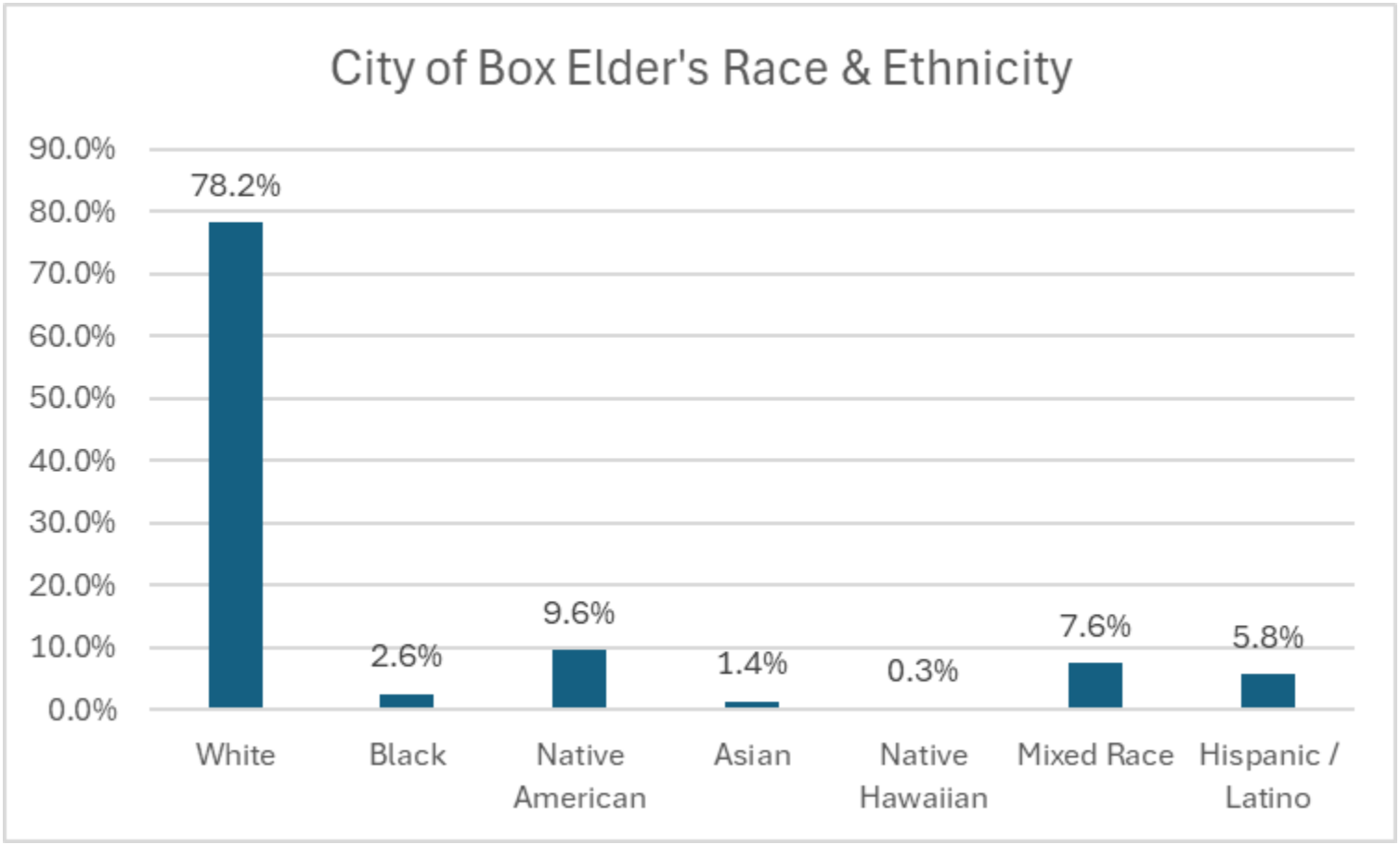
- ≈ Low income: people with income less than or equal to the Federal poverty level (not including students in Higher Ed) 92nd percentile (above 65th percentile)
- ≈ Housing Cost; share of households making less than 80% of the area median family income of housing, 98 percentile (above 90th percentile)
- ≈ Proximity to Superfund Sites; count of proposed or listed Superfund (or National Priorities List (NPL) sites within 5 kilometers, 93rd percentile (above 90th percentile)
- ≈ High School Education: percentage of people aged 25 and over whose high school education is less than a high school diploma, 18% (above 10%).
- ≈ 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.

FIGURE 5 – PROJECT AREA CENSUS TRACTS



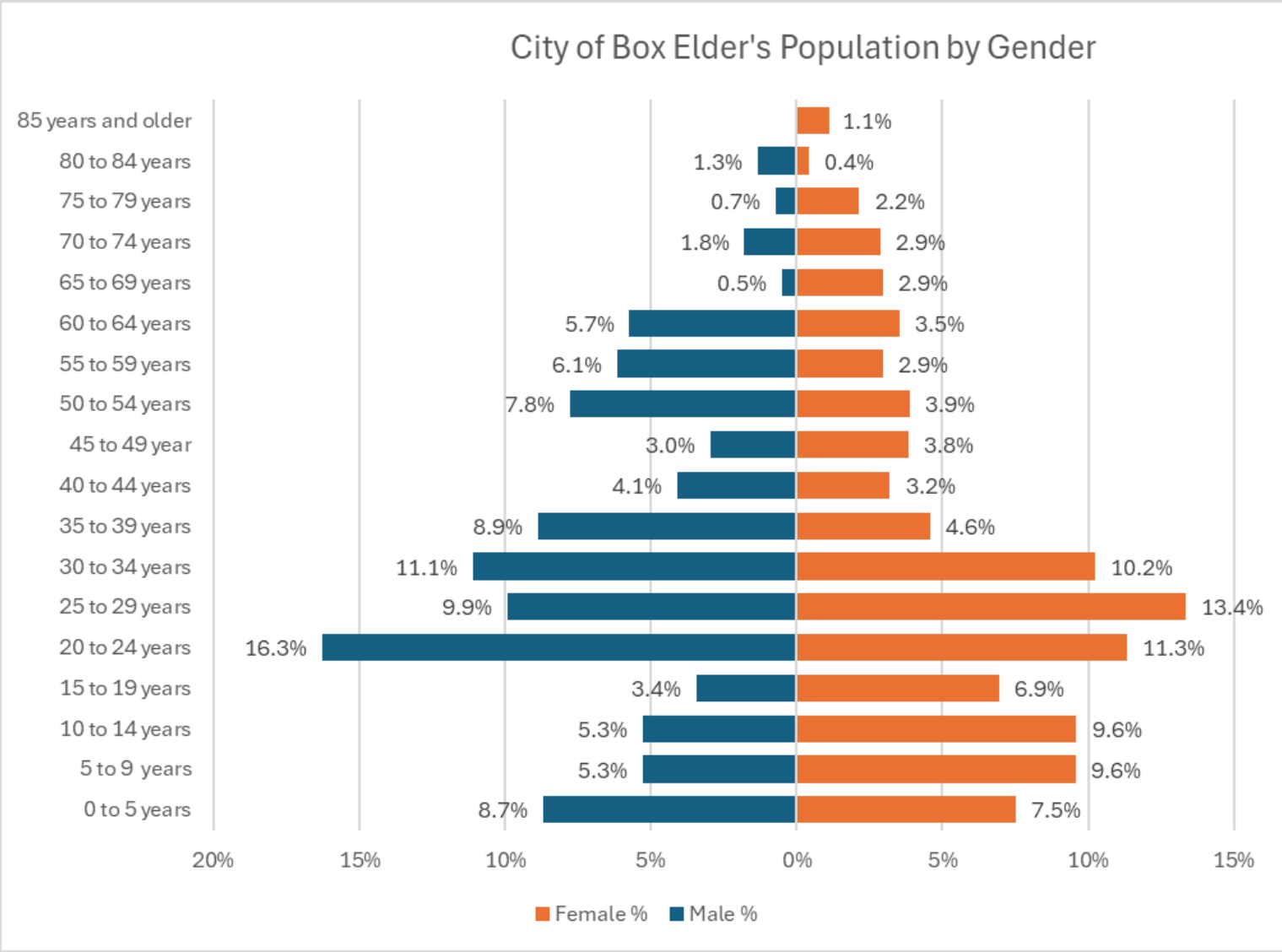
DEMOGRAPHICS

FIGURE 6 - DEMOGRAPHICS - RACE AND ETHNICITY



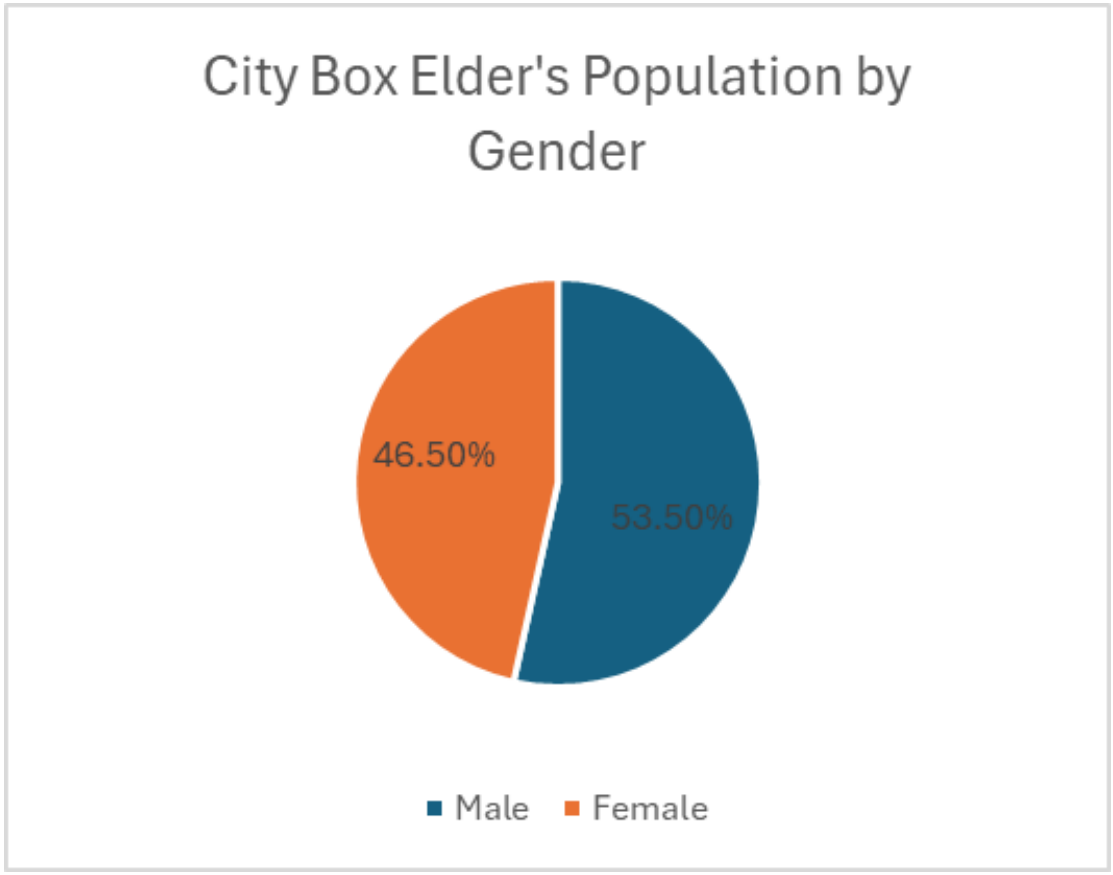
U.S. Census Bureau QuickFacts: Box Elder city, South Dakota; United States (ACS 2023)

FIGURE 7 - DEMOGRAPHICS - POPULATION BY GENDER



S0101: Age and Sex - Census Bureau Table (ACS 2022)

FIGURE 8 - DEMOGRAPHICS - POPULATION BY GENDER SUMMARY

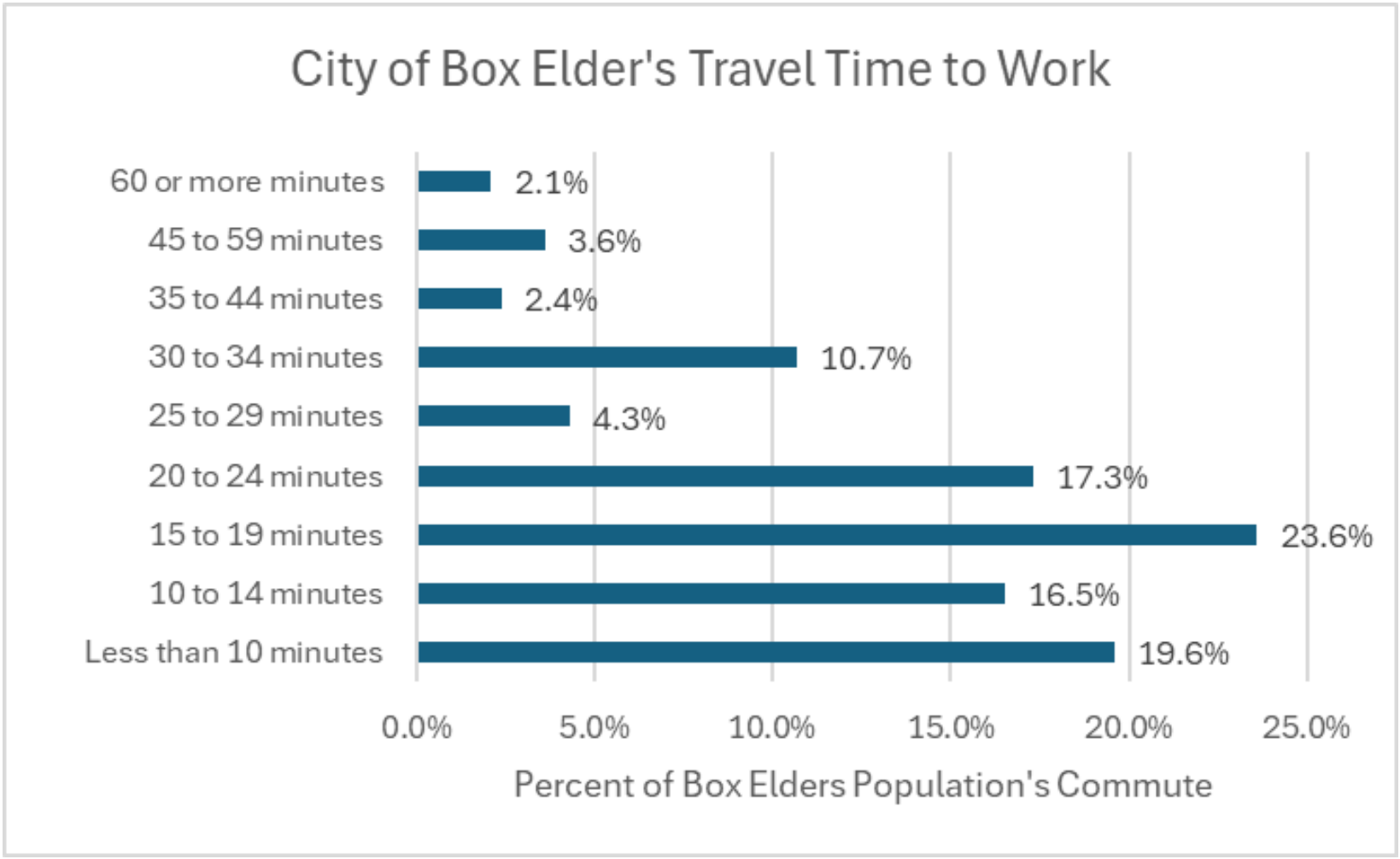


S0101: Age and Sex - Census Bureau Table (ACS 2022)

There is an available *"Means of transportation"* by select transportation characteristics data set from 2020 Census data. This data provides a breakdown of utilization of public transportation, biking, and who drives alone, etc., but the data seems to be incomplete/unreliable. Based on the available data[1] the only people to take public transportation are 47 black males in the age range of 25-44.

[1] https://data.census.gov/table/ACSST5Y2022.S0802?q=Box%20Elder%20city,%20South%20Dakota

FIGURE 9 - DEMOGRAPHICS - TRAVEL TIME TO WORK BY PERCENT



Census Bureau Tables (ACS 2022)

Mean travel time to work is 18.4 minutes. (Census Bureau Tables (ACS 2022))

BASELINE INFORMATION

About a decade ago, the city was considered a suburb or bedroom community to Ellsworth Air Force Base and Rapid City. Today, it is one of the fastest growing and independent cities in South Dakota. Ellsworth Air Force Base necessitates various support services, including healthcare, education, retail, and housing, which are readily available in Box Elder and in nearby communities.

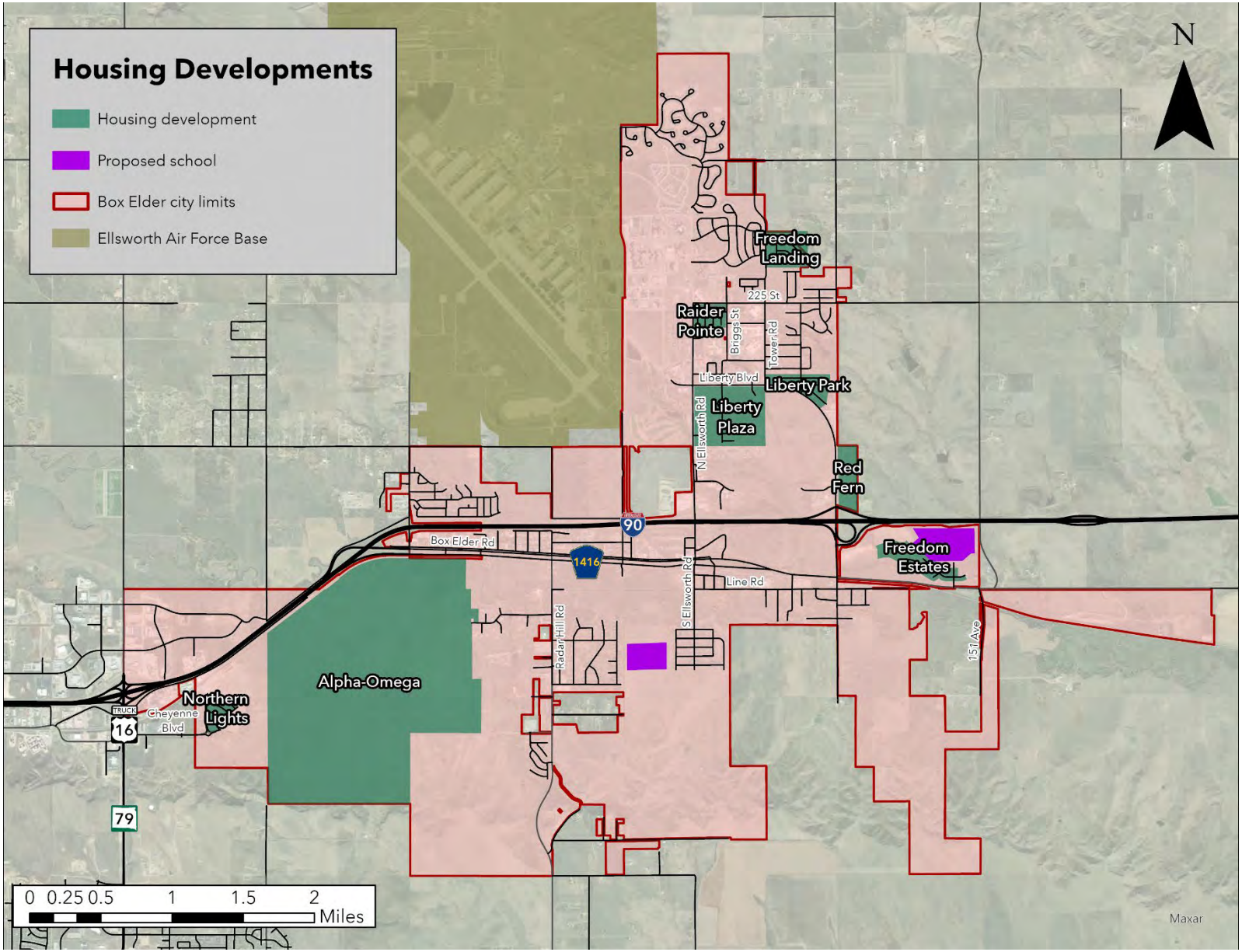
Land development patterns within Box Elder's city limits exhibit examples of non-contiguous or "leap-frog" development. Historically, numerous streets within the city were built in accordance with the subdivision ordinances from both Pennington and Meade Counties before Box Elder extended its jurisdiction to these areas. Consequently, these streets exhibit certain shortcomings such as interruptions in their layout, absence of sidewalks, insufficient width to accommodate two-way traffic and on-street parking, and a lack of incorporation of multi-modal transportation options. As part of its strategic planning process, the City of Box Elder is committed to providing safe transportation infrastructure for its residents and visitors.

In recent years leading up to present time, new residential and commercial construction is significant. Several developers have received grants from the South Dakota Housing Development Authority for three housing projects to provide affordable housing for homeownership or lease. These projects include (See Figure 10):

- Freedom Landing Phase 5: This $2.9 million project in Box Elder will develop 38 single-family lots, each sized at 11,000 square-feet, with $950,000 in grants.
- Northern Lights: Also in Box Elder, this $4.7 million project will create 49 lots for single-family homes. The $1.3 million in grants will reduce lots costs from $95,000 to $55,000.
- Alpha Omega Subdivision: This $9.2 million development in Box Elder plans for approximately 130 townhomes and 350 multi-family units, with townhome prices ranging from $310,000 to $350,000. It received $3 million in grants.

Additionally, significant construction is expected in existing developments. See Figure 10 for locations of additional development which include Raider Point, Liberty Park, Liberty Plaza, Red Fern, and Freedom Estates. 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. Development consists of hotel, retail, and service businesses, as well as light industrial. There is also planned commercial development within the city center which proposes new retail, services, and entertainment which will cater to new residents and visitors alike. The new growth has also been a catalyst for the renovation of a city administration facility.

FIGURE 10 – BOX ELDER AREAS OF DEVELOPMENT AND CONSTRUCTION



Additionally, with consideration of current and forecasted growth, freight traffic is a major consideration as the city expands and develops. Preventing conflicts with residential traffic, while accommodating commercial traffic must be monitored. Ellsworth Air Force Base has a specific gate designated for commercial traffic. The city also has designated truck routes (See Figure 11).

Figure 12 depicts the location of Box Elder existing and proposed schools (preschool, three elementary schools, middle school, and existing and proposed new high school). Also shown are the city's parks and proposed sidewalks and trails projects identified in the 2023 Parks and Trails Master Plan.

