2017 BELGRADE LONG RANGE TRANSPORTATION PLAN

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Prepared for:

CITY OF BELGRADE, MONTANA

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ACKNOWLEDGMENTS

The successful completion of this project was made possible through cooperation and assistance of many individuals. The following people provided guidance and support throughout the course of the LRTP:

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Adopted By

Belgrade City-County Planning Board - May 29, 2018

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Gallatin County Commission - September 25, 2018

ACRONYMS

AADT	Annual Average Daily Traffic
AC	Advisory Committee
ACS	American Community Survey
BNSF	BNSF Railway
CAGR	Compound Annual Growth Rate
CEIC	Census & Economic Information Center
EPA	Environmental Protection Agency
eREMI	Regional Economic Models, Inc.
FAST Act	Fixing America's Surface Transportation Act
GIS	Geographic Information Systems
HUD	Department of Housing and Urban Development
LOS	Level of Service
LRTP	Long Range Transportation Plan
LTS	Level of Traffic Stress
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
MRL	Montana Rail Link
MSN	Major Street Network
MSU	Montana State University
NHTS	National Household Travel Survey
PDO	Property Damage Only
R/W	Right of Way
SOV	Single Occupancy Vehicle
TDM	Travel Demand Model
TDM	Travel Demand Management
TMP	Transportation Master Plan
TSM	Transportation System Management
TWLTL	Two Way Left Turn Lane
U.S.	United States
U.S.C.	United States Code
USDOT	United States Department of Transportation
v/c	Vehicle to Capacity Ratio
vpd	Vehicles per Day
W&P	Woods & Poole Economics, Inc.

CHAPTER 1:
Introduction

1.1. PURPOSE

The Belgrade Long Range Transportation Plan (LRTP) serves as a guide for development of and investment in the community's transportation system in a comprehensive manner. The LRTP was developed through a collaborative approach with city, county, and state staff, elected officials, and local residents to provide a blueprint for guiding transportation infrastructure investments based on system needs and associated decision-making principles. The LRTP incorporates all applicable background information, includes detailed analysis of options and alternatives, incorporates meaningful input from citizens and local officials, and provides a framework for future efforts within the context of State and Federal rules, regulations, and funding allocations.

This comprehensive plan identifies community goals and improvements to the transportation infrastructure and services within the City of Belgrade and the portion within Gallatin County that is likely to include future urban area expansion. The LRTP addresses regional transportation issues, overall travel convenience, traffic safety, sustainability, funding, and multi-modal connections. The LRTP includes recommendations for short-term improvements as well as recommended modifications and capital improvements to major roadways.

1.2. BACKGROUND

The City of Belgrade and surrounding areas