FIGURE 11 - DESIGNATED TRUCK ROUTES

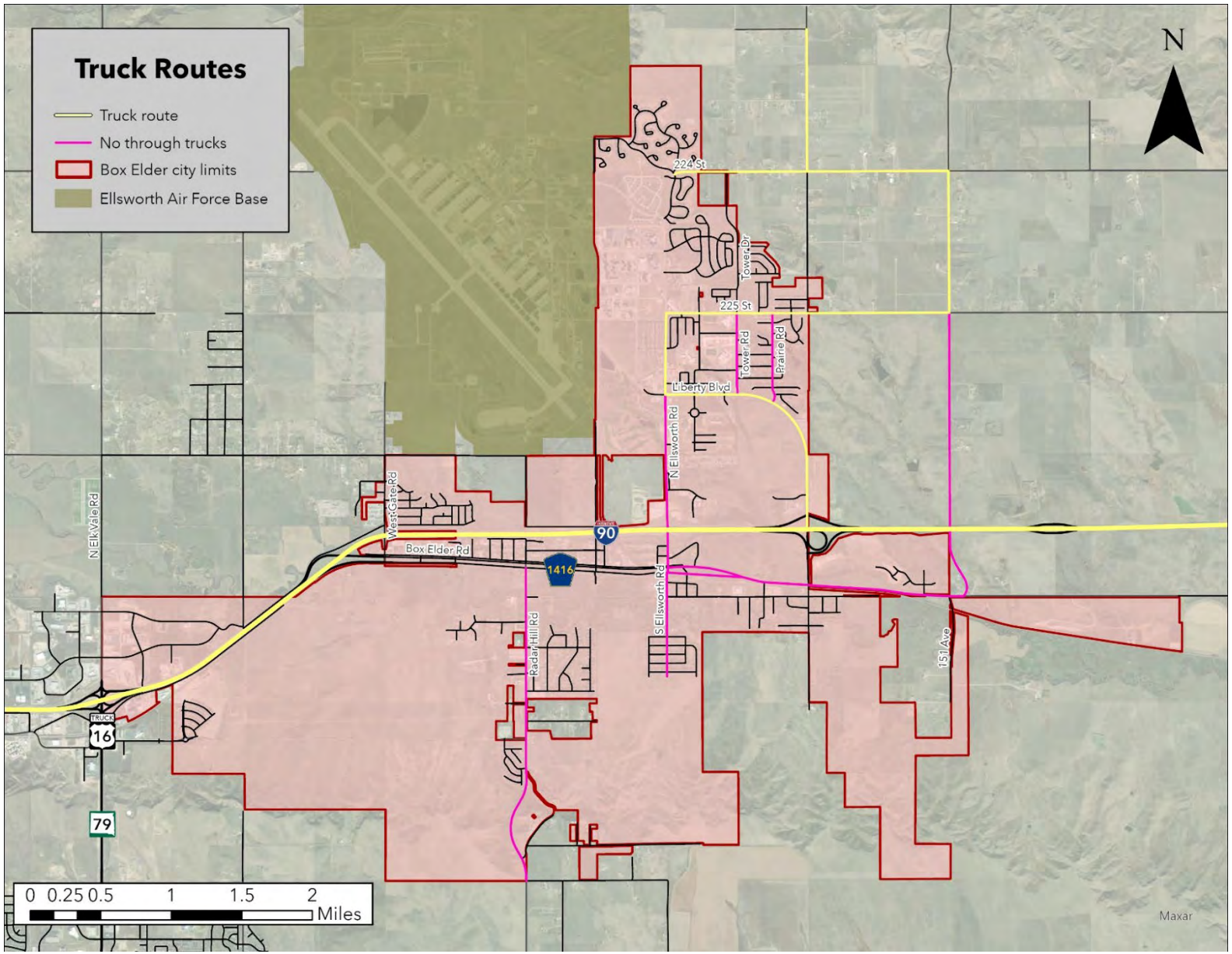
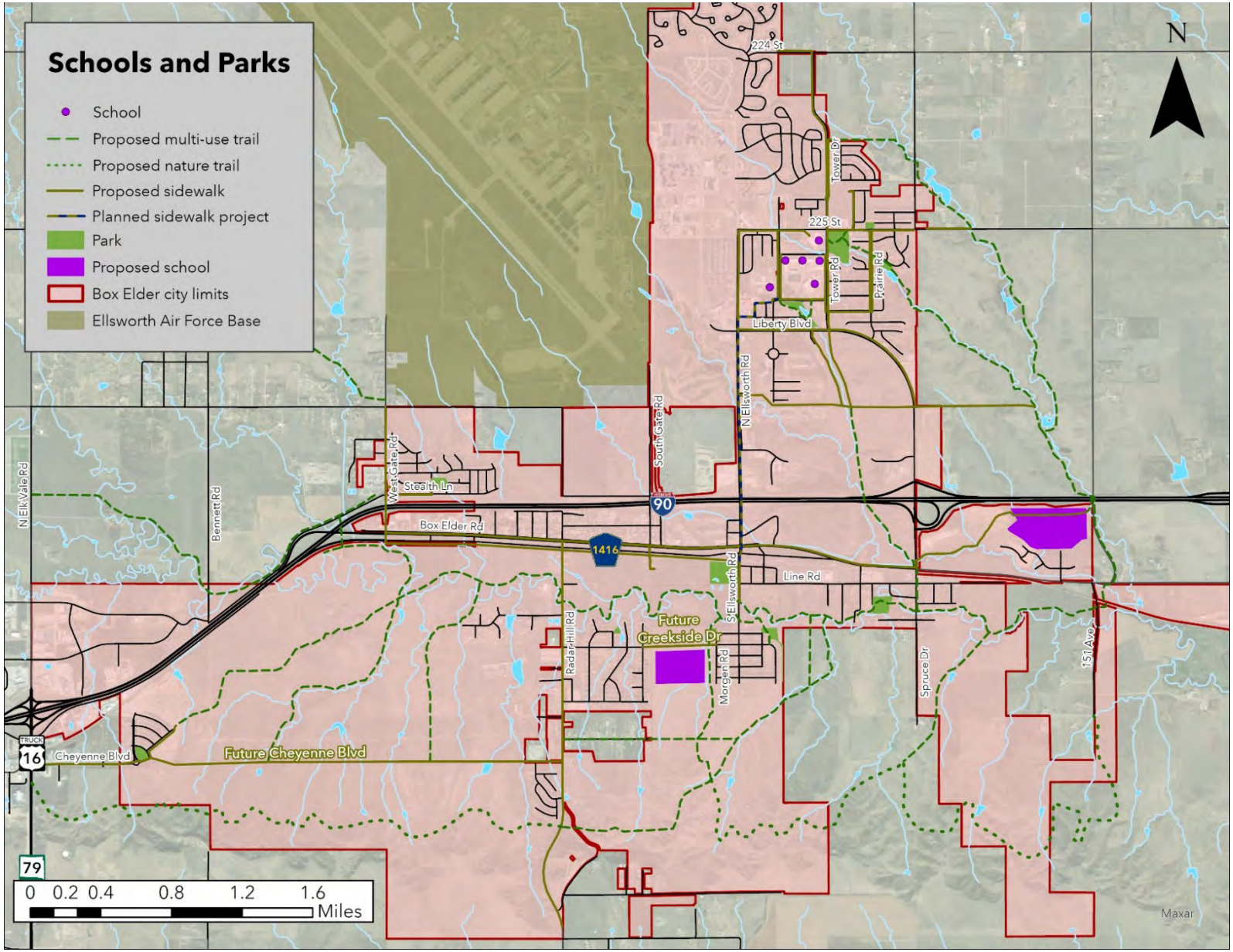


FIGURE 12 – BOX ELDER SCHOOLS, PARKS AND PROPOSED SIDEWALKS AND TRAILS



Chapter 3- 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 13**.

FIGURE 13 - 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.

Crash by Roadway Jurisdiction

Quantifying crashes by jurisdiction is crucial for informed decision-making, targeted interventions, and the development of effective policies to enhance road safety. It enables authorities to address specific challenges in different areas and work towards creating safer road environments for all users. The details of these crashes along roadways, classified by jurisdiction, are presented in **Table 1** on the following page.

TABLE 1 – CRASHES BY ROADWAY JURISDICTION (YEAR 2013 TO 2022)

Year	Crashes by Roadway Jurisdiction				All Roads
	City	County	State	Others	
2013	16	29	23	1	69
2014	16	31	37	2	86
2015	21	28	16	—	65
2016	25	25	26	—	76
2017	31	24	19	5	79
2018	39	29	35	3	106
2019	40	26	26	5	97
2020	28	24	37	—	89
2021	40	18	29	—	87
2022	29	17	24	—	70
Total	**285**	**251**	**272**	**16**	**824**

There were 285, 251, 272, and 16 crashes that occurred in city, county, state, and other roadway jurisdictions, respectively.

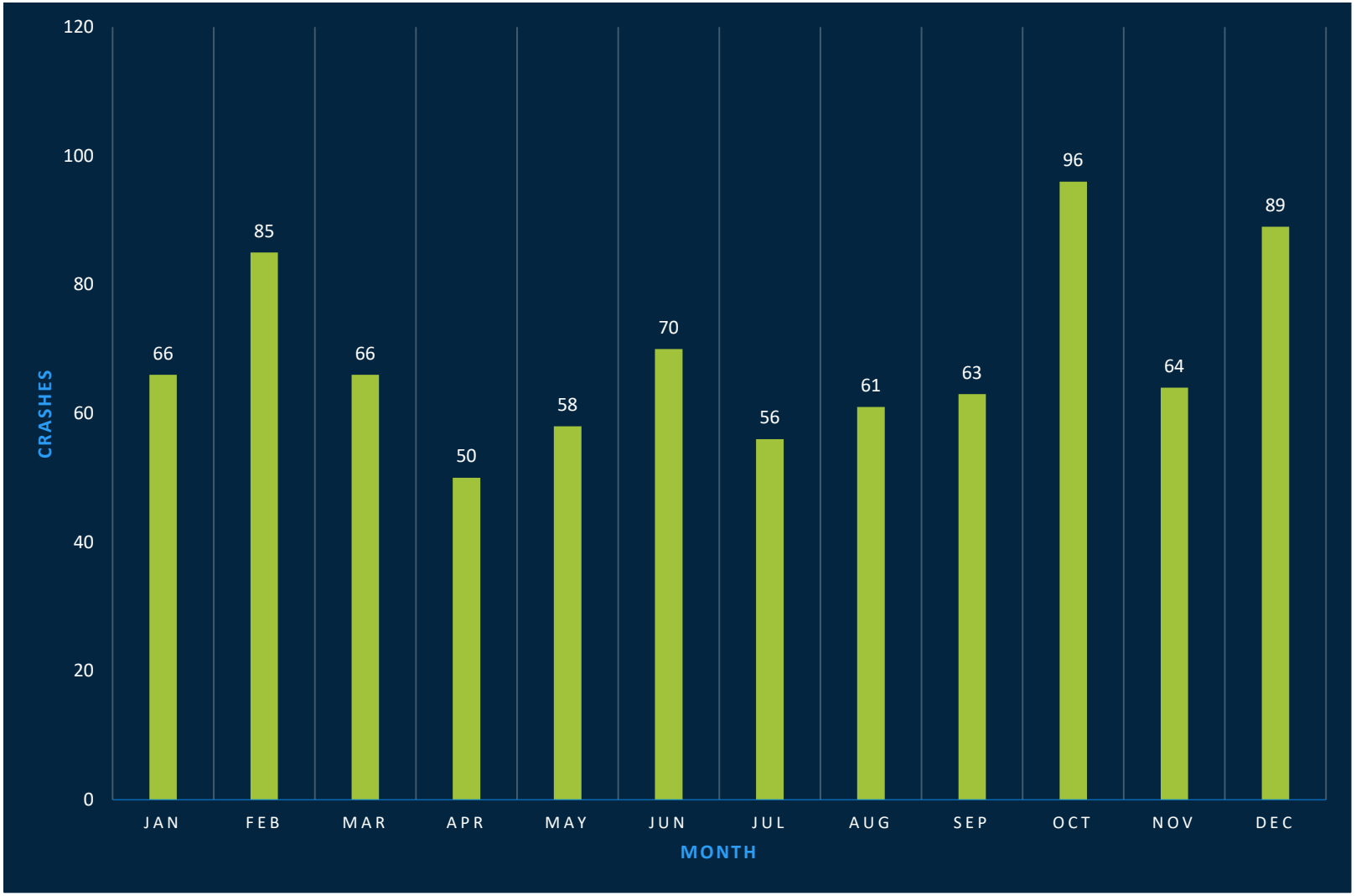
Crash Occurrence Period

Crash occurrence statistics assist in refining patrol deployment decisions. Typically, traffic varies significantly by time of day and day of the week, particularly during weekday peak hours. Crash data for the study area was evaluated based on the period of occurrence of the crash with respect to the month of the year and the day of the week.

Month

Crashes by the month of the year during the analysis period is shown in **Figure 14** on the following page. The highest number of vehicular crashes occur in October and December over the analysis period. This correlates to the statewide monthly crash trend which similarly shows an increase in crashes during the months of October through December. Challenging winter road conditions including snow, sleet, and ice can contribute to more crashes during the winter months from October to February. The number of crashes is generally low in the spring compared to the rest of the year (which also correlates to statewide statistics). In Box Elder, April had the least number of crashes.

FIGURE 14 – CRASHES BY MONTH OF THE YEAR (YEAR 2013–2022)



Day of the Week

Crashes by the day of the week are shown in **Figure 15**. Weekdays generally experience more crashes compared to weekends, with Sunday experiencing the fewest number of crashes. This holds true at the statewide level, which also peaks on Thursdays (15% of crashes) and Fridays (17% of crashes), with Sunday (11% of crashes) recording the fewest number of crashes.

FIGURE 15 – CRASHES BY DAY OF THE WEEK (YEAR 2013–2022)

Crash Severity

Considering crash severity holds significant importance in comprehending the present safety conditions within the system and devising recommendations to address specific problematic areas. In the SDDOT crash data, reported crashes were categorized into distinct severity levels, encompassing:

Fatal Crashes	Incapacitating Injury Crashes	Non-Incapacitating Injury Crashes	Possible Injury Crashes	No Injury or Property Damage Only (PDO) Crashes

The classification of crash severity is based on the most severe injury sustained in the crash. For instance, if a collision involves two vehicles, resulting in one serious injury and two possible injuries, the crash is documented as a suspected incapacitating injury crash. A suspected Incapacitating Crash is defined as an injury, other than fatal which prevents the injured individual from walking, driving, or normally continuing the activities they could perform before the injury.

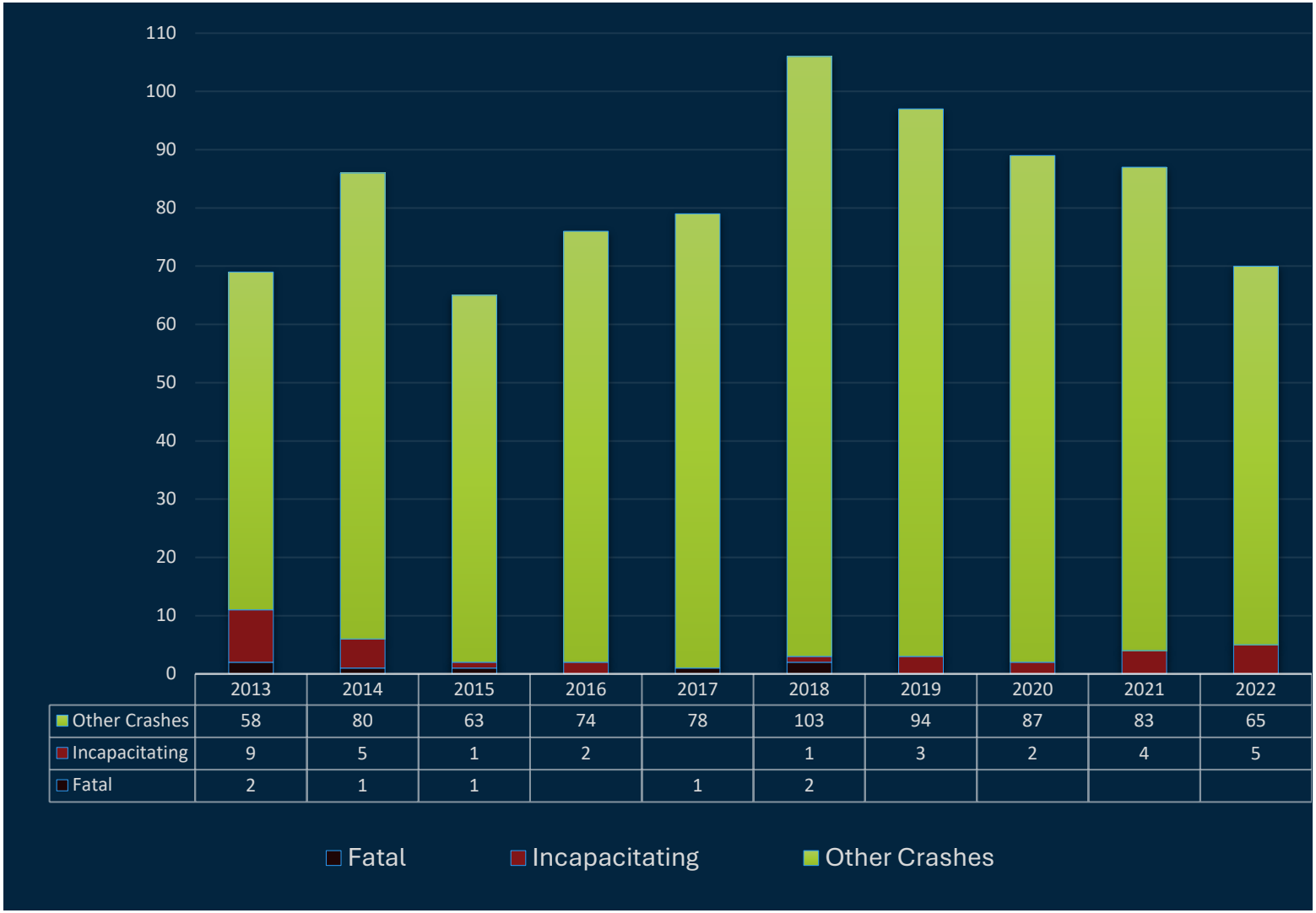
Among the reported data, there were:

- ≈ **7** crashes resulting in **Fatality**,
- ≈ **32** crashes resulting in **Incapacitating Injury**,
- ≈ **97** crashes resulting in **Non-Incapacitating Injury**,
- ≈ **115** crashes resulting in **Possible Injury**,
- ≈ **510** crashes resulting in **No Injury/PDO**

Compared to South Dakota statewide data, the state experienced:

- ≈ **607** crashes resulting in **Fatality**,
- ≈ **2,247** crashes resulting in **Incapacitating Injury**,
- ≈ **6,846** crashes resulting in **Non-Incapacitating Injury**,
- ≈ **1,994** crashes resulting in **Possible Injury**,
- ≈ **80,472** crashes resulting in **No Injury/PDO**

FIGURE 16 – SUMMARY OF CRASH SEVERITY BY YEAR



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Other Crashes	58	80	63	74	78	103	94	87	83	65
Incapacitating	9	5	1	2		1	3	2	4	5
Fatal	2	1	1		1	2				

TABLE 2 – SEVERITY OF CRASH BY ROAD CONDITION 2013–2

ROAD CONDITIONS	FATAL INJURY	INCAP.	NON-INCAP.	NO INJURY	POSSIBLE INJURY	WILD ANIMAL HIT	NOT REPORTED	TOTAL CRASH
Ice	1	1	11	98	12	1	0	**124**
Snow	1	1	4	39	8	1	0	**54**
Frost	0	0	0	3	0	0	0	**3**
Slush	0	0	1	12	1	1	0	**15**
Wet	0	3	5	44	11	4	0	**67**
Dry	5	26	74	310	82	54	1	**552**
Sand, mud, dirt, gravel	0	1	2	3	0	0	0	**6**
Unknown	0	0	0	1	1	1	0	**3**
Severity Total	**7**	**32**	**97**	**510**	**115**	**62**	**1**	**824**

TABLE 3 – SEVERITY OF CRASH BY WEATHER CONDITION 2013–2023

WEATHER CONDITION	FATAL INJURY	INCAP.	NON-INCAP.	NO INJURY	POSSIBLE INJURY	WILD ANIMAL HIT	NOT REPORTED	TOTAL CRASH
Blowing Snow	0	0	0	2	2	0	0	**4**
Blowing Snow, Severe crosswinds	0	0	0	4	2	0	0	**6**
Clear	4	23	71	329	78	49	1	**555**
Clear, Severe crosswinds	0	0	1	0	0	0	0	**1**
Cloudy	2	7	11	50	16	5	0	**91**
Coudy, Blowing snow	0	0	0	3	2	1	0	**6**
Cloudy, Fog, smog, smoke	0	0	0	2	0	0	0	**2**
Coudy, rain	0	1	0	13	3	1	0	**18**
Cloudy, Severe crosswinds	0	0	0	1	0	0	0	**1**
Cloudy, Sleet, hail (freezing rain or drizzle)	0	0	1	2	0	0	0	**3**
Cloudy, Snow	0	0	3	5	4	0	0	**12**
Fog, smog, smoke	0	0	0	6	1	0	0	**7**
Rain	0	0	1	14	3	3	0	**21**
Rain, Severe crosswind	0	0	1	1	1	0	0	**3**
Severe crosswind	0	0	1	7	0	0	0	**8**
Sleet, hail (freezing rain or drizzle)	0	0	1	10	0	1	0	**12**
Sleet, hail (freezing rain or drizzle), Blowing snow	0	0	1	1	0	0	0	**2**
Sleet, hail (freezing rain or drizzle), Fog, smog, smoke	0	1	0	5	0	0	0	**6**
Sleet, hail (freezing rain or drizzle), Severe crosswinds	0	0	0	1	0	0	0	**1**
Sleet, hail (freezing rain or drizzle), Snow	0	0	0	8	1	0	0	**9**
Snow	1	0	4	31	2	2	0	**40**
Snow, Blowing snow	0	0	1	13	0	0	0	**14**
Snow, Fog, smog, smoke	0	0	0	1	0	0	0	**1**
Not Reported	0	0	0	1	0	0	0	**1**
Severity Total	**7**	**32**	**97**	**510**	**115**	**62**		**824**

Fatal and Incapacitating Crashes

The location of all the fatal and incapacitating injury crashes within the study area is shown in **Figure 17** on the next page. Most of the crashes resulting fatality or incapacitating injury were along I-90 and Highway 1416.

Crash Density

Within the crash data, spatial records were integrated and subjected to analysis to unveil the patterns of motorized vehicular crashes and pinpoint areas at high risk. This analytical process was facilitated through a hot-spot analysis, a technique adept at identifying clusters characterized by a dense concentration of accident occurrences, a representation of which is featured in **Figure 18** on page 30. Crashes are more frequent at the following areas:

- Highway 1416 corridor between West Gate Rd and Pine Dr.
- Interchange of I-90 with N Elkvale Rd.
- Interchange of I-90 with Pine Dr.
- Liberty Blvd corridor
- Tower Rd corridor

FIGURE 17 – FATAL AND INCAPACITATING CRASHES

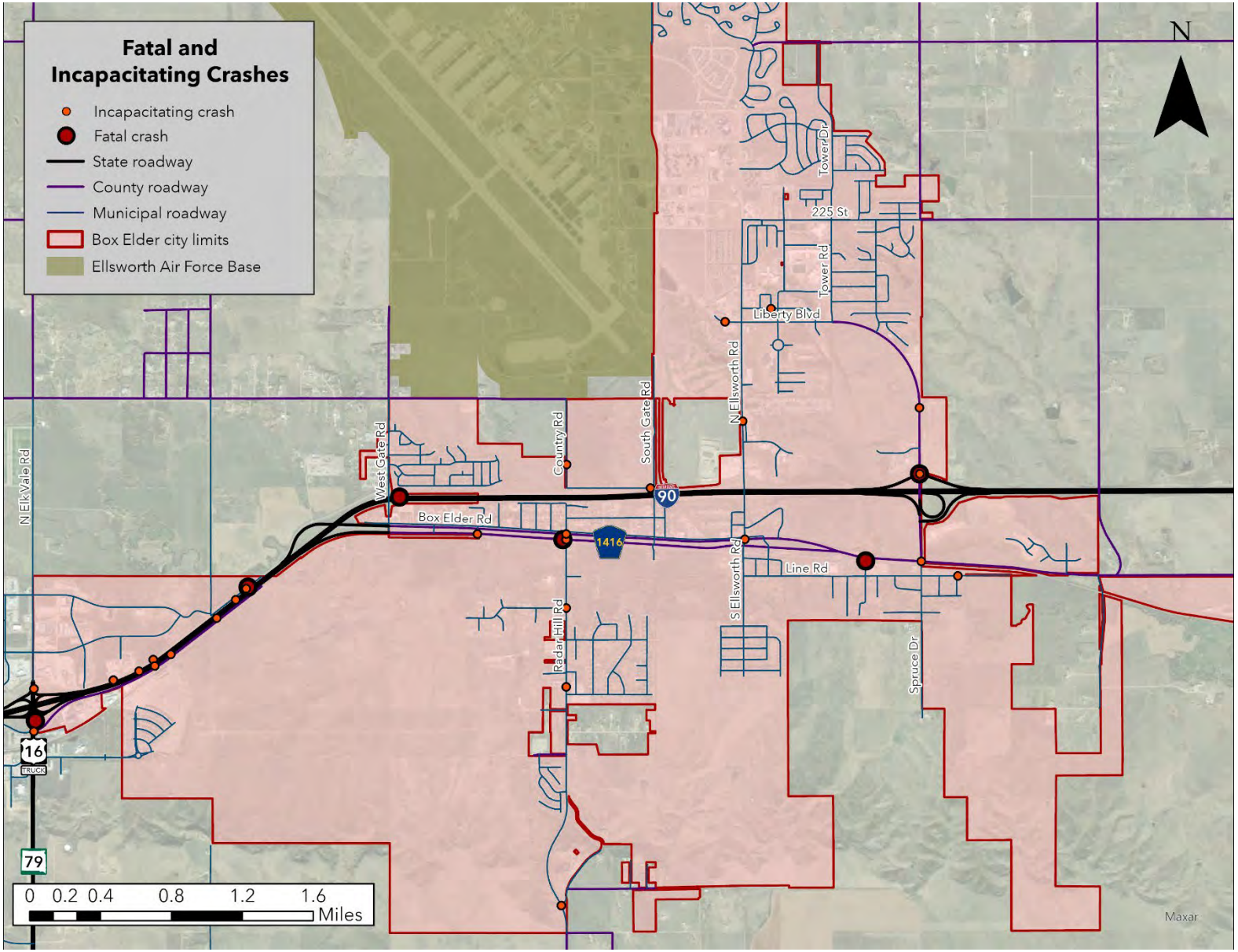
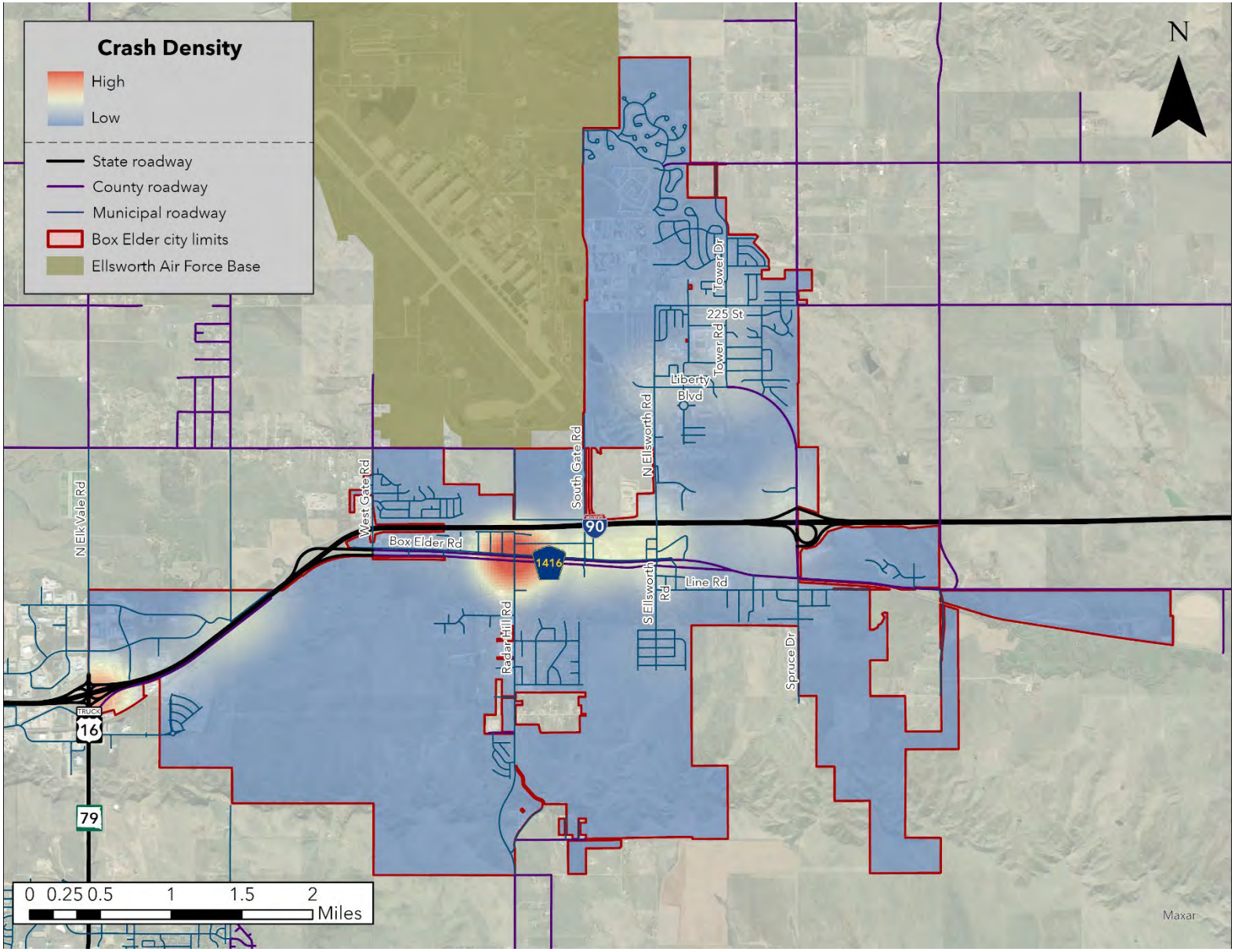


FIGURE 18 – CRASH DENSITY

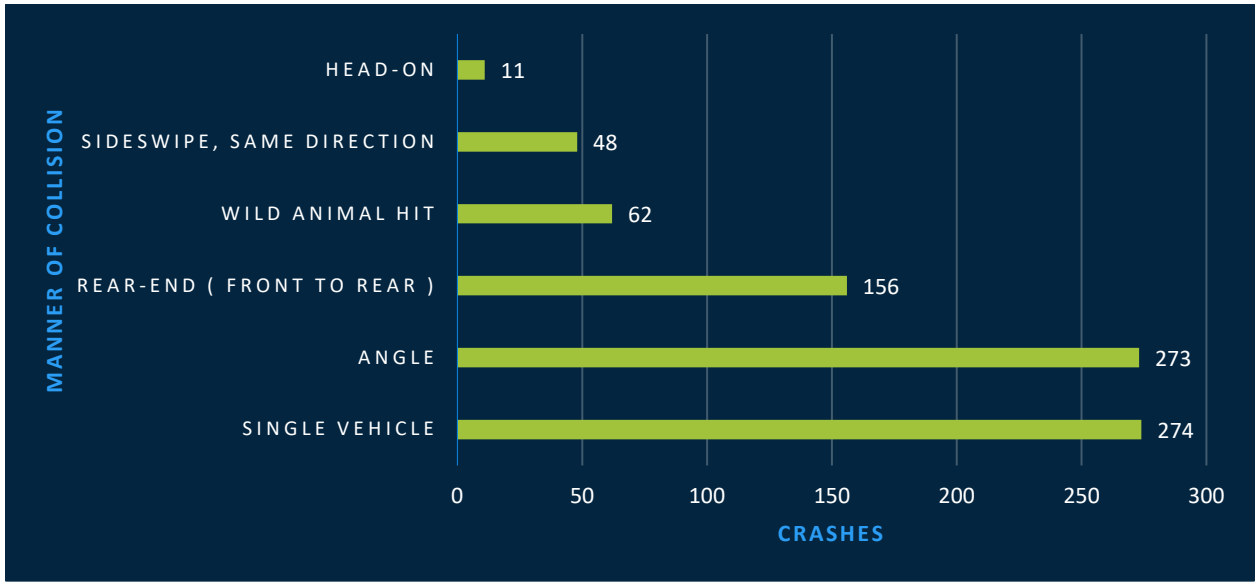


Crash by Collision Type

Examining crash types is instrumental in comprehending the factors contributing to accidents and facilitates the creation of countermeasures to alleviate or reduce these contributing factors. Over the analysis period, it was evident that angle collisions (112), single-vehicle-related incidents (84), and rear-end collisions (65) stood out as the most prevalent crash types. The Box Elder study area diverges slightly from statewide crash trends in that Single Vehicle crashes come in first with 44% of all crashes, followed by Angle Collisions at 21%, Rear-end crashes at 17%, and Collisions with an Animal(s) at 10%.

Crash Data - May 2019 to May 2024. **Figure 19** shows crashes by crash type during the ten-year analysis period.

FIGURE 19 – CRASHES BY MANNER OF COLLISION (YEAR 2013-2022)



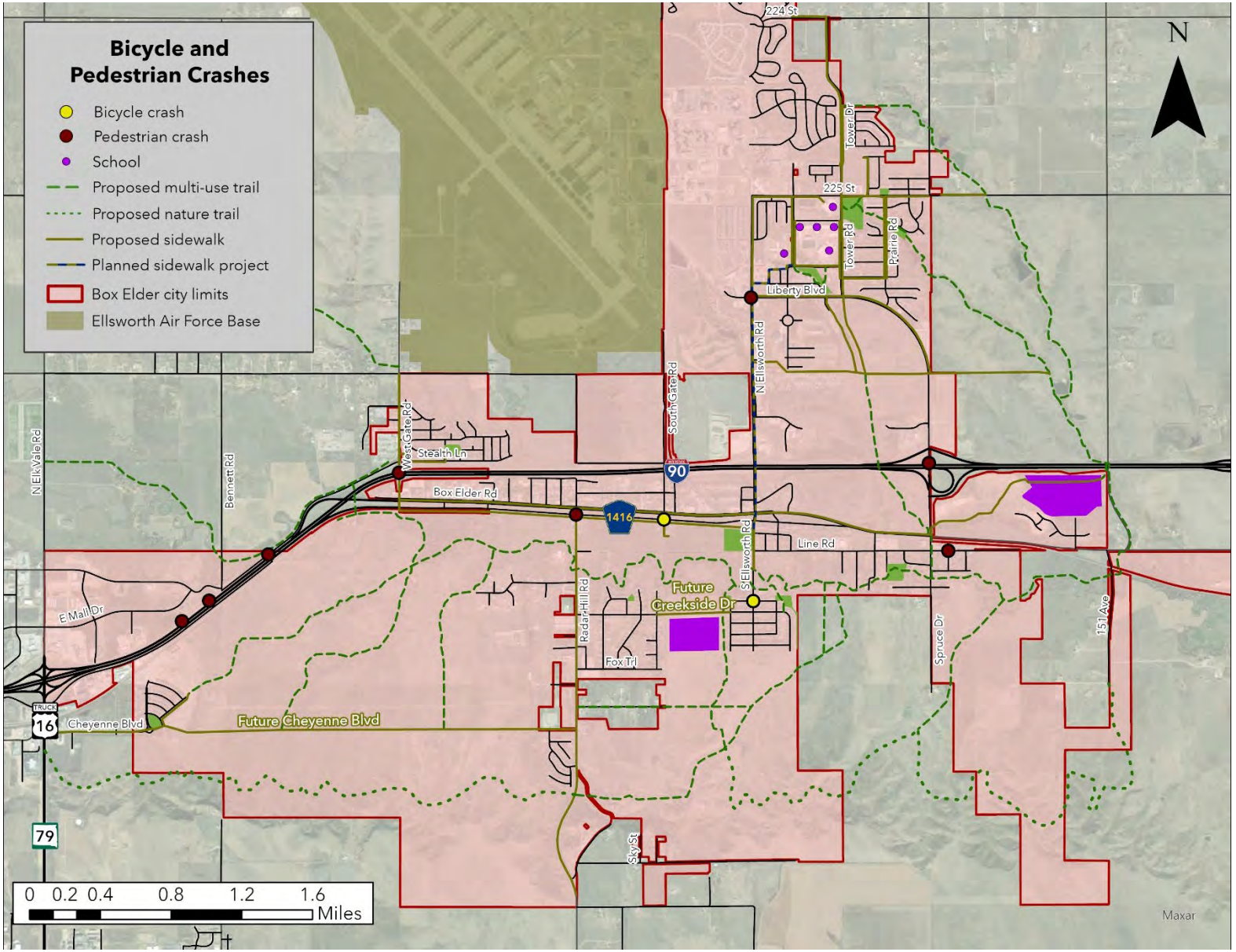
Crashes Involving Impaired Drivers

From 2013 to 2022, there were 74 crashes involving impaired drivers. This corresponds to 9% of all crashes (The statewide average is 5.9% of crashes involved impaired drivers; 31.5% were fatal crashes involving impaired drivers - Crash Data - May 2019 to May 2024). Four of the seven fatal crashes (57% of all fatal crashes) were alcohol related in Box Elder over the analysis period. The statewide average for fatal crashes involving impaired drivers during the same time frame was 43%.

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 20** on the next page for the locations of bicycle and pedestrian related crashes.

FIGURE 20 – BICYCLIST/PEDESTRIAN CRASHES



High Frequency Crash Intersections

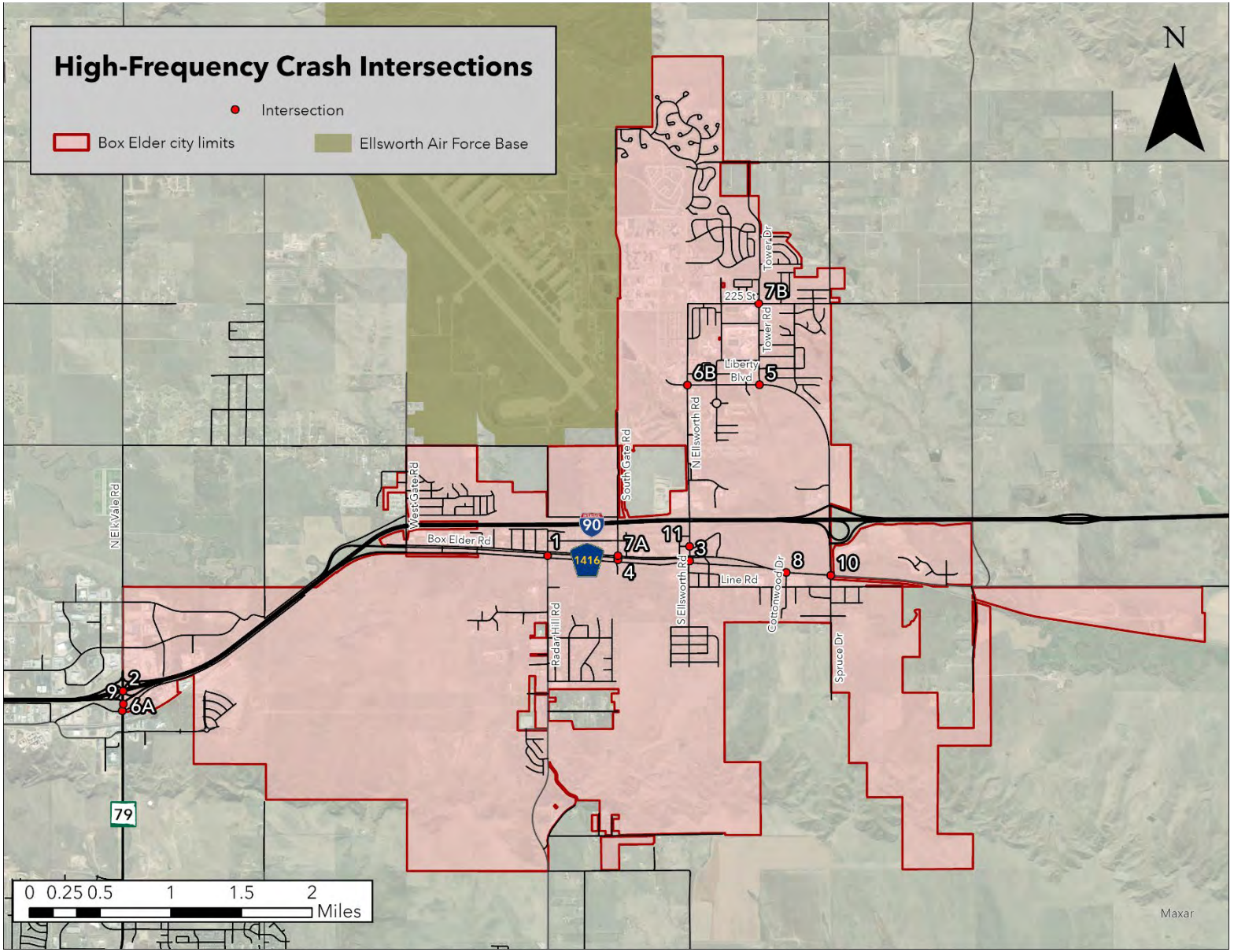
To assess the safety performance of intersections within the study area, five intersections were identified with the highest number of crashes during the analysis period. Table 4 summarizes the number of crashes for each high-crash intersection with Figure 21 showing the location of the intersections. 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 4 – 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

FIGURE 21 - HIGH FREQUENCY CRASH INTERSECTIONS



1. Highway 1416 and Radar Hill Rd

The intersection of Highway 1416 with Radar Hill Rd ranks first in the City of Box Elder, exhibiting more than three times the next intersection on the list for the greatest number of crashes in the city. There were 102 crashes (7 incapacitating, 23 non-incapacitating, 18 possible injury, 53 non-injury and 1 other type crashes) reported for the intersection during the analysis period. Angle crashes (77) were the most prominent type of crashes at the intersection. The intersection of Highway 1416 with Radar Hill Road is a wide, median divided intersection where the eastbound and westbound approaches of Highway 1416 operate as independent intersections with Radar Hill Road due to the large median (approximately 120 feet) between them.

The intersection was converted to an all-way stop-control (AWSC) intersection in 2020. Prior to that, the intersection operated as a side-street stop-controlled intersection with stops on the northbound and southbound approaches. The major contributing factor to the angle crashes was failure to yield. The rate of angle crashes declined between 2020 and 2022 while operating as an AWSC intersection. Most of the angle crashes involved vehicles traveling northbound and westbound. 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.

2. Interstate 90 and Elk Vale Rd

There were 29 crashes (2 non-incapacitating, 4 possible injury, and 23 non-injury type crashes) reported for the intersection during the analysis period. The Intersection is a single point urban interchange (SPUI). A SPUI is an intersection engineered to enhance the flow of the traffic, though motorists may face challenges when negotiating these intersections. Rear-end crashes (15) were the most prominent type of crashes at the intersection.

Potential issues may include a challenging intersection, possible driver confusion, and/or absent or unclear signage and signaling. SPUIs frequently present more complexity than conventional intersections, involving multiple turn lanes and signal stages. SPUIs may confuse motorists, especially those who aren't acquainted with them if they are rarely implemented in a specific region. This complexity can sometimes be overwhelming for drivers as they work through the various alternatives to make the correct choices.

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.

3. Highway 1416 and Ellsworth Rd

There were 27 crashes (1 incapacitating, 3 non-incapacitating, 6 possible injury, and 17 non-injury type crashes) reported for the intersection during the analysis period. Angle crashes (20), followed by rear-end crashes (5) were the most prominent type of crashes at the intersection. Failure to yield or running red lights were among the contributing factors for the crashes at the intersection. 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.

4. Highway 1416 & South Gate Rd

There were 26 crashes (4 non-incapacitating, 3 possible injury, and 19 non-injury type crashes) reported for the intersection during the analysis period. Angle crashes (13), followed by rear-end crashes (7), and single vehicle crashes (6) were the most prominent types. The intersection of Highway 1416 with South Gate Rd is a wide, median divided intersection where the eastbound and westbound approaches of Highway 1416 operate as independent intersections with Radar Hill Road due to the large median between them. The northern intersection experienced 19 of the 26 crashes. All the 13 angle crashes reported were along the northern intersection.

The Highway 1416 corridor is being reviewed as part of the Highway 1416 and Radar Hill Road Traffic and Corridor Analysis Study, which was completed in 2024 prior to this Safety Action Plan. The corridor study evaluated an option for Highway 1416 conversion from a four-lane divided highway to a two-lane undivided roadway with a center left turn lane. The alternative for conversion is also identified as a near-term priority included in the contemporaneous statewide transportation improvement plan (STIP) and Rapid City Area Transportation Improvement Plan (TIP).

5. Tower Rd and Liberty Blvd

There were 21 crashes reported at the intersection during the analysis period. Angle crashes (13) were the most prominent type of crashes, followed by single vehicle crashes (4). All the angle crashes involved at least one vehicle traveling along the westbound direction. The intersection is controlled by a traffic signal. The intersection is obscured by the roadway curvature for the motorists traveling westbound direction. The sudden transition from a seemingly clear and open road to the abrupt visibility of the traffic signal catches motorists off guard leading to abrupt braking or running red lights.

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.

Additionally, recommendations from the 2018 Box Elder Area Transportation Study are shown below for a compare/contrast of current intersection needs/recommendations. Based on existing and forecasted growth since 2018, several of the following intersection recommendations are obsolete based on the current safety analysis and recommendations in the bullet points above.

Previous 2018 study recommendations:

- The traffic signal control for this intersection is appropriate.
- The intersection operates at LOS A.
- With lanes on Liberty Boulevard and separate left and right turn lanes on Tower Rd, turn lanes at the intersection are adequate.
- There are curb ramps for future sidewalk extensions on all four intersection approaches. No sidewalk extensions are recommended until development results in closer destinations for pedestrians

6A. Edward St/South I-90 Service Rd and N Elk Vale Rd

There were 20 crashes (1 incapacitating, 4 non-incapacitating, 3 possible injury, and 12 non-injury crashes) reported during the analysis period. Angle crashes (14), followed by single vehicles crashes (5), were the most prominent types of crashes at the intersection. The Intersection is controlled by side-street stops with stops on Edward St and on South I-90 Service Rd. Elk Vale Rd is a four-lane divided roadway with dedicated left-turn lanes and serves as the US Hwy 16 bypass. This configuration, combined with the heavy traffic flow, increases the complexity and risk for vehicles attempting to cross from the minor street onto 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.

6B. Liberty Blvd and Ellsworth Rd

There were 22 crashes (1 non-incapacitating, 7 possible injury, and 14 non-injury crashes) reported for the intersection during the analysis period. Angle crashes (11), followed by single vehicle crashes (6) were the most prominent type of crashes at the intersection. The intersection is currently controlled by all-way stops. Failure to stop was a contributing factor for the crashes at the intersection. The South Dakota Air and Space Museum is on the north-west quadrant of the intersection. It is expected there will be many nonfamiliar motorists or tourists that travel through this intersection.

This intersection is an important one to the City of Box Elder in that it is key in helping to control traffic flow onto Ellsworth AFB. Removing the all-way stop would likely increase traffic incidents/accidents during an "All Call" event. Therefore, potential alternatives to mitigate the safety issues include:

- Monitoring the traffic volumes to analyze if the intersection meets warrant for upgrading the current all-way stop control to a signalized intersection or construction of a roundabout. If warrants are met from future traffic volume monitoring, an upgrade to the existing traffic all-way stop control can be further studied and considered for implementation.
- Setting up information centers near the South Dakota Air and Space Museum or strategic points to provide maps, guidance, and information specifically for nonfamiliar motorists.

7A. Box Elder Rd and South Gate Rd

There were 15 crashes (one non-incapacitating, five possible injury, and nine non-injury crashes) reported at the intersection during the analysis period. Angle crashes (13) were the most prominent type of crashes. Most of the angle crashes involved vehicles travelling in the northbound and eastbound direction, with failure to yield being the most prominent contributing factor. The downstream intersection is spaced less than 50 feet. When intersections are closely spaced, especially with stops on minor approaches, drivers may have limited visibility of the oncoming traffic. This restricted line of sight reduces the reaction time for drivers to assess the traffic situation before entering the intersection. This can often lead to hurried decisions and potential mistakes by motorists and increasing the risk of crashes.

The potential alternatives to mitigate the safety issues include the reconfiguration of the downstream intersection of Highway 1416 with Commercial Gate Rd.

7B. 225th Street and Tower Rd

There were 16 crashes (1 possible injury and 15 non-injury crashes) reported at the intersection during the analysis period. Angle crashes (10) were the most prominent type. Nine out of the ten crashes involved at least one vehicle traveling in the eastbound direction. The contributing factor for most of the angle crashes was motorists failing to yield. The intersection is controlled by an all-way stop. The narrowness of the road and the rural characteristics of the area make it challenging for vehicles on Tower Rd to stop and yield to vehicles that stop on 225th Street.

*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.

**The above bulleted recommendations are also updated/revised recommendations to the previous 2018 plan for this intersection.*

8. Highway 1416 and Cottonwood Dr

There were 10 crashes (one fatal, one non-incapacitating, one possible injury, and seven non-injury crash) reported during the analysis period. The intersection is controlled by side street stops on Cottonwood Dr. Highway 1416 is an east-west roadway and Cottonwood Dr is a north-south roadway. The north approach of the intersection is a gravel driveway to private residentials. Rear end crashes (4) and single vehicle-related crashes (4) were the most prominent type of crashes at the intersection. The primary contributing factor for the crashes were failure to yield.

During the analysis period, the only fatal crash at this intersection occurred in 2014 when a motorist attempted to cross the Rapid City, Pierre, & Eastern Railroad tracks at the unguarded crossing of Cottonwood Drive in the south approach of the intersection. The vehicle was struck by a westbound freight train on the driver's side, leading to the vehicle being dragged for a short distance before being pushed into a nearby field. This crossing lacks active protection such as lights and gates to warn motorists of approaching trains, despite trains crossing there daily at a maximum speed of 40 mph.

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 Rapid City, Pierre, & Eastern Railroad to explore options for additional safety measures, such as improved visibility for train engineers or train speed reductions.

9. N Elk Vale Rd Northbound and Interstate 90 Eastbound Interchange on Ramp

There were 10 crashes (1 fatal, 1 incapacitating, 3 non-incapacitating, 4 possible injury, and 1 non-injury crash) reported during the analysis period. This includes four single vehicle crashes and three rear-end crashes. No clear contributing factors were identified from the crash data. However, it could be assumed that motorists may be traveling at excessive speeds, making it difficult to maintain control, especially when approaching the interchange. Additionally, motorists might be making sudden lane changes or maneuvers, leading to rear-end collisions as vehicles slow down unexpectedly.

The potential alternatives to mitigate the safety issues include:

- ≈ 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.

10. Highway 1416 and Liberty Blvd

There were nine crashes (one non-incapacitating, two possible injury, five non-injury, and one other type crashes) reported during the analysis period. Angle (four) and single-vehicle (three) crashes were the most prominent crash types at the intersection. Speeding and failure to yield were the major contributing factor to these crashes.

The Rapid City, Pierre, & Eastern Railroad tracks cross Liberty Blvd in the south approach of the intersection. The crossing is unguarded. No crashes involving a freight train was reported. However, this crossing lacks active protection such as lights and gates to warn motorists of approaching trains, despite trains crossing there daily at a maximum speed of 40 mph.

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 Rapid City, Pierre, & Eastern Railroad to explore options for additional safety measures, such as improved visibility for train engineers or train speed reductions.

11. Ellsworth Rd and Melody Ln

There were eight crashes (two possible injury, and six non-injury crashes) reported at the intersection during the analysis period. Rear-end crashes (seven) were the most prominent type. Six of the seven rear-end crashes involved vehicles travelling along the northbound direction. There are no turn lanes on Ellsworth Rd (north-south approach) and the existing traffic volumes may not justify the installation of a turn lane. In the absence of turn lanes, if a driver tailgates and the vehicle in front makes a sudden stop, there might not be enough time to react and avoid a rear-end collision.

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.

TRAFFIC CITATION RECORDS

Traffic citation records are a valuable resource in traffic safety studies, providing essential data that helps in understanding traffic behavior, improving safety measures, informing policy decisions, and evaluating the effectiveness of interventions aimed at managing and enhancing traffic flow and safety. Three years of traffic citation records from August 1, 2020, to July 30, 2023, were requested from the City's law enforcement. There were 2,207 traffic citations issues during the three-year analysis period, which corresponds to nearly 736 traffic citations per year.

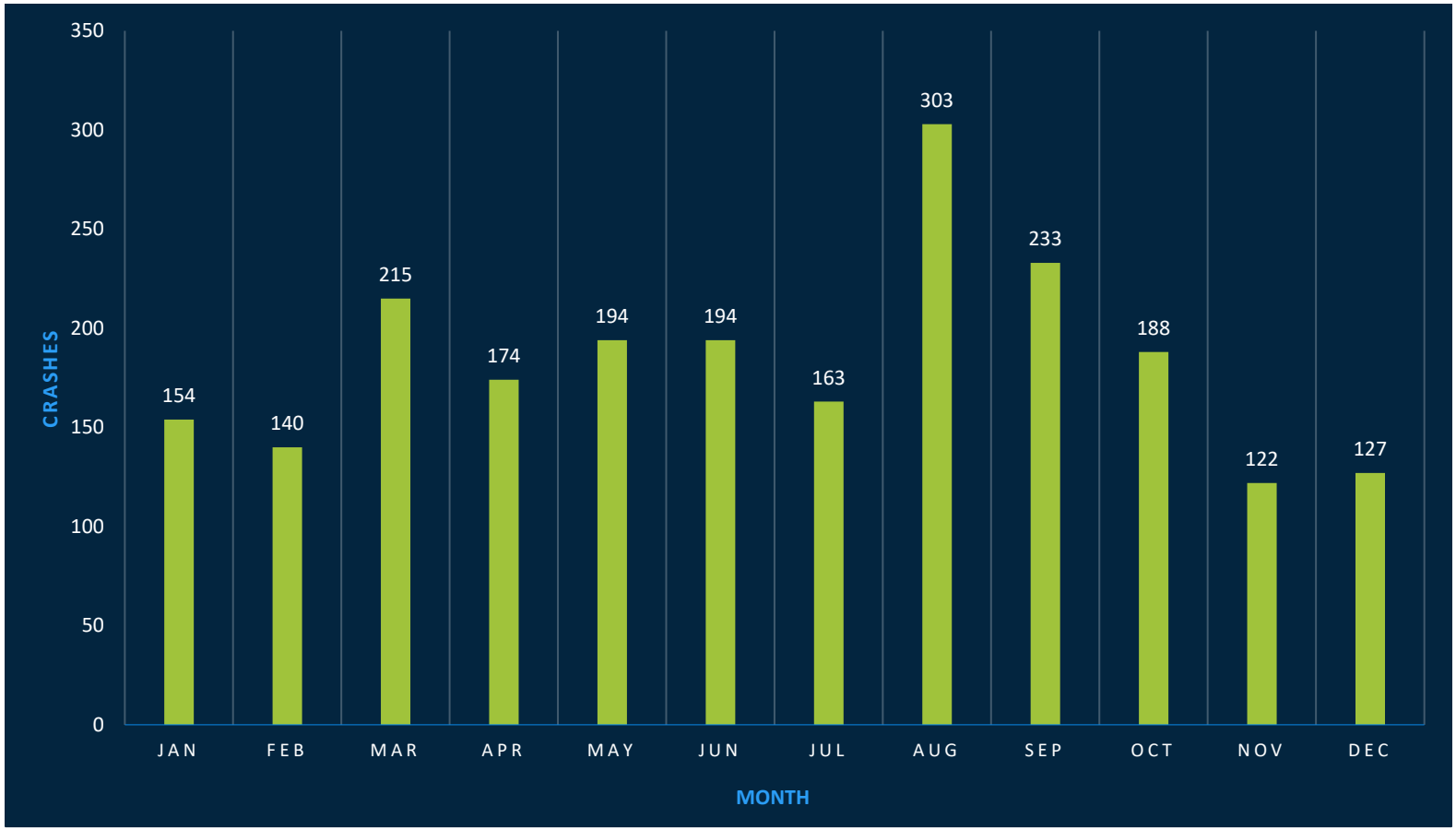
Citation Occurrence Period

Citation occurrence statistics assist in refining patrol deployment decisions. Typically, traffic varies significantly by time of day and day of the week, particularly during weekday peak hours. Citation for the study area was evaluated based on the period of occurrence of the citation with respect to the month of the year and the day of the week.

Month

Citation by the month of the year during the analysis period is shown in **Figure 22**. The highest number of citations were issued in August (303) and September (233) over the analysis period. This corresponds to 24.3% of all citations. The number of citations issues were lowest in November and December.

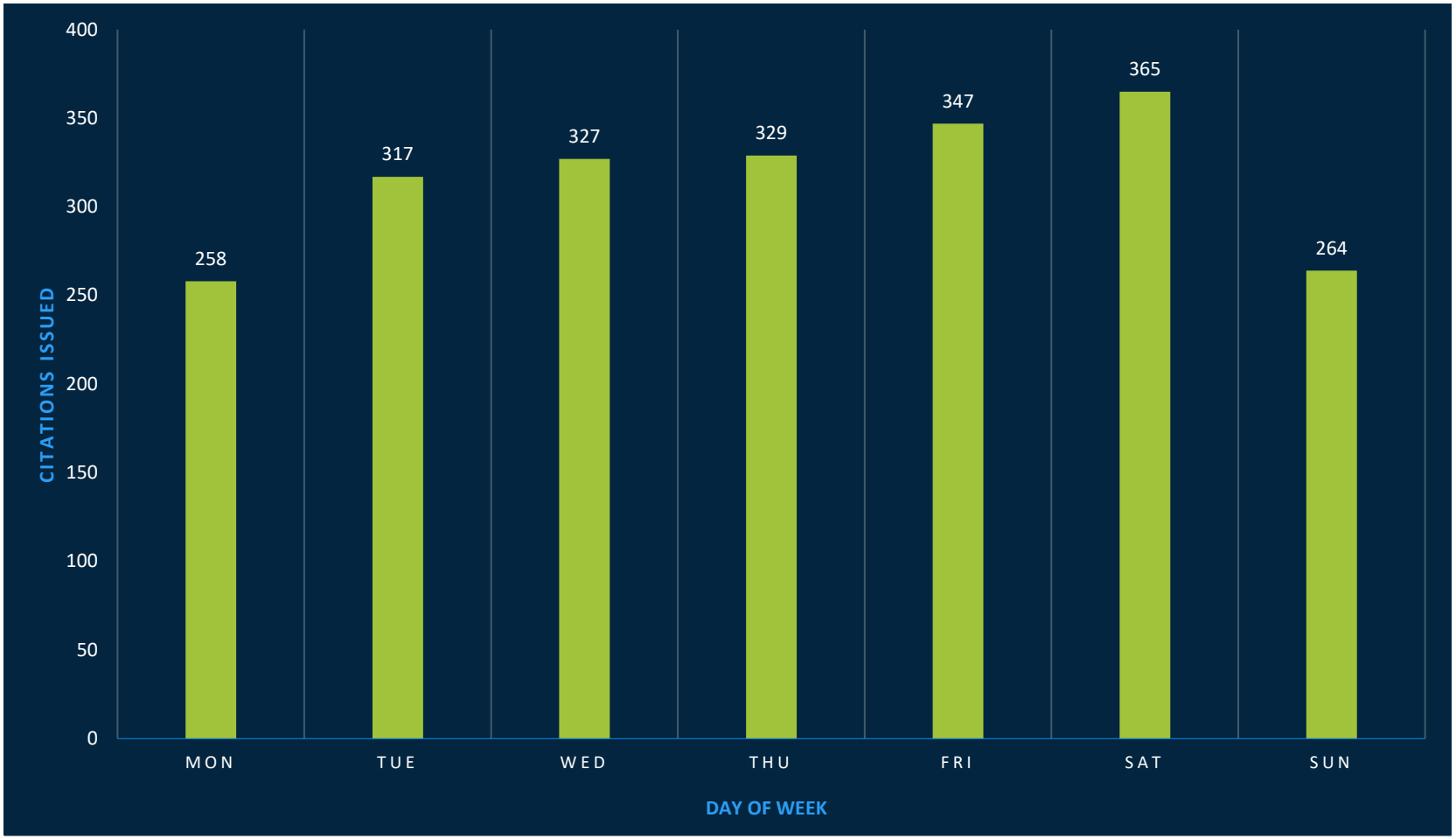
FIGURE 22 – CITATIONS ISSUED BY MONTH OF THE YEAR (AUG 2000 – JULY 2023)



Day of the Week

Citation issued by the day of the week is shown in Figure 23. Most citations were issued on Friday and Saturday. Least number of citations were issued on Sunday and Monday

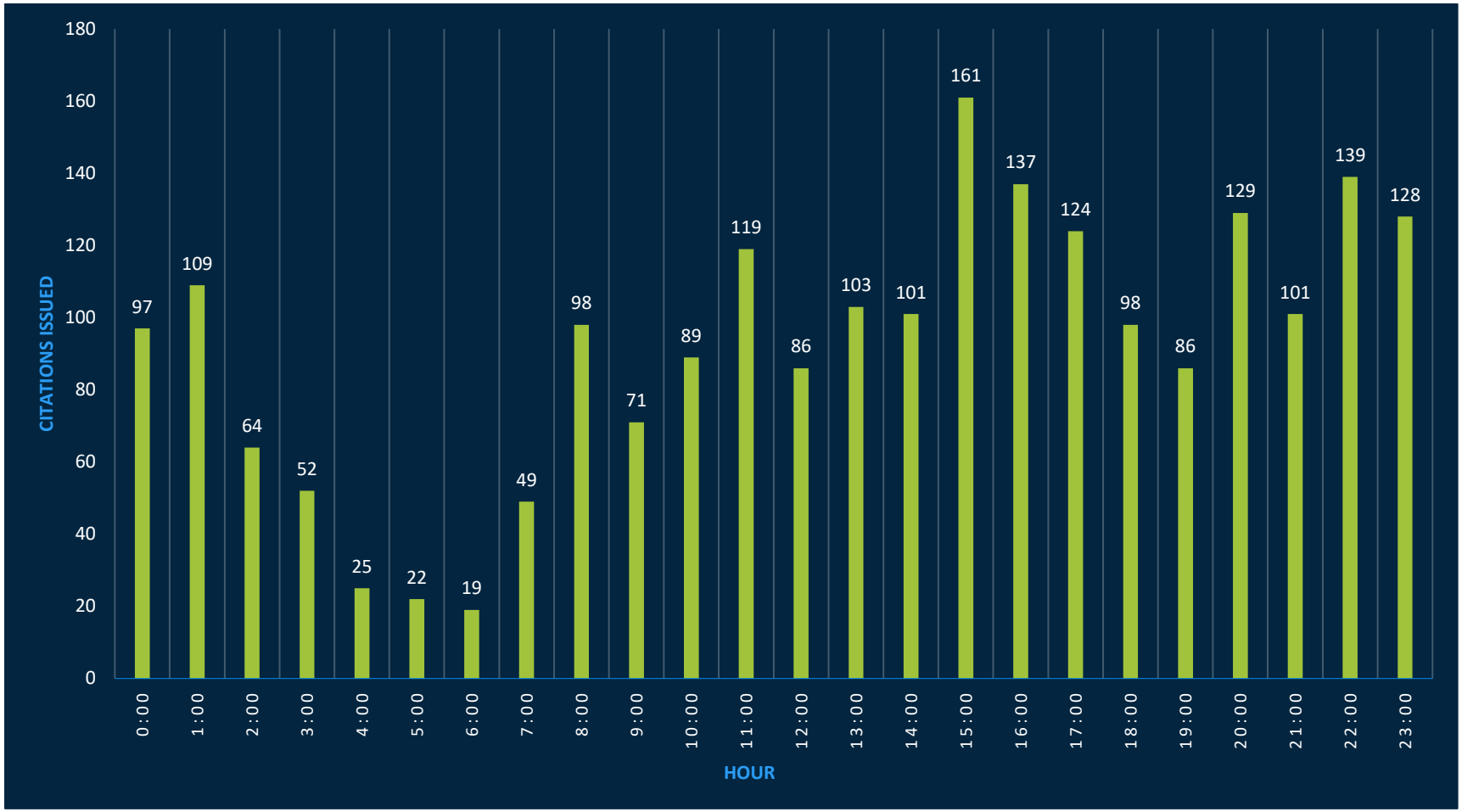
FIGURE 23 – CITATIONS ISSUED BY DAY OF THE WEEK (AUG 2000 – JULY 2023)



Hour of the Day

Citation issued by the hour of the day is shown in **Figure 24**. Most citations were issued between 3PM and 6PM (19.1%).

FIGURE 24 – CITATIONS ISSUED BY HOUR OF DAY (AUG 2000 – JULY 2023)



Prominent Citations

Table 5 summarizes the top five traffic citations issued by the Box Elder law enforcement during the analysis period. The top five citations correspond to 50% of all traffic citations issued by the law enforcement in the analysis period.

TABLE 5 - TOP FIVE TRAFFIC OFFENSES RECORDED BY BOX ELDER LAW ENFORCEMENT
(AUG 2020 – JUL 2023)

TRAFFIC OFFENSES	NUMBER
No Proof of Insurance	353
Speeding 1-15 mph over the limit	332
Invalid License/Permit	154
Suspended License	136
Stop Sign Violation	133
TOTAL	**1,108**

Chapter 4 – Community Engagement

The Box Elder Safety Action Plan was initiated in late July 2023 through an internal kick-off meeting involving the project team. After this kick-off meeting, plans were made for a stakeholder meeting designed to foster discussions based on insights derived from crash data and findings. The objective was to set the framework for the next stages of the planning process.

Public and stakeholder engagement plays a crucial role in providing a comprehensive understanding of safety conditions and challenges across the region. This engagement offers valuable context for data-driven safety analysis. By maintaining a robust and ongoing dialogue with relevant stakeholders and the public, the opportunity to pinpoint areas with perceived safety concerns and citizen-suggested improvements may be identified. The feedback is utilized by integrating it into the project prioritization process.

RELEVANT STAKEHOLDERS

The project team engaged relevant stakeholders from local agencies to provide support in project identification and development. These stakeholders were specifically chosen due to their agencies' responsibilities in overseeing project development and funding, which encompassed the entire project lifecycle, from initial planning to construction. Continuous coordination efforts were upheld throughout the process to ensure that these stakeholders had a comprehensive understanding of the Safety Action Plan, the prerequisites of the SS4A program, and the criteria for grant funding eligibility. This collective effort resulted in a shared comprehension of the program, enabling local partners to be well-prepared for potential SS4A funding applications via Implementation Grants in the future.

The following stakeholders participated in developing the Safety Action Plan:

- City Departments
- School District
- Fire
- EMS
- Emergency Management
- Interested citizens
- State DOT
- Local Developers
- Engineering Firms

Stakeholder 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. To kick-off outreach efforts, an in-person stakeholder meeting was held November 8, 2023.

Stakeholders in Attendance:

- Douglas School District
- Box Elder Fire and Emergency Services
- Box Elder Emergency Response
- Box Elder Streets Department
- Box Elder Parks Department
- Daene Boomsma, Housing Developer at Boom Construction
- Kyle Hobbs, Indigo Design
- Billy Landernoem, resident

The meeting's focus was to consider the entire Box Elder community, identifying "pockets" or areas within the community that need focused attention and discuss areas of growth within the community.

Key themes identified during this session included:

- Connectivity. Both roadway connectivity and pedestrian connectivity was identified as a hurdle for the Box Elder community. The sprawled-out nature of the community means it is challenging to provide consistent connectivity from outlying developments to the city.
- Highway 1416 and Radar Hill Road is a major traffic challenge in Box Elder. Rapid City MPO is currently conducting a corridor study for this segment.
- Growth within the community. The community continues to see growth at a rapid rate, providing challenges for developers (connectivity) and ensuring safe and efficient traffic flow.
- Roadway jurisdictional challenges. The roadways that serve the Box Elder community are "owned" by many different jurisdictions (Box Elder, Rapid City, Airforce Base, Pennington County). Providing a cohesive system is important.

The meeting consisted of conversations and cross-collaboration to understand the systemic issues, policies, and processes within the community. The represented entities brought varying perspectives, but better yet, provided a unique opportunity to collaborate with one-another and develop working relationships, which has never been done to this extent before.

PUBLIC ENGAGEMENT

In creating the Safety Action Plan, the community's active involvement was of utmost importance. The perspectives of those who traverse Box Elder's roads, whether by motorized vehicle, bicycle, or on foot, played a crucial role in guaranteeing that the streets were designed to accommodate all users effectively. The public had two primary means of engagement, namely an online survey and in-person engagement meetings.

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. The project website was the main avenue to collect feedback. An interactive map and a “quick” survey question 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.

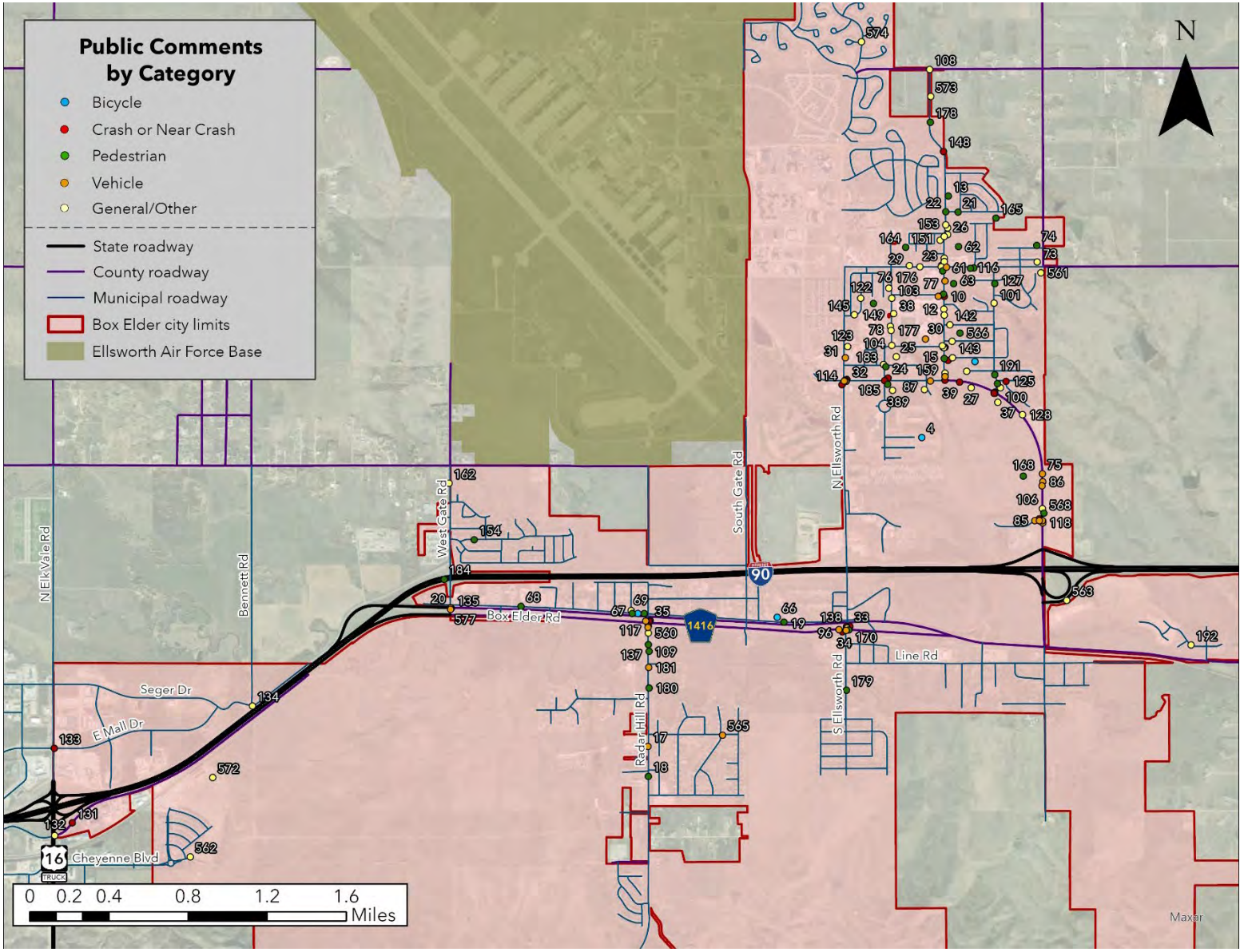
INTERACTIVE MAP

The public utilized an interactive map to identify location specific issues, concerns, or ideas. A total of 149 contributions were collected on the map. Figure 25 shows the locations of public comments (*Each comment is identified by a unique comment location number which is associated with the numbered Social Pinpoint survey responses, used for comment tracking purposes).

Topics and contributions included:

- Pedestrian= 35 contributions
- Bicycle= 4 contributions
- Vehicle= 26 contributions
- Crash or Near Crash= 29 contributions
- General/Other= 55 contributions
- Disability Access= 0 contributions

FIGURE 25 – SOCIAL PINPOINT PUBLIC COMMENTS



Interactive mapping exercise resulted in 154 comments in the Box Elder community. **Key themes identified through the interactive map:**

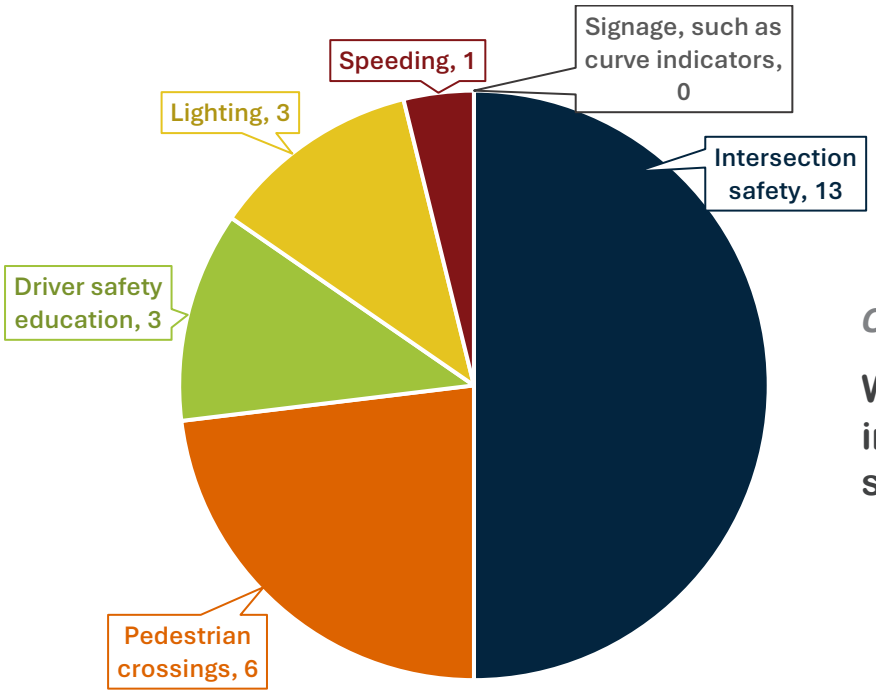
- The need for sidewalks and pedestrian facilities
- Improved connectivity
- Intersection improvements including turn lanes or traffic lights to help with traffic flow and congestion.

A full listing of comments collected can be found in the Appendices.

ONLINE SURVEY

One "quick" poll survey question was posted onto the website for visitors to answer. 26 contributions were collected.

FIGURE 26 – POLLING QUESTION RESULTS



QUESTION:

What roadway safety issue is most important to you to address in the safety action plan?

OUTREACH ACTIVITIES

The project team identified several avenues to engage with local residents with reaching a broad and diverse group of people. Outreach included connecting with families attending schools within Douglas School District, engaging with Ellsworth Air Force Base residents and families, and engaging with community partners such as Feeding South Dakota. The project team connected with these local entities in a variety of ways with the goal of directing people to the project website to give feedback. KLJ's project manager, with assistance from the public engagement team, conducted outreach with the local school district, local media, Ellsworth Airforce Base, and community partners by presenting information and sharing handouts directing people to the project website.

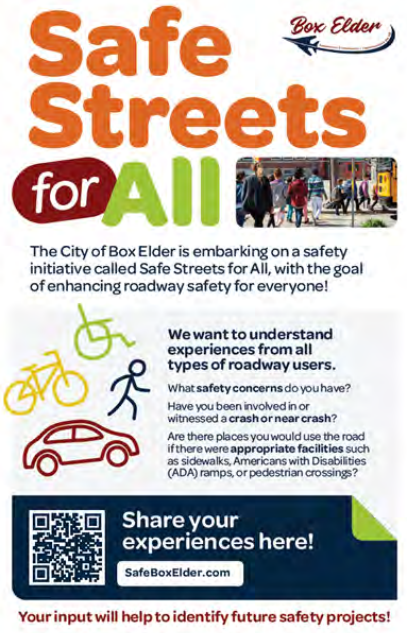
Outreach activities included:

- Presentation at Douglas School District's community council meeting
- Shared information with Ellsworth Air Force Base personnel for distribution to Ellsworth Air Force Base members
- Disseminated information via the school newsletter and internal communication channels
- Participated and engaged with community members at the Feeding South Dakota local charitable event on two occasions.
- Disseminated information to all city staff.
- Social media and local media outreach to the public.

Additionally, the city is in the process of updating their comprehensive plan. One of the public outreach exercises was to have the attendees prioritize issues, and the top five were the following:

1. Affordable Housing
2. Attracting retail and services
3. Activities for kids
4. Parks and playgrounds
5. More sidewalks, especially near the schools

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



Chapter 5 – 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 as follows. 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."

BOX ELDER MASTER TRANSPORTATION STUDY (2018)

Traffic Operations Recommendations

Based on the 2018 review of *key intersections* surrounding the schools, the following recommendations were provided:

- 225th Street and Briggs Street – Widen 225th Street to install east-west left turn lanes. Optionally, the addition of a northbound left turn lane.
- 225th Street and Tower Road – Maintain current lanes and traffic control
- Briggs Steet and Villa Drive – Provide channelization and delineators to "T" Villa Drive into Briggs Street. Optionally, curb and gutter may be used.
- Liberty Boulevard and Tower Road – Maintain current lanes and traffic control.
- Liberty Boulevard and Prairie Road – Maintain current lanes and traffic control.
- Briggs Street and Patriot Drive – Remove stop sign from east approach.

Based on the 2018 review of ***roadway corridors*** surrounding the schools, the following recommendations were provided:

- Briggs Street – reconstruct as a 3-lane section when warranted
- Don Williams Drive – Maintain current function and turn Don Williams Drive over to Douglas School District for operations and maintenance
- Ellsworth Road – Construct a left turn lane for the bus drop-off facility
- Liberty Boulevard – Maintain the current 5-lane section
- Patriot Drive – Maintain the current 2-lane section
- Tower Road – Reconstruct as a 3-lane section soon from Liberty Blvd. To Pershing Street
- Villa Drive – Reconstruct as a 3-lane section when warranted
- 225th Steet – Maintain the current 2-lane section. Add bus lane at Douglas Middle School

School Bus Recommendations

The bus service analysis focused on pick-up and drop-off activities around the schools, most notably at Don Williams Drive and Douglas Middle School. Final recommendations included:

- Don Williams Drive – Observations indicated that Don Williams Drive was operating satisfactorily. Therefore, the "Do Nothing" alternative was recommended.
- Douglas Middle School –Constructing a bus turnout lane along 225th Street was recommended.

School Parking, Pick-Up and Drop-Off Recommendations

An analysis of off-street parking at the schools indicates that even with anticipated growth, there appears to be sufficient parking spaces available. The breakdown between elementary, middle, and high school students, as well as the future locations for school building expansion could impact this conclusion.

Pick-up and drop-off activities were observed and are not ideal, as some of this activity is occurring in school parking lots. No alternatives were identified to improve this issue, short of adding a bus lane along 225th Street for the Middle School.

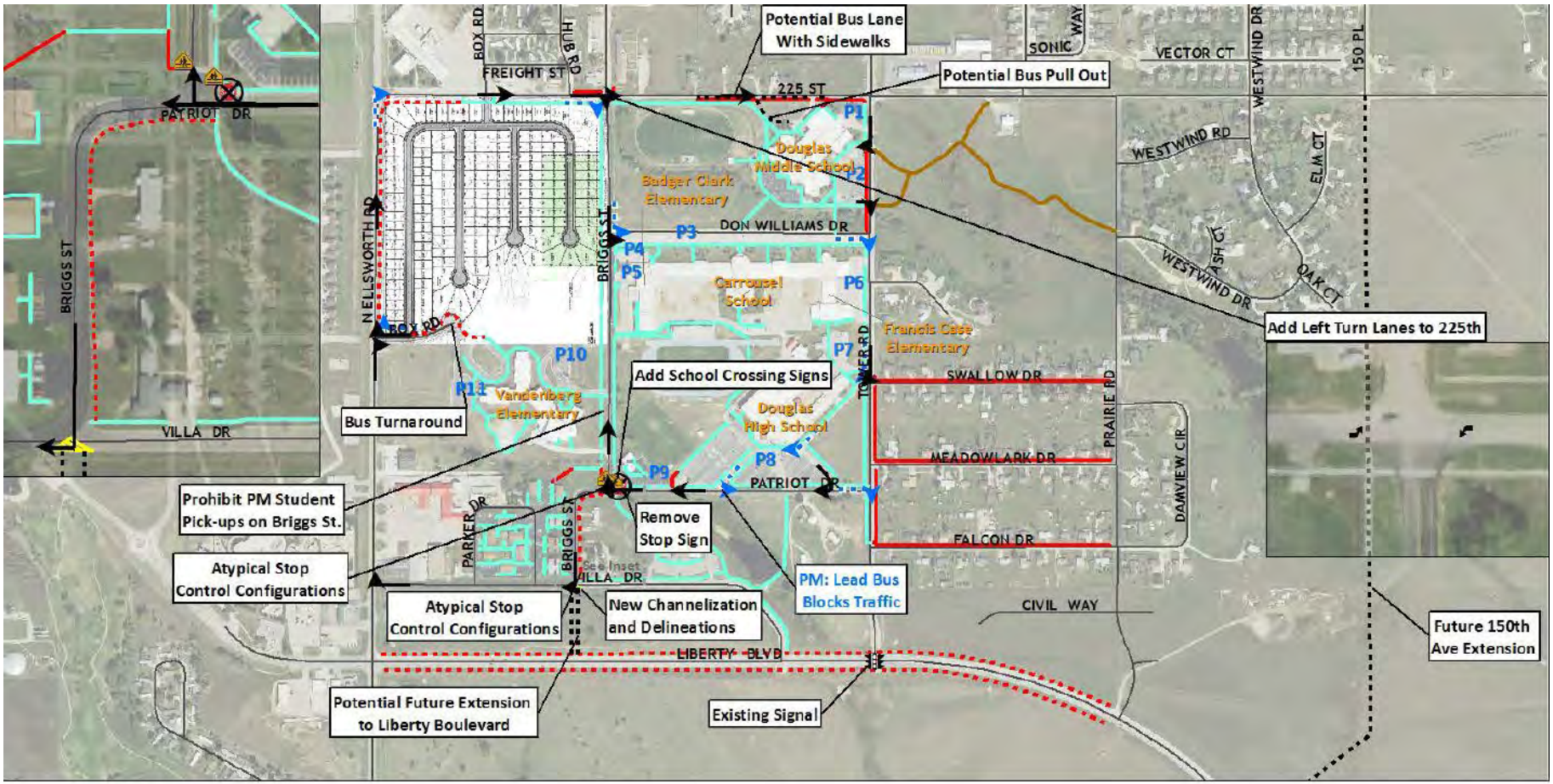
Pedestrian and Bicycle Facility Recommendations

Construction of new sidewalks and multi-use paths to accommodate both pedestrian and bicyclists was recommended. These will extend into new areas and fill in short gaps in the current sidewalk system, improving both accessibility and safety. Specific locations where new sidewalks are recommended (Shown previously in Figure 12) include the following:

- West side of Tower Road, connecting Middle School to Elementary School
- North side of 225th Street – Briggs Street to Hub Road
- West side of Briggs Street at Patriot Drive intersection
- Side path along east side of Ellsworth Road as part of development construction
- South side of 225th Street as part of development construction
- Southwest corner of High School parking lot
- One or both sides of Swallow Drive, Meadowlark Drive, and Falcon Drive
- Along proposed 225th Street bus lane
- Along Tower Road to complete both sides from Liberty Blvd. to Pershing Street
- East side of Briggs Street in key locations

Figure 27 on the following page shows the locations of projects identified in the Box Elder Master Transportation Study (2018).

FIGURE 27 – BOX ELDER MASTER TRANSPORTATION STUDY PROJECT LIST (2018)



Implementation Plan Recommendations (2018)

Four priority categories and miscellaneous recommendations were established to guide the City of Box Elder in implementing future projects. These are described as follows:

- **Priority 1** – Low-cost intersection improvements at locations that do not have typical traffic control standards and whose implementation was expected to result in safety and/or capacity building.
- **Priority 2** – Fill in gaps within the sidewalk system that surrounds the schools.
- **Priority 3** – Encompassed street improvements which were estimated to require significant financial investment, such as new road ways, complete roadway intersection/redesign, versus that of less costly improvements such as intersection stop control improvement, signage, etc.
- **Priority 4** –Considered low priorities because they were further from the schools and had minimal impact on school-related traffic congestion and safety.
- **Miscellaneous recommendations** – Covered non-project related policies recommended for consideration in response to the analysis 2018 analysis.

The 2018 transportation plan projects were prioritized as follows:

Priority 1 – Address Critical Intersection Needs

1. Briggs Street & Villa Drive – Provide channelization pavement marking and delineators.
2. Briggs Street & Patriot Drive – Remove stop sign from east approach per MUTCD guidelines.

Priority 2 – Provide Important Sidewalk Connections

1. West side of Tower Road, connecting Middle School to Elementary School
2. North side of 225th Street – Briggs Street to Hub Road
3. West side of Briggs Street at Patriot Drive intersection
4. Side path along east side of Ellsworth Road as part of development construction
5. South side of 225th Street as part of development construction
6. Southwest corner of High School parking lot
7. One or both sides of Shallow Drive, Meadowlark, Drive, and Falcon Drive

Priority 3 – Complete High Priority Corridor Improvements

1. Construct bus lane and sidewalk along 225th Street
2. Construct east-west left lanes at the Briggs Street/225th Street intersection
3. West side of Briggs Street at Patriot Drive intersection
4. Side path along east side of Ellsworth Road as part of development construction
5. South side of 225th Street as part of development construction
6. Southwest corner of High School parking lot
7. One or both sides of Swallow Drive, Meadowlark Drive, and Falcon Drive

Priority 4 – Complete Low Priority Improvements

1. Side path (north side) and sidewalks (south side) along Liberty Boulevard
2. Extension of Briggs Street to Liberty Boulevard

In 2018, it was recommended that the Priority 1 recommendations be implemented in 2018 since they could be completed for very low cost and would result in dramatic improvement in traffic operations at the identified intersections. Other priorities were recommended to be implemented in the order listed, as funding allowed.

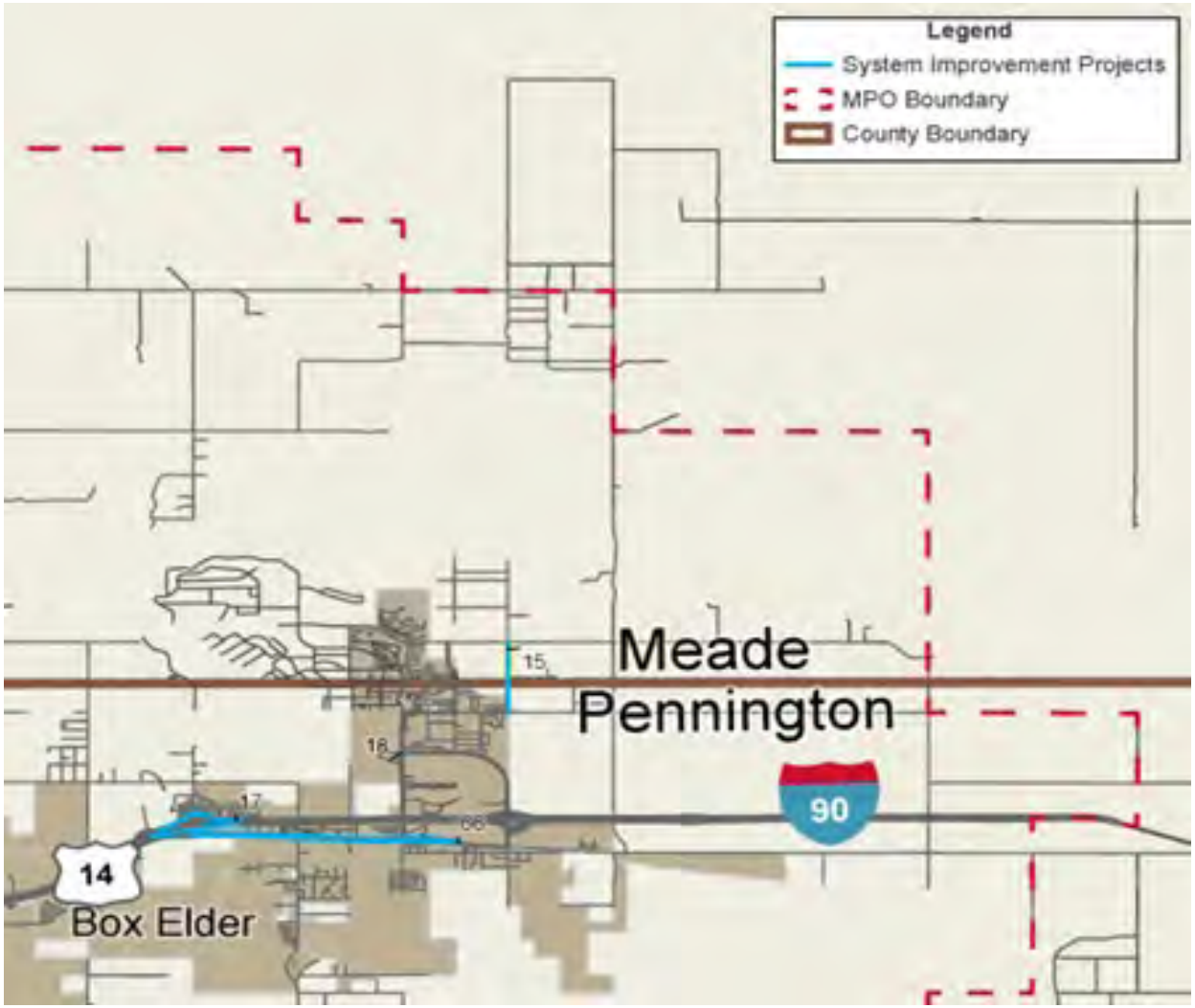
RAPID CITY AREA METROPOLITAN PLANNING ORGANIZATION (MPO) RAPID TRIP 2045 (2020)

The Rapid City MPO's Rapid Trip 2045 plan identified three (3) projects that fall within the Box Elder city limits. Those projects are listed below and shown in **Figure 28** as "System Improvement Projects" on the following page. The full Rapid Trip 2045 plan can be found online here:

https://rapidcityareampo.org/application/files/5115/9665/7703/20TP028_-_Metropolitan_Transportation_Plan_-_Final_Report.pdf

- ≈ Hwy 1416 (System Improvement Projects)
- ≈ Exit 63 interchange
- ≈ 150th Ave

FIGURE 28 - BOX ELDER PROJECTS IDENTIFIED FROM THE RAPID CITY AREA MPO'S RAPID TRIP 2045 (2020) PLAN



EXIT 63 SDDOT STUDY (2021)

The technical analyses indicated that a diverging diamond interchange configuration on I-90 at Exit 63 (Highway 1416) will provide future operational and safety benefits. Further, the analyses indicated the preferred configuration is the *Most Technically Feasible Alternative* and will have fewer environmental impacts than the other interchange Feasible Options that were evaluated. The Most Technically Feasible Alternative (described as Alternative 3b in previous sections of the study) is presented on Figure 47 of the report found here: https://dot.sd.gov/media/I90Exit63IMJR_Final_08252021_compiled.pdf . Control of Access for the preferred alternative is presented on Figure 48 and the related Guide Signing Plan is presented as Figure 49. The FHWA has two policy points that must be evaluated when completing an interchange modification on the intestate network. Each of these points is found in the report beginning on page 98, along with documentation of how the Most Technically Feasible Alternative addresses them.

MEADE COUNTY MASTER TRANSPORTATION PLAN (2022)

Several short- and long-range projects that fall within the Box Elder city limits were identified in the recently completed Meade County 2022 Master Transportation Plan (MTP). Those projects are listed below. The full MTP can be found online here:

https://dot.sd.gov/media/documents/Meade%20County%20MTP%20Final%20Report2_Final_PDF_20220715.pdf

- ≈ 150th Ave (Pennington County Line to Eagle Ranch Rd. (Asphalt paving – minor arterial)
- ≈ 151st / Antelope Creek Rd. (Pennington County Line to Elk Creek Rd – gravel to pavement conversion)

BOX ELDER HIGH SCHOOL TRAFFIC IMPACT ANALYSIS (2021)

Generally, the Box Elder High School Traffic Impact Analysis recommended that pedestrian and bicycle accommodations be provided within and surrounding the new High School site. It was recommended that additional funding sources be identified to help finance regional and local multimodal improvements. Key recommendations included those shown in the graphic on the next page.

Specific curbside passenger drop-ff areas within the site that maximize safety for students being conveyed to and from the site via bus or vehicular pick-up and drop-off.

Sidewalks along both sides of the main east-west access roadway through the site to allow for ease if student walking to parking areas and athletic fields.

Provisions for pedestrian and bicycle linkages to future and nearby residential development with the Liberty Boulevard/HWY 1416/151st Avenue area.

Provisions for future trail connections to serve bicycle and pedestrian travel to and from the school area. Potential connections should include:

- North connections across I-90m likely best via 151st Avenue
- South/west connections: 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).
- East/west connections: Any future trail connections along Hwy 1416 should include linkages to the new High School

Future regional enhancements are encouraged including:

- A shared use path along HWY 1416 through Box Elder
- A shared use path/trail along 151st Avenue from 225th Steet to HWY 1416

BOX ELDER CREEKSIDE ELEMENTARY SCHOOL TRAFFIC IMPACT STUDY (TIS) - 2022

Traffic Operations

The Creekside Elementary School TIS found that intersections experience unacceptable operations in the study area in year 2025 in the AM peak hours:

- The intersection of Highway 1416 and Radar Hill Rd is expected to operate with unacceptable delay and LOS F under No-Build and Build Conditions.
- The northbound approach of the Hwy 1416 and S Ellsworth Rd is expected to operate with unacceptable delay and LOS F under the Build Conditions.
- The northbound approach of the intersection of Highway 1416 and S Ellsworth is expected to operate with unacceptable delay and LOS D under the Build scenario.

All intersections and their approaches operate with acceptable operations during the PM peak of both the No-Build and Build scenarios in 2025.

The improvement of the traffic controls to signals and the addition of turn lanes at the two intersections of Highway 1416 at Radar Hill Rd and South Ellsworth Rd will mitigate the traffic operational deficiencies experienced in 2025.

With the improvement of the traffic controls to signals and the addition of turn lanes at the two intersections of Highway 1416 at Radar Hill Rd and S Ellsworth Rd all intersections and their approaches are anticipated to operate with acceptable operations during the peak hours of both the No-Build and Build scenarios in 2045.

The signal cycle lengths and splits used in the 2045 No-Build Conditions at the two future signalized intersections were retained for 2045 Build Conditions. The drop in LOS from No-Build to Build conditions at the two future signalized intersections can be improved by optimizing the signal cycle lengths and split.

Warrant Analysis

The existing and projected traffic volumes do not warrant the installation of a traffic signal at either of the analyzed intersections at Radar Hill Rd and Creekside Dr, and S Ellsworth Rd and Freude Ln.

The projected 2025 and 2045 traffic volumes and trips generated by the proposed school meet warrants for a westbound left turn lane at the school entrance access during the AM peak hour. However, the intersection and westbound approach of the school entrance intersection operate with acceptable delay and LOS during the AM peak hour, indicating that westbound left turn lanes may not be required.

BOX ELDER PARKS AND OPEN SPACE MASTER PLAN (2022)

Pedestrian and Bicycle Facility Recommendations

A primary goal of this study was to identify pedestrian and bicycle facility needs and to prioritize needed sidewalk and multiuse trail improvements. Gaps in the pedestrian/bicycle system comprise the most significant issue related to pedestrian and bicycle safety within the study area. Proposed facility locations (i.e., potential projects) are shown previously in Figure 12.

BOX ELDER ACTIVE TRANSPORTATION STUDY (2023)

The 2023 active transportation study has a handful of key recommendations that are related to transportation safety improvements, as follows:

Recommendation 4: Develop a main corridor into Box Elder

The study recommends development of a main corridor for vehicular traffic and multimodal traffic that would lead residents and visitors through the center of the city. The study cites Highway 1416 and Liberty Boulevard as options for this development as Liberty Boulevard is the location of City Hall and the highly anticipated Black Hills Children's Museum. Developing commercial space and recreational areas along Liberty Boulevard is an appropriate place for further developments such as these and would promote traffic to the developing commercial district.

Recommendation 5: Create and connect nodes at prominent locations

Nodes are transitional areas between connecting paths or transportation corridors that function as gathering points. Nodes should be implemented at prominent city intersections around the city.

Recommendation 11: Develop a green corridor along Ellsworth Road

Box Elder is developing a system of paths and trails throughout the city to improve safety and functionality of its bike and pedestrian network.

The study noted that "sidewalk along Ellsworth Road does not run the full length of the road. It is interrupted by an unsafe highway interchange and has no enclosure or appeal. This makes walking and biking along this road unsafe and unenjoyable. This is hazardous because this road is the only major connection between the two primary portions of Box Elder. There is a sidewalk running along Ellsworth Road from Heritage Park and Community Gardens to Liberty Boulevard. This should be converted into a Green Corridor. Small offshoot plazas and connections to commercial developments should be integrated with the corridor."

Recommendation 20: Redesign Highway 1416 to improve safety and function

See Highway 1416 and Radar Hill Road Corridor Analysis Study (2024) on page 67.

Recommendation 21: Improve connections between Box Elder's neighborhoods

The study found and recommended that current infrastructure in Box Elder is not equipped to manage the increasing population and high rate of development citing many of the city's arterial and secondary roads need to be improved. Main roads cited for improvement included:

- Tower Road
- Radar Hill Road
- Radar Hill Drive
- West Gate Road
- Line Road
- 225th Road
- Ellsworth Road
    - Ellsworth Road was found to need updated sidewalks and roundabouts where it intersects with Liberty Boulevard and 225th Street.
    - The roundabouts will slow traffic and improve safety and security for the entries into Ellsworth Air Force Base.

PENNINGTON COUNTY MASTER TRANSPORTATION PLAN (2024)

Several short- and long-range projects that fall within the Box Elder city limits were identified in the recently completed Pennington County 2024 Master Transportation Plan (MTP). Those projects are listed below. The full MTP can be found online here:

https://docs.pennco.org/docs/HI/2024%20Master%20Transportation%20Plan.pdf

Intersection Projects

Short Term

- I-90 Service Rd S & US Hwy 16 Bypass is a high crash intersection identified for an Intersection Safety Improvement Project in 2028 with a Rough Order Magnitude (ROM) cost estimate of $600k.

Long Term

- Liberty Blvd and Tower Rd. This is a High Crash Intersection identified for an Intersection Safety Improvement Project beginning in 2029 or after with a ROM cost of approximately $750k.

Roadway Projects

Short Term

- 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 (See Highway 1416 and Radar Hill Road Corridor Analysis Study 2024, below).

Long Term

- 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.

HIGHWAY 1416 AND RADAR HILL ROAD CORRIDOR ANALYSIS STUDY (2024)

Based on the capacity results discussed in the report, recommendations were developed for each of the study intersections that require improvement:

Safety and capacity issues are present now, and they are expected to become worse as traffic increases. Efforts to correct these deficiencies should be undertaken as soon as adequate funding can be found.

- *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.
- *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.
- *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.

The full study can be accessed online here: https://docs.pennco.org/docs/HI/2024%20Radar%20Hill-1416%20Corridor%20Report%20-%20Final.pdf

Chapter 6 – 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 6 and Figure 29. 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 6 and Figure 29.

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 6 and Figure 29).

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 6 – 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

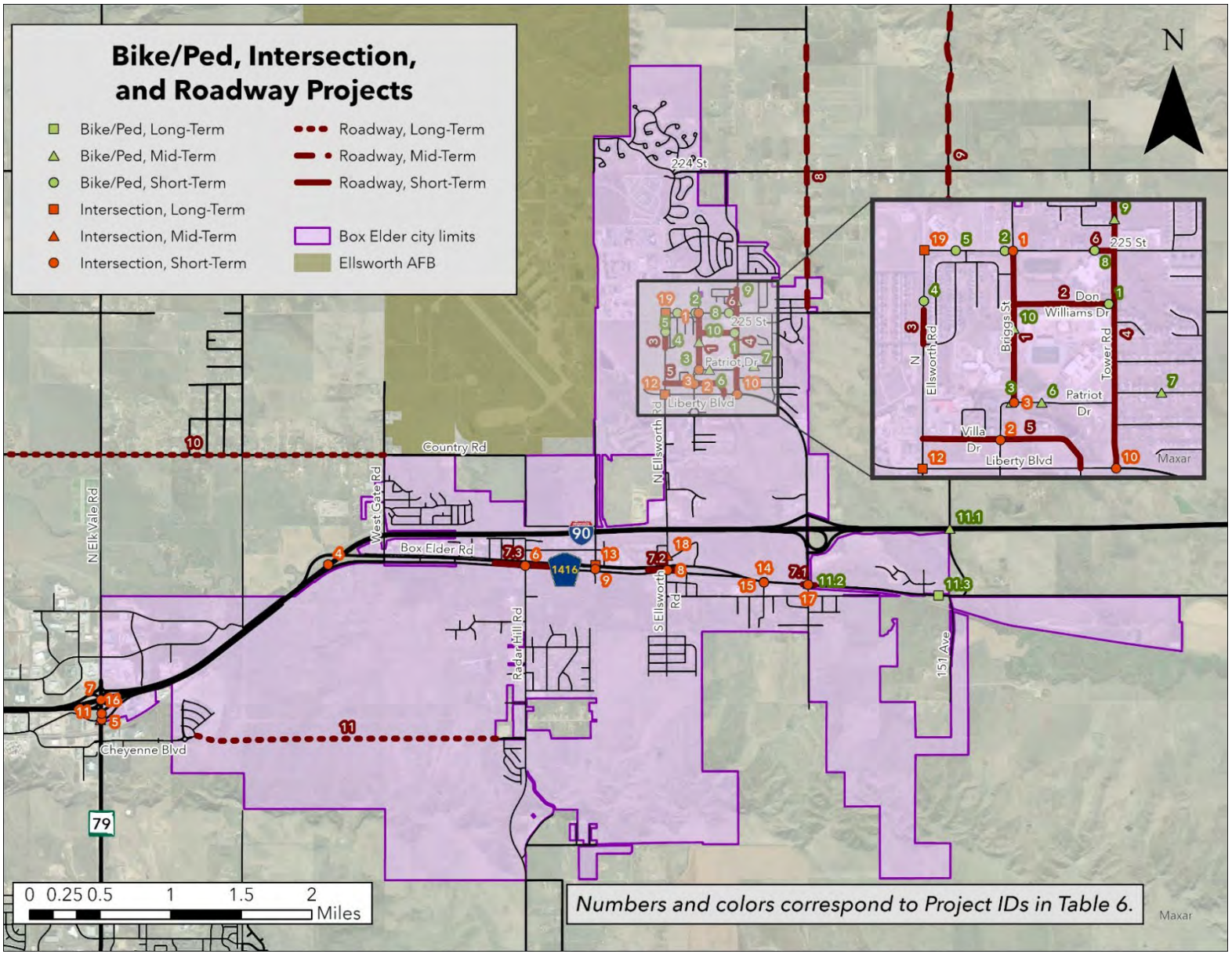
SS4A PROJECT RECOMMENDATIONS						
Project ID (Refer to Figure 29)	**Project Name & Description**	**SS4A Related - High Priority Recommendation (Yes / No)**	**Project Source**	**Project Identification Year**	**Project Time Frame Recommendation (Short / Mid / Long Term)**	**Project Status (Complete / 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 29 - SS4A PROJECT LOCATIONS



Chapter 7 - Concepts For Implementation of Safe & Friendly Streets

BEST PRACTICES

In 2018, as part of the Box Elder Master Transportation Study, KLJ explored best practices in South Dakota as well as other states to provide guidance that could be applicable to the Douglas School system from a policy or improvement methodology standpoint. This guidance holds true today.

Through the process of analysis, preferred measures of effectiveness (MOE's) were prepared that respond to road safety and improvement needs, locations of high pedestrian and/or bicycle activity, bus activity, and other potential safety issues.

The Institute of Transportation Engineers (ITE) is perhaps the best source for best practices concerning elements of school traffic management. ITE resources reviewed for this purpose included:

- Pickup and Dropoff Plans that Work
- School Traffic Safety Assessment
- School Strategies
- School On-Site Design

Other resources that were reviewed to investigate best practice included:

- North Carolina Pupil Transportation Services Indicators Report
- North Carolina Budget Cuts
- Planning for School Bus Safety on School Sites and Schools Bus Parking Lots
- South Dakota Legislative Research Council
- South Dakota Safety Council Back-to-School Safety Fact Sheet
- Aerial images of other Rapid City area schools

The results of this review have been placed into two categories:

- **Suggested Applications**
- **Measures of Effectiveness**

SUGGESTED APPLICATIONS

Suggested applications from ITE include the following:

Pickup and Drop-off Plans that Work

- Parking should be prohibited along streets adjacent to a school where pick-up and drop-off activities occur.
- Drop-offs should be discouraged from the middle of parking lots or directly from travel lanes of a street.
- Where space in front of a school is tight, establish more than one drop-off location.
- Communicate with parents what is expected.
- Avoid requiring students from having to cross the line of cars picking up or dropping off students.
- By keeping parents in the car, the queue of vehicles will keep moving. (This may not be practical where students are required to cross between cars or buses.)
- School safety patrols (older students) can assist students into and out of their vehicles.
- Use traffic cones liberally to highlight and enforce elements of the traffic plan.
- One-way traffic flow reduces delays and enhances student safety.
- Staggered start and dismissal times can reduce travel demand around the schools.
- Develop a Safe Route to School program.
- Use changeable message speed limit signs as a form of speed control.

School Traffic Safety Assessment

- Allow cyclists and pedestrians to leave the school before all others.
- Provide secure bicycle racks and/or shelters.
- Establish parents' car-pooling scheme.
- Determine whether a school zone is warranted.

School Strategies

- Designates access points for bus drivers, school staff, and parent drivers that are separated from pedestrians and bicyclists.
- Vary dismissal time or location by mode or grade to reduce the number of students arriving at or leaving school simultaneously.
- Define zones within the school campus (student drop-off/pick-up, short-term parking, bus waiting area, etc.) and identify student and parent rules in each zone.
- Use a platooning drop-off/pick-up system in which all vehicles unload/load simultaneously, and all drivers must wait for the front vehicles.

- Require parents of kindergarteners to park and walk their students to and from school.
- Design circulation by designated one-way flow and pull-through lames, or by realigning or constricting automobile access.
- Issue school parking lot “citations” or warnings designed to look like actual police tickets.
- Educate students in proper walking and bicycling rules of the road; provide yearly lessons that build safety skills.
- Designate a remote drop-off/pick-up area where students can walk to or from school.

School On-site Design

- Locate building entrances with consideration of pedestrian “desire lines.”
- Provide bicycle travel and parking facilities to encourage bicycle use.
- Provide separate left-turn and right-turn lanes for exiting buses.
- Drop-off area design should not require backward movement by buses.
- Bus drop-off areas should not require children to walk between buses.
- The bus-loading zone should not straddle a pedestrian crossing.
- For efficiency, bus travel should not share a common driveway with parent traffic.
- Provide an adequate driveway length for queuing cars on site. The length of the car pick-up zone should be determined as a function of the expected number of cars.
- Drop-off area design should not require backward movement by vehicles.
- Do not load or unload students where they must cross a vehicular path before entering the building.
- Provide maps and instructions to parents on the school websites and in newsletters to describe the location and operation of the new loading zone.
- Due to increased dwell time, the space requirements for pick-up can be much longer than for drop-off. Separate polices for pick-up and drip-off may be necessary.
- Use separate driveways for parent traffic and bus traffic at elementary and middle schools.
- Locate the bus area so that buses exit upstream of automobiles and gain priority, thereby reducing delay.
- When selecting the location of driveways, consider the predominant direction of traffic and student origins so most drivers turn right when exiting the school.

The *South Dakota Safety Council Fact Sheet* also offers the following recommended policies to improve safety for travel around schools:

School Bus Safety

- Walk with kids to the bus stop and wait with them until it arrives.
- Tell kids to stand at least three giant steps back from the curb as the bus approaches.
- Teach kids to wait for the bus to come to a complete stop before getting off.
- To cross the street after getting off the bus, kids should take five giant steps in from of the bus (never walk behind the bus), look both ways and make eye contact with bus driver before stepping into the road. See more tips for a safe bus ride http://bit.ly/18bsLLC.

Carpooling/Riding to School

- Always buckle up and use child safety seats correctly every time you ride. Need age-specific child passenger safety help? Visit www.carseatsmadesimple.org
- Never carry more passengers than there are safety belts in the vehicle.
- The back seat is a safest place for children of any age to ride.
- Check with the school about designated drop-off areas; make sure kids enter and leave the car on the curb side.

Walking to School

- Choose the safest route and walk it with kids.
- Have kids walk facing traffic, on sidewalks or paths. Walk as far to the left as possible if there are no sidewalks.
- Make sure kids look both ways before crossing the street, and cross at designated crosswalks or at corners.
- Don't allow a child (typically under age 10) to cross streets alone. Every child is different, but developmentally, most kids are unable to judge the speed and distance of oncoming cars until age 10.
- Distraction among drivers is at an all-time high today, so remind kids to make eye contact with the driver in a stopped vehicle before stepping into the road.
- Remind kids to put down the phone and turn off volume in headphones when crossing the street. Visit http://bit.ly/2b07TAy for more safe walking tips.

Biking to School

- Make sure children have the right size helmet and wear it every time when riding. Take the helmet fit test http://bit.ly/2bMGOnt.
- Select a safe route and bike it with kids.

- Kids should ride on sidewalks (being alert for vehicles going in and out of driveways) or bike paths until around age 10.
- Kids should be able to show they know how to follow the rules of the road before cycling with traffic.
- Remind kids to stay alert to traffic and stop before crossing the street, entering a road or turning. See more safe biking tips at http://bit.ly/2bN7NOB.

For Drivers

- Follow the speed limit and slow down in school zones and near bus stops.
- Be alert to kids walking to or from school or the school bus.
- Slow down and stop if you're driving near a school bus that is flashing yellow or red lights. This means the bus is either preparing to stop (yellow) or already stopped (red) and children are getting on or off.
- Visit http://bit.ly/1FuehY1 for more back-to-school tips for drivers.

PERFORMANCE MEASURES

Yearly reduction in number of fatal and severe injuries on the streets	Annually report fatal and severe injury crashes. Delineate by mode, severity, location, driver behavior, and impairment. Watch for patterns from year to year. Correlate data with citizen complaints.
Installation of safety features annually or more often as resources become available.	Within the City's capital improvement plan, identify and prioritize techniques and resources for targeted areas.
Lessen speeding and the need for additional enforcement. Additional positive reinforcement for safe driving.	Continue to monitor speed and tests effectiveness of the types of monitors.
Form a Plan Advisory Committee that meets at least bi-annually	Review data and reports. Provide recommendations to the appropriate staff. Include estimated costs and research to meet the goals and objectives.

COUNTERMEASURES & STRATEGIES

A range of flexible and cost-effective countermeasures have been proven effective in reducing the likelihood and severity of bicycle crashes. Examples include:

- Advance warning signs and markings
- Dedicated bicycle lanes
- Lighting

- Prohibited right turns on red
- Separated multiuse paths
- Road diet
    - "The road is a shared space; safety is a shared responsibility." - Atlanta Regional Commission, Regional Safety Strategy (2023)"

Rapid Trip 2045 Safety and Performance Strategies:

Strategies to Maintain and Improve Highway Safety Performance

Strategies that support Performance Measure 1 include review of crash frequency and crash rate intersections to identify potential safety countermeasures for intersections demonstrating safety issues. Appendix D provided some specific countermeasures to consider. Some of the common safety strategies that were identified were to:

- Improve signal head visibility
- Add 3-inch yellow retroreflective sheeting to signal backplates
- Implement systemic signing and visibility improvements at signalized intersections

It is important to prioritize and construct [regional] transportation improvements that support the statewide Highway Safety performance measures and SDDOT's Strategic Highway Safety Plan (SHSP). State safety projects are programmed for locations that record high frequencies of fatal and serious injury crashes and demonstrate potential for the highest rate of return on investment through reduced crashes. By continually improving performance for PM 1, the MPO [in concert with local agencies] demonstrate commitment to improving regional highway safety performance and remain competitive in receiving [regional/local] funding for safety projects.

Strategies to Maintain and Improve Pavement and Bridge Performance

Strategies that support Performance Measure 2 include:

- Planning for and identification of sufficient resources for managing assets to maintain pavement and bridges within performance targets. Interagency coordination between member agencies to identify highest priority pavement and bridge needs so that repair and/or replacement of deficient assets is prioritized.
- Pavement management systems provide detailed information on pavement conditions and investment priorities and can compare the life-cycle costs of a major mid-cycle rehabilitation compared to routine surface maintenance.
- For state routes, SDDOT has a Transportation Asset Management Plan (TAMP) plan in place and Pavement Condition Monitoring system. All public bridges are included in the National Bridge Inventory (NBI) to gain an understanding of bridge conditions and priorities.

Strategies to Maintain and Improve System Performance

Strategies that support Performance Measure 3 include:

- ≈ Identify transportation system management strategies in corridors with known reliability issues while utilizing the National Performance Management Research Dataset (NPMRDS) measures of LOTTR and TTTR to monitor annual reliability for the Interstate and NHS system.
- ≈ Use of the MPO's travel demand model to forecast emerging areas of congestion, and plan for projects that improve traffic operations and reliability.
- ≈ Plan for traffic incident management in the Rapid City area so that better management of system operations in the case of unforeseen and non-recurring congestion events can take place.

Safety Toolkit

A collaborative, multidisciplinary approach is needed to target high-risk locations and improve safety outcomes for all road users. Initiative-taking partnerships use a data-based process, budget for incremental improvements, and collaborate in developing a safe system approach. Transportation safety is a concern for everyone; most people have stories about family members, friends, colleagues, and loved ones whose lives have been significantly altered as the result of a motor vehicle crash. However, deaths and serious injuries are not experienced equally by all people.

Vulnerable community members, including low-income individuals, people with disabilities, minorities, older adults, and younger children tend to be disproportionately impacted by severe crashes. This may be due to a reliance on more affordable forms of transportation, such as walking, biking or public transportation or a lack of investment over time in some communities. As a percentage of total crashes, collisions involving pedestrians, bicyclists, and motorcyclists, disproportionately result in fatalities or serious injuries compared to crashes involving other types of vehicles or forms of transportation.

Policies and Strategies

To reach the ultimate goal of zero deaths and injuries on roadways in Box Elder will take a combination of infrastructure solutions, policies, and strategies. City staff should work across departments and with partner agencies to pursue actions aimed at reducing serious injuries and fatalities, targeting facilities, and addressing locations with a history of severe crashes. Beyond implementing countermeasures, strategies such as speed management, linking land use development and transportation decision making and encouraging travel by modes other than driving can help improve safety outcomes.

Speed Management

Managing speeds can reduce deaths and serious injuries. Comprehensive speed management involves not just design and countermeasures, but also strategies such as setting appropriate speed limits, enforcing speed limits, raising awareness, and establishing appropriate policies around road operations and design.

Developing Complete Streets

Encouraging people to travel by modes other than driving is one way to improve transportation safety. Providing complete streets by filling sidewalk gaps, providing bicycle facilities, and improving crossing opportunities can all encourage more people to use other modes than driving.

Linking Land Use Development and Transportation Decision-Making

As seen in patterns around focus crash types, there is a connection between land development patterns and serious injury and fatal crashes. Acknowledging how development patterns affect how people get around can lead to improved decision making about site uses in relation to transportation facilities, mixing uses, improving street connectivity, driveway access, block length, and other factors.

Implementing Safety Policies

Codifying practices through codes and policies can go a long way toward ensuring best practices are implemented and holding communities accountable.

Encouragement

- Work toward an eventual goal of Zero deaths and serious injuries on Box Elder's streets and roadways, by achieving incremental reductions over time, such as a 5% annual reduction in fatalities or equivalent, which would reduce the number of serious injuries and fatalities on Box Elder's streets.
- Request adoption of the Safety Action Plan by all agencies

Education

- Develop outreach/messaging campaign to promote safer speeds and compliance with traffic Laws.

Targeted Education

- Work with Box Elder leadership other partners to provide educational awareness campaigns about young adult drivers, senior drivers, impaired driving, bicycle and pedestrian safety, and other campaigns to help address safe behaviors.

- Install permanent signage or temporarily utilize dynamic message signs on high-injury/high-crash corridors with targeted messages to help mitigate unsafe driving behavior. (e.g., “Slow down – speed kills!” or “Don’t drink and drive.”)
- Partner with non-profits and advocacy groups in environmental justice areas to understand safety concerns and needs for travelers – particularly pedestrians, and bicyclists. Coordination with Partner Agencies
- Coordinate with SDDOT, Rapid City, and the counties outreach and educational campaigns.

Engineering Processes

- Strengthen the County’s Complete Streets policy with context sensitive design guidance.
- Integrate the Complete Streets Policy into the planning, design, and construction of transportation projects in Box Elder.
- Evaluate what types of elements or facilities are most appropriate, based on the land uses, demographics of the area, and other factors that would generate traffic from pedestrians and cyclists.
- Include a checklist or matrix that identifies safety risk factors and potential safety countermeasures to be considered in the design.
- Incorporate low-cost safety measures (raised pavement markers, wider edge lines, upgraded signage and markings, etc.) into routine maintenance activities.

Policies

- Create a policy for use and application of Rectangular Rapid Flashing Beacons and Pedestrian Hybrid Beacons following FHWA, SDDOT, and MUTCD guidance.
- Prioritize separated bicycle lanes or multi-use paths over striped bike lanes where possible.

Programs

- Work with SDDOT and the counties, if necessary, on road safety audits on high-injury roadways. If available, request funds from SDDOT or USDOT for high-impact safety projects.
- At intersections with high levels of pedestrian activity, evaluate pedestrian signal timing to confirm that pedestrians have enough “walk” time and adapt as needed.
- Work with the Safe Routes to School Program to identify infrastructure/design projects, or safety programming, around schools in high-crash areas.

Projects

- Incorporate equity into project selection by prioritizing safety investments in historically disadvantaged and/or underserved communities.

- Review school bus stop locations and identify where sidewalk gaps should be filled and locations of potential mid-block crossings.
- Implement proven safety countermeasures on high-risk/high-crash corridors.
- Consider the use of connected signals to install emergency vehicle pre-emption (emergency vehicle priority) to enhance post-crash care.
- Verify and update signage at intersections with multiple pedestrian fatalities reminding drivers to stop or yield for pedestrians as appropriate.

Enforcement

- Consider targeted enforcement on high-risk/high crash corridors.

Evaluation

- Establish baselines for federal safety performance measures and develop procedures for updating and monitoring data on a regular basis.
- Prioritize reported safety issues on roadways.
- Develop a process to prioritize safety needs by comparing individual corridor and intersection crash rates to established baseline averages in the city that are organized by consideration of functional classification and area types.

MISC. - STREETS AND STORMWATER: GREEN INFRASTRUCTURE, SUSTAINABLE TECH, SHARED STREETS

Box Elders narrow rural streets and ditch drainage systems, put in place years ago have been re-evaluated and viewed as an important part of green infrastructure Low Impact Design (LID) tools. As Box Elder continues growth, there is opportunity to incorporate existing rural infrastructure characteristics to build a healthier, more economically, ecologically, and flood-resistant community by implementing LID.

Local Streets:

Box Elder has several types of street and right-of-way criteria that works with LID criteria within neighborhoods:

- **Rural neighborhood streets:** narrow streets with on-street parking, no curb & gutter, a ditch system for drainage and no sidewalks. These are generally the oldest neighborhoods in Box Elder. These are defined as “Rural Roads” in the City of Box Elder Public Works Infrastructure Design Standards but must also fit into the functional classification system per the same document.
- **Suburban neighborhood streets:** Recent housing developments with wide streets, curb and gutter, and sidewalks. Sidewalks are required and are generally located at the back of the curb. Stormwater is collected in the streets and surface-drained toward the creek near neighborhood parks or in collection swales behind houses. Is there something that would work better in terms of

maintaining the “small town” feel, providing good places for people to walk and bike, a good street section AND better stormwater management for future developments?

LID Principles:

A collector street cross section often has no curb & gutter and may be only the street with a ditch on both sides (where needed) and sidewalks on the property line side of the ditch. This allows space for wider sidewalks (8’–10’) whereby snow is plowed into the ditch, increasing year-round sidewalk use and minimal impacts to snow removal maintenance. Additionally, non-motorized users have separation from the faster-moving street which is crucial for children walking to and from school.

LID Principals for Green Streets in Box Elder:

Basic tools from the LID playbook should be included in future planning efforts within Box Elder. These tools are at the forefront of the innovation and Best Management Practices of urban street engineering and are rapidly becoming standard practice in the efforts to implement green infrastructure practices.

- Bioretention
- Bioswales
- Stormwater curb extension
- Stormwater planter
- Street trees
- Infiltration trenches
- Subsurface infiltration and detention

Appendices

Appendix A: Community Engagement Report

Engaging with stakeholders and the broader community was an important aspect for the project team in identifying issues or concerns that community members experience. To kick-off outreach efforts, a stakeholder meeting was held November 8, 2023.

STAKEHOLDERS:

- 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

The meeting's focus was to consider the entire Box Elder community, identifying "pockets" or areas within the community that need focused attention and discuss areas of growth within the community.

Key themes identified during this session included:

- Connectivity. Both roadway connectivity and pedestrian connectivity was identified as a hurdle for the Box Elder community. The sprawled-out nature of the community means it is challenging to provide consistent connectivity from outlying developments to town.
- Highway 1416 and Radar Hill Road is a major traffic challenge in Box Elder. Rapid City MPO is currently conducting a corridor study for this segment.
- Growth within the community. The community continues to see growth at a rapid rate, providing challenges for developers (connectivity) and ensuring safe and efficient traffic flow.
- Roadway jurisdictional challenges. The roadways that serve the Box Elder community are "owned" by many different jurisdictions (Box Elder, Rapid City, Airforce Base, Penning County). Providing a cohesive system is important.

The meeting consisted of conversations and cross-collaboration to understand the systemic issues, policies, and processes within the community. The represented entities brought varying perspectives, but better yet, provided a unique opportunity to collaborate with one-another and develop working relationships, which has never been done to this extent before.

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 and a quick survey question 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.

FIGURE 30 – PROJECT WEBSITE

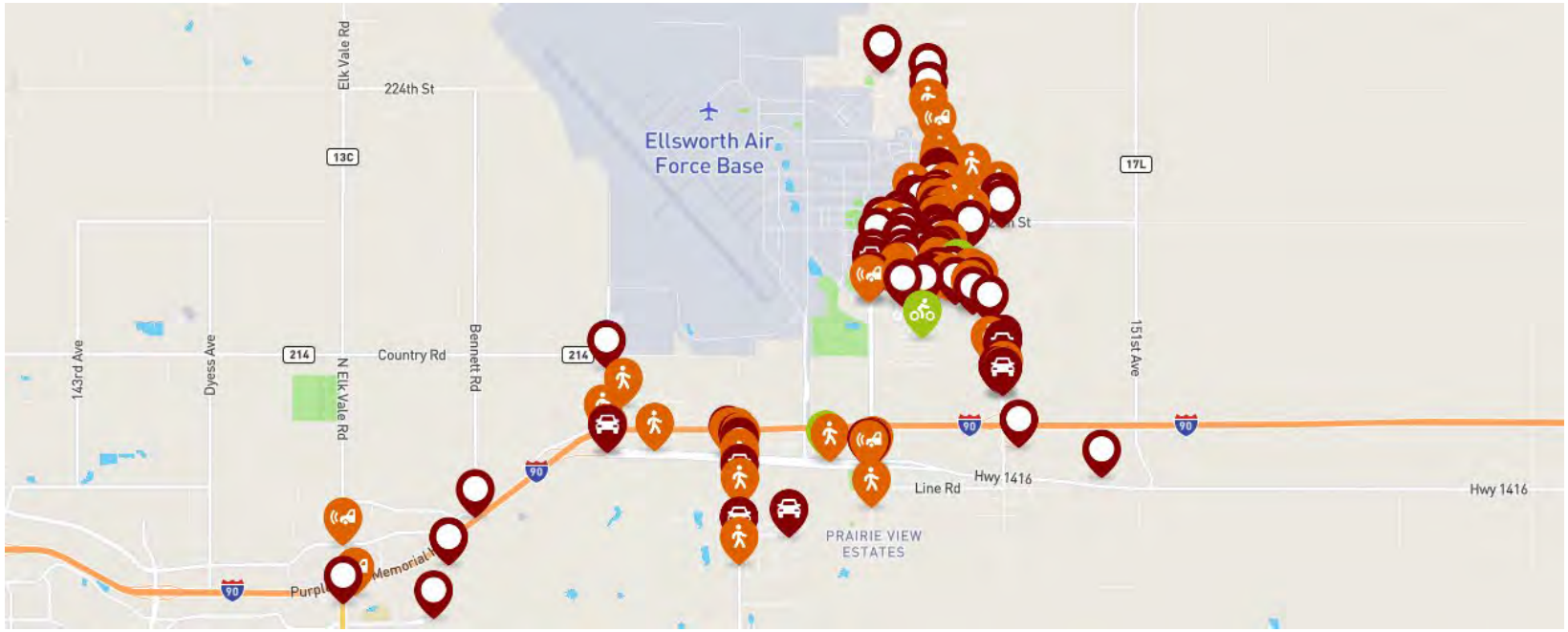
INTERACTIVE MAP

The public utilized an interactive map to identify location specific issues, concerns, or ideas. 148 contributions were collected on the map.

Topics and contributions included:

- Pedestrian= 35 contributions
- Bicycle= 4 contributions
- Vehicle= 26 contributions
- Crash or Near Crash= 29 contributions
- General/Other= 55 contributions
- Disability Access= 0 contributions

FIGURE 31 - INTERACTIVE MAPPING EXERCISE RESULTED IN 154 COMMENTS IN THE BOX ELDER COMMUNITY.



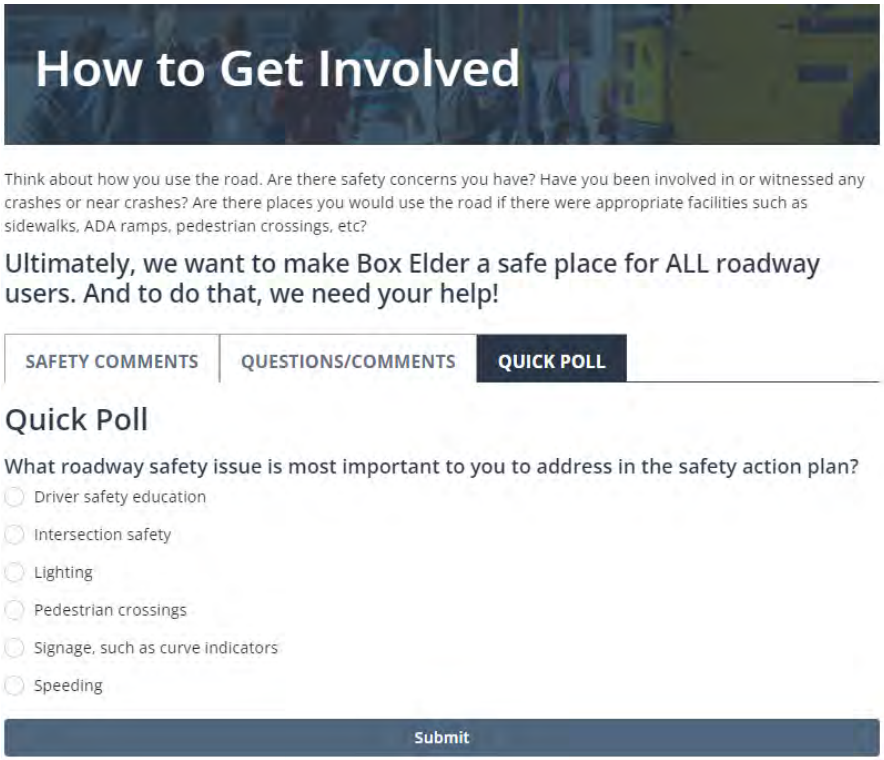
Key themes identified through the interactive map:

- The need for sidewalks and pedestrian facilities
- Improved connectivity
- Intersection improvements including turn lanes or traffic lights to help with traffic flow and congestion

QUICK SURVEY

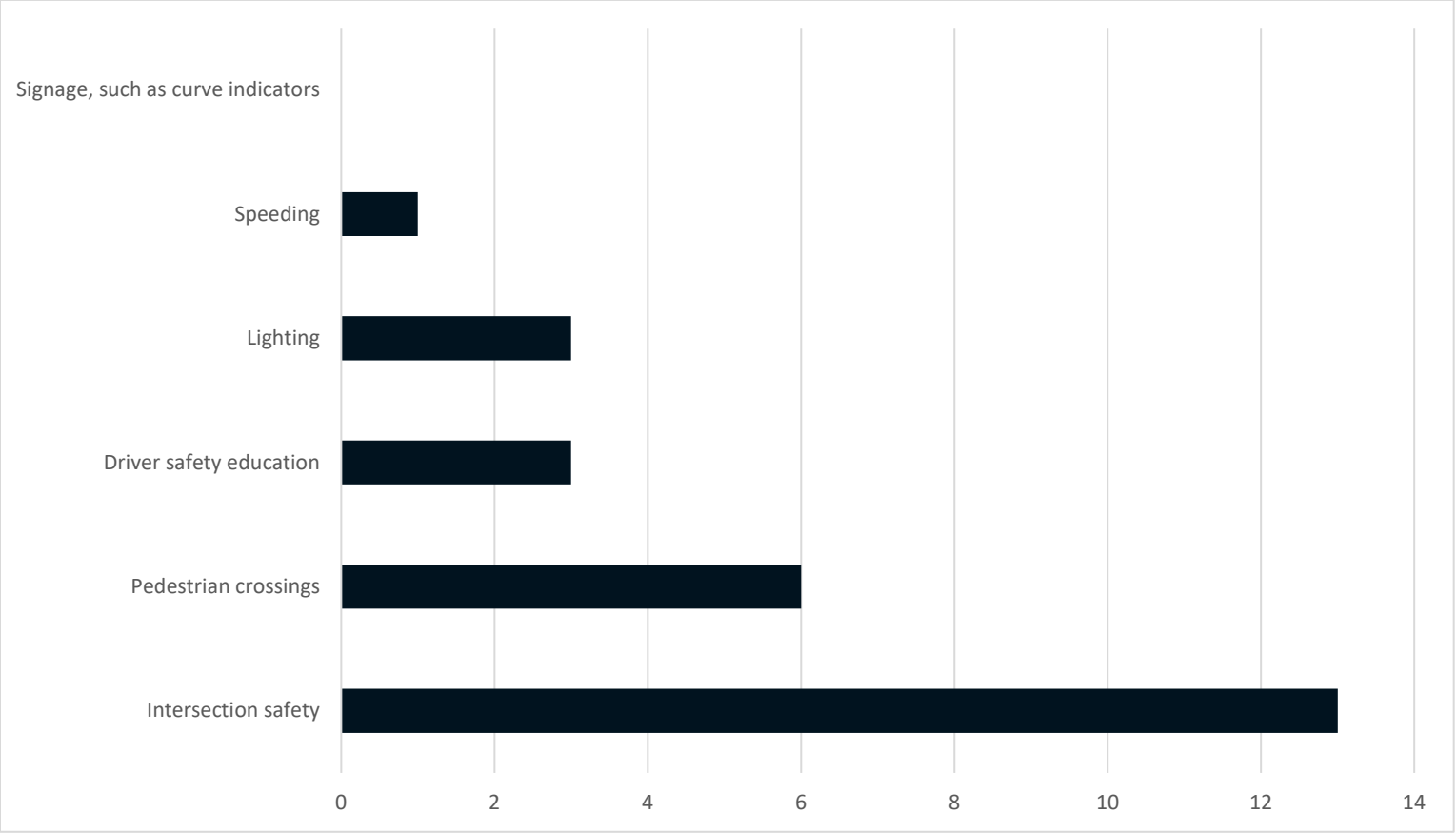
One "quick" poll survey question was posted onto the website for visitors to answer. 26 contributions were collected.

FIGURE 32 - POLLING QUESTION ON THE PROJECT WEBSITE SERVED AS ONE WAY TO PROVIDE INPUT.



Question: “What roadway safety issue is most important to you to address in the safety action plan?

Results:



OUTREACH ACTIVITIES

The project team identified several avenues to engage with local residents with reaching a broad and diverse group of people. Outreach included connecting with families attending schools within Douglas School District, engaging with Airforce Base residents and families, and engage with community partners such as Feeding South Dakota. The project team connected with these local entities in a variety of ways with the goal of directing people to the project website to give feedback. conducted outreach with the local school district, local media, Ellsworth Airforce Base, and community partners by presenting information and sharing handouts directing people to the project website. Outreach activities included:

- Presentation at Douglas School District's community council meeting
- Shared information with Airforce Base personnel for distribution to base members
- Disseminated information via the school newsletter and internal communication channels
- Participate and engaged with community members at the Feeding South Dakota local charitable event on two occasions.
- Disseminated information to all city staff.
- Social media and local media outreach to the public.

FIGURE 33 - FLYER WAS DISTRIBUTED TO LOCAL ENTITIES ENCOURAGING PARTICIPATION IN THE PLAN DEVELOPMENT.

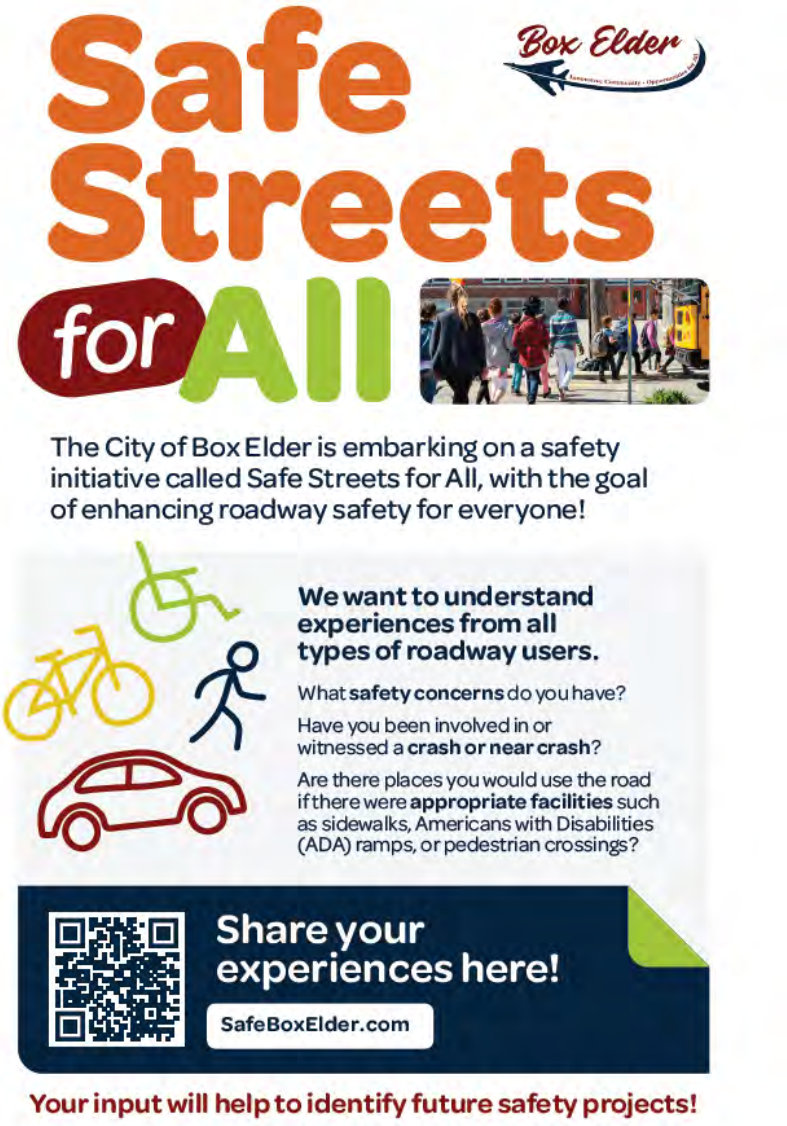


FIGURE 34 - SOCIAL MEDIA POSTS DIRECTED PEOPLE TO THE PROJECT WEBSITE TO GIVE FEEDBACK.

COMMENTS

Busy intersection
Busy intersection
Heavily used intersection
Narrow roadways in Antelope Ridge
Tower Road is the only way to get to North Box Elder.
Provide an additional access to the Northern Lights Subdivision. Only way to access is to go through Rapid and loop back in.
Sidewalks connecting Red Feren subdivision to city
Safe crosswalk across Liberty Blvd to the YMCA
More sidewalks needed to the school in the center of town
Inefficient traffic flow at Creekside and Prairie view
Traffic congestion
Connect exit 67 to the Airport
Extend Cheyenne Blvd to provide additional connectivity to the city
Extend 150th to connect north/south
Heavy traffic, can't accommodate the traffic
Radar Hill needs to be repaired, not just patch jobs that are ruined within weeks of repairing. Radar also needs to be widened, allowing for a turning lane. With all the housing having a turning lane will help with stopping of traffic along the road to make a turn. A right turn lane to get on to 14/16 would also be helpful.
Please add a Walgreens or CVS Pharmacy.
Lack of knowledge or care on following 4-way stop. Need traffic light with arrows to clear up confusion. Also, can assist in pedestrian safety when crossing the intersection.
parking on both sides of the street is dangerous in this area. Hard to get through with bigger vehicles. possibly hampering emergency vehicles.
Mailbox units need to be relocated. Extremely dangerous spot on one of this city areas major thoroughfare. Very unsafe at night.
There needs to be some sort of flashing cross walk signs here. With all of the new housing across the street, I've had to pull my car over and help young students cross the busy intersection. The drivers

often don't see them due to the incline of the road. Might be worth slowing down the speed limit in this area so traffic can stop easier as well.
There have been too many occurrences of pedestrians walking on this stretch of the I-90 Service Road, with no sidewalks and poor lighting, it is constantly in the back of my mind that one of them is going to get hit after the sun goes down.
Maybe additional signage or brighter signage. There seems to be a lot of confusion that the north/south lanes have no stop or yield sign.
At minimum need a continuous turn lane with proper curb and gutter and sidewalks. This road is too small for current traffic flow.
Sidewalks from HWY 14-16 to top of hill.
Sidewalks
Need a sidewalks that connects all parts of our town. We have people that walk/ride bikes from Antelope Ridge into town and need a safe place to do that. Especially the kids in the morning and afternoons to and from school.
Continuous turn lane down Briggs from 225th to Patriot drive to assist with school traffic, parking, sporting events etc.
Continuous turn lane from Ellsworth to 150th to manage the increased traffic of new developments from the north.
A continuous turn lane needs to be along Tower between Liberty and 225th around the school zones. This area is heavy traffic on normal days and during school is ridiculous.
Enough traffic to require a traffic light. Especially in the morning and evenings during the Ellsworth 500.
There needs to be a traffic light at this intersection. I understand many in supervision do not believe in this control device, but we need to work to the lowest common denominator and that means clear traffic control devices.
Rear Ended at stop light
It would be nice if it was easier for pedestrians to cross Highway 1416.
Eventually it would be nice to have a sidewalk. I see someone walking every day towards Love's.
Public knowledge is limited, stop signs prove incompetence, street lights needed
Public knowledge is limited, stop signs prove incompetence, street lights needed
Install sidewalk connecting neighborhoods, though not necessarily along roads, from Ballista Blvd to Norad Dr.
It would be good to have sidewalks connecting neighborhoods, though not necessarily along roads, such as from Sovereignty Ln to Howard Dr.

City needs to work with Ellsworth on getting them to open the West Gate again to private vehicles. This would alleviate the amount of traffic on Liberty Drive to reduce many of the issues.
More storm sewer drainage needs to be added.
Needs a traffic light with a no right turn on red sign. Vehicles, especially semis, turning in front of vehicles headed south on Liberty drive has increased and is going to cause fatalities with the increased traffic. And with the new subdivision to the east those residents will have difficulty crossing Liberty to get to I-90.
Speed limit should be reduced to 35 mph along Liberty with the additional population and more entrances to businesses.
Ellsworth Road needs to be leveled out flush with Liberty Drive. There is no need for the speed bump since there is a stop sign.
A light needs to be installed above this mailbox unit.
With the new all way stop signs, traffic gets very backed up in the morning, especially in the short area between the 14/16 lanes. Additionally, the fact that Ellsworth road coming out of Prairie View Estates has a weird junction at the intersection makes it more dangerous. It would help if it was straight across.
Put in sidewalks in the thunderplains/stealth subdivision. Half of this neighborhood doesn't have sidewalks, leaving children to walk and ride bikes in the middle of the road
Please repaint the roads. White line in the middle
Please repaint the roads. White line in the middle
Please repaint the roads. White line in the middle
No one knows the speed limit here during school hours. Only thing posted on 225th between Tower and Briggs is 25mph. Then cops are going 15 or 25 because no one knows. Then cops pull you over for doing 25.
Place a walking path from Bomber Way, through Vandenberg's field to the sidewalk/crossing walk on Briggs by Badger Clark for the children in this new development to use and not have to walk on busy streets or the muddy field with snow melting and/or rain.
Lower the speed limit to 25mph. People are speeding down this road from antelope ridge. The bend is a blind spot and could hurt someone. Please also create a bike path for bicyclists to prevent them from getting hit and prevent traffic during and before work/school hours
Crash

Please repaint the roads. White line in the middle
No Parking in this section of roadway, very dangerous in the morning with bus and vehicle traffic.
Falcon Drive needs to be widened and sidewalks installed.
Meadowlark Drive needs to be widened and sidewalks installed.
Swallow Drive needs to be widened and sidewalks installed.
Large dips in the road
Several crashes because of stop signs. Need to install round-abouts.
No sidewalk.
Several crashes because of stop signs. Should install round-abouts.
Several crashes because of stop signs.
Intersection is poorly designed; several vehicles have crashed into the barricade signs.
Numerous crashes because people do not see the stop signs when traveling east/west on E Mall Drive.
Almost impossible to turn south onto N Elk Vale Rd from S I90 Service Rd due to amount of traffic.
Multiple crashes in this area due to narrow road, no lighting, and increased traffic.
Can an additional road be built in this area to ease the traffic pattern turning onto Prairie? More housing is being built in this area and Candyland has a high amount of traffic in the area creating lots of traffic congestion and unsafe scenarios at the Prairie and Liberty intersection.
Veterans park is over here but there aren't any sidewalks to walk on and this road is extremely busy now.
I have witnessed multiple crashes at this intersection. A traffic light is needed.
An official stop sign needs to be placed here. Pedestrians and vehicles have almost been hit from drivers pulling straight onto Liberty Park Drive from Constitution Blvd.
Unshielded extremely bright light aimed at traffic makes it hard to see people walking
I understand the idea behind limiting parking on side streets to reduce visibility concerns, especially near a school zone. However, limiting parking to only one side of the street during all hours is unrealistic. Many houses in the residential areas only have 1 car driveways. We should have the ability to park in front of our own house, at LEAST overnight, or if we have company. A better idea would be to restrict street parking to hours- 8am to 5pm.
Near crash
Horribly lit and unsafe intersection for our kids to be crossing, especially near a school. Very crowded. Limited walkways and not well lit
No sidewalks. Kids walking on road and playing would be nice to have safe pathways for all

I feel like it is difficult to get out with the semi-truck. And cars turning to goes toward base.
Roundabouts instead of stop signs or traffic lights would help keep traffic flowing at these intersections.
Hard to see location. Not well lit early in morning
Fast moving traffic. Terrible icy turn
Near crash
Need sidewalks
Only one evac entrance in and out for hundreds of people.
we need a traffic light
So much traffic through here, need a dedicated turn lane for the traffic turning into the businesses here.
This whole entire road and 4 way is a nightmare at school begin and end. Need additional lanes for through and turning traffic.
This whole entire road and 4 way is a nightmare at school begin and end. Need additional lanes for through and turning traffic.
This whole entire road and 4 way is a nightmare at school begin and end. Need additional lanes for through and turning traffic.
This whole entire road and 4 way is a nightmare at school begin and end. Need additional lanes for through and turning traffic.
The road super narrows right at the hilltop- super dangerous still when two cars passing all the way to 225 St.
They have a mailbox bank right off the busiest road in that neighborhood- why not move it to a side street?
Need to widen road for better vehicular movement. Reduce the angle of the hill and add curb and gutter.
Instead of having a traffic light, stop sign, or anything else there, we should have a round-a-bout so traffic does not have to stop.
This road needs to be straightened to align with the stoplight better. The curve going uphill is especially bad during ice/snow and there are lots of accidents
Placing speed bumps on Tower road will help with people speeding through school zones and communities. Can alternate on each side so that streets can still be plowed or cleaned.
Remove stop sign & put a yield sign here for Southbound traffic. The new stop sign backs up traffic badly
Please add a Subway somewhere in Box Elder

Agree with other comment. Large "waves" in road are dangerous. Especially when its icy or snowy out, they have thrown my car almost sideways before, even when going slow.
This road needs to be connected the other end to meet up with Tower Road at the stoplight. This will improve traffic flow
Need a stop light by Loves. Very dangerous trying to turn north with trucks and heavy traffic.
A signal or light here would be helpful for traffic turning into the high school or students crossing the street to go to school.
Traffic backs up on Tower during school drop-off and pickup times.
You have cars in two turn lanes turning left and right along with a crossing guard stopping traffic. It is not safe . . . also people stopping on the west side of the road for drop off . . . (off of brings - in the ditch).
Need curb on both sides of street to eliminate parents from parking anywhere and everywhere. Huge safety concern. Wider street and turn lanes. Consider entry and exit off of Don Williams Drive. One Way, right turn or left turn only depending on which lane you are in.
Need curb on both sides of street to eliminate parents from parking anywhere and everywhere. Wider street and turn lanes. Consider entry and exit off of Don Williams Drive.
Large dips in the road are unsafe.
Need sidewalk here to connect to housing development for safety reasons.
Very dangerous along 225th if you are trying to walk, either North on 150th or east/west on 225th. Needs sidewalk to connect in from 150th to the daycare area. No place to walk safely. Also there needs to be attention paid to the 150th/225th intersection. Lots of truck traffic pushing gravel onto highway creating a slick surface. The gravel needs pushed back on to 150 to keep the highway clear (monthly). Also, trucks are tearing up both sides of 225th with wide turns. The area needs quarterly maintenance to preserve the roads.
Sidewalks
Sidewalks
Would be nice to get this paved.. currently full of potholes , city just keeps filling with incorrect material and or blading it .. dust is horrid , hard on cars.
Sidewalks needed
Would like to see sidewalks along box Elder road & box Elder road West.. many pedestrians walk this route to get to yesway.. they walk in middle of road etc.. no edge to walk even .. many close calls especially at night with dark clothing.

It would be nice to be able to ride a bike path that goes from the housing developments south of the interstate up to what is being built as the center focal point of Box Elder. This would provide ways to get safely to the fishing pond, parks, future children's museum, and other family center places that may be developed as the community grows.
The cars do not stop I have almost been hit numerous times we need a pedestrian crossing here
People do not stop here for crossers
We need a safety method here for pedestrians
This intersection is so dangerous during busy times of the day I have been in a car accident in this intersection and so have many others so they need something to get people to slow down going through here
Need a crossing guard here before and after school have seen people going least 40 if not faster and high school kids hanging out car windows. Someone is going to get hurt or a kid ran over.
Can we have the only traffic light in the city upgraded to LED lights? The sun easily washes it out.
Make the exit here for the elementary and a better parking systems so parents stop parking on both sides of the road. Just make a better parking and exit system. Need streetlights and sidewalks. It's about time for the City if Box Elder to put sidewalks in a rapidly developed area. Also, please create a bicycle path throughout box elder so bicyclists and those on skateboards stop going in the middle of the road. Such a hazard.
Home Depot 🙏 please
With the new development across the way we need a traffic light here and reduce speed limit. Cars are going way more than the posted speed limit. There's a housing development across the way and can foresee accidents here once the development is completed. Might Want to add streetlights, cross walk in this area, crossing signal, reduce speed to 25mph, pedestrian crossing signal. This area is developing fast and we need to prepare by minimizing risk to public safety. We need turning lanes and also shields on the side of the road so cars can safely pull over.
Traffic lights
Traffic light, sidewalks, crosswalks, crossing signals, streetlights, and pedestrian crossing signs
Need traffic light
Need a traffic light
Fix the parking lot 🙏 please.
Please create a better parking system and have a pickup drop off zone. Stop having busses park right in the front of the school. Why are they not using the bus lane? They are blocking the exit and causing a

huge blind spot, plus they are loading the kids on the bus from the road and not the sidewalk, which isn't safe for drivers or teenagers. This parking lot has no system. Patriot elementary and the middle school needs a pickup drop off zone and better way for parents to exit from the parking lots.
Laundry mat, public library with computer center, urgent care, Walgreens... if not here somewhere within Box Elder. Build jobs, place for kids, shorter distance to receive medical care and pick up prescriptions when base pharmacy is closed or those who can't access the base. If all fails at least put sidewalks on both side of the roads and cross walks. Streetlights would be nice.
Please install a playground with public bathroom, dog park next to playground. Playground with a toddler section to separate from the older kids. A pavilion, track, outdoor exercise area with equipment, trees for shade, bicycle path, basketball/tennis court, courtyard, landscape, doggie pooping bin, trash bins, parking lot, and park lights.
Wouldn't it be great to have a Costco here? We should have a Costco right here. We need more sit in restaurants too. Please have an activity center for teenagers. This area caters more to younger children and adults. We need a safe recreational center for teens and families. Create indoor public sports teams. I would have no problem paying for a membership for our family if there was more teenager activities. Splash pad and pool would be great, big playground and dog park.
Put a Supermarket Like Aldi or Safeway right here or somewhere in Box Elder.
Fix the parking lot please. There's too many holes and cracks. Re-do the entire parking lot. Please post arrows so drivers stop driving all over the place like they got no sense.
Need a sensor traffic light at this 4-way and pedestrian crossing signal. Need street lights and sidewalks on both sides of the road. People literally almost bang each other here and kids walk this route home. This area is expanding and we need more safety measures like pedestrian crossing signs.
Need a sensor traffic light. People can't handle the 4-way here. Seen cars almost hit each other and others running the stop sign. The traffic light should include pedestrian crossing signal. Very dangerous area during morning and after-school traffic.
Need cross walk and, or stop sign. Please lower speed limit to 25 mph on this entire road. We have lots of student walking home on this route. A cop in this area would be helpful as cars speed here all the time and I'm worried a child may get hit. Maybe lower the speed limit to 15mph before and afterschool hours. Need street lights for better visibility providing safety for both pedestrians and drivers.

Please put a side walk on the opposite side starting from the 4-way by the bus barn up to freedom landing.
We need to lower the speed limit in Freedom Landing to 15mph. There are a lot of kids who walk home from school and small children who play in the neighborhood. We also need streetlights. Visibility is low at night. Need it for both pedestrian and driver safety. We need more children at play signs on every street.
There should be a light or a cop directing traffic at this intersection during the busiest hours when the traffic gets backed up so bad on 14/16. Something needs to be done about this ridiculous situation.
I have experienced and seen many near misses between vehicles and pedestrians on this road. There is nowhere for people to walk but the road.
There are no sidewalks or shoulders on Radar Hill Rd. making walking and riding bicycle very hazardous. I have had several near misses while walking along this road.
Multiple points along Radar Hill Rd. have uneven road surfaces making driving unsafe.
This crosswalk is so dangerous. As someone who regularly walks my kids to school we have almost been hit multiple times because people ignore the STATE LAW to yield to pedestrians. A flashing light crossing is 100% necessary here. Many many school kids cross here.
I've seen multiple people completely ignore this stop sign and almost hit other cars. They are also constantly blocking the crosswalk for pedestrians to be unable to walk. Having some kind of blinking lights for crossing would be nice.
I'm glad there is a side walk up to Ballista now. But who build the apartments here should have been responsible for a section of side walk here from Ballista to Bull Run. Either the city drop the ball when these were built by not making the developer do this or the developer just didn't do it. This should used as example to get the developers and learn experience for future developments.
It would be nice to have a center turn lane on Tower road. And get all the parked cars off of the should and in the dirt.
There is no side walk here between the schools. I know there is a bridge not too far down the parking lot but students and regular people using the sidewalks on Tower Road don't use it.
An officer directing traffic would be nice.
Dangerous for vehicles
Need bike lanes here
General Comments submitted via the website

Since the plan from 2014 was to be completed by 2030, is this why everything is being done in a rush now???
Will sidewalks be placed on both sides of the street on the most utilized roads such as Ellsworth?
We received the door notice today about street parking violations. Although I understand the concern that parking on the street can lead to visibility problems with children in the neighborhood, I feel a better solution could be implemented. It might seem petty to say, but its a bit unfair that one side of the street is able to park in front of their own homes, while the other side is forced to use limited driveway space, or park further down the road- assuming they can find space. Again, I'm a reasonable chap, so I get it. Its all relative and I'm sure few are affected like I am. However, the house I purchased is a one-car house, with a single-car driveway. That's no one's problem, sure. The neighbor across from me is the in the same situation, however he's able to use the front of his house, and I am either forced to leave my driveway in the bitter cold just so that my wife cam park in the garage every night when she gets home....or I can park 2 houses down every night. It just doesn't seem right that I can't park in front of my own home. A better solution to me, would be to implement an hourly restriction. Perhaps, on school/weekdays, there is a time limit of 7am to 5pm timeframe? Then, the streets stay clear for the day, but hardworking homeowners can park near their own expensive homes at night...especially in the bitter winters. I'm sure an issue like this would seem so personal and fall on deaf ears (or eyes) but I implore someone to please reconsider these No Parking zones in residential areas. Please.
An official stop sign being placed at the Constitution Blvd and Liberty Park Dr would increase safety. Vehicles do not always stop coming off Constitution Blvd onto Liberty Park Dr. Not only have I almost been hit while in my own vehicle, but I have witnessed pedestrians/kids almost being hit as they cross this intersection. Also, a traffic light or additional road will help decrease vehicle accidents at the Prairie Rd and Liberty Blvd intersection. I have witnessed several accidents at this intersection. Traffic will only increase with the more residential housing being built in this area. A traffic light or additional road to ease the traffic flow of people leaving the neighborhood or going to Candyland Daycare would promote safety as our area continues to grow.
It would be beneficial for the intersection by Loves and McDonalds to have a stop light or some sort of intervention. Every morning, I see cars almost being smashed by semi trucks. Or giving an alternative route out of that area that maybe goes towards the New Holiday/Circle K gas station. It would also be nice to have some sort of walkway from Antelope Ridge to the school area we have a lot of runners that run on the road and often times we don't see them until we are about to hit them.

Thank you for the open conversation to help make Box Elder safer for the children.
I have lived here for two years. Moving from Alaska I thought we would be moving to a better safer neighborhood with the city having more people from the town I moved from. I was shocked to find Box Elder without sidewalks. Alaska has very small towns and we even had sidewalks. Why can't we have them all the way to loves all the way to dollar general? Kids like to ride their bikes, how is it safe having them walk or ride in the road. I see prairie road finally got some, but why not make it all the way down? Why not make them on the three connecting roads that lead to the schools? I can't let my 8-year-old walk to or from school because people don't know how to give the pedestrian the right of way here. I walk every day. One out of 10 cars might stop at the crosswalk for me. This is a law in Alaska that is strongly enforced. A police car didn't stop why should the cars. Please make these roads safe for us who choose to walk or bike ride. These new subdivisions all get sidewalks so it should be required that all city roads have them to. Don't ignore these issues waiting for something bad to happen, fix them before it happens!!!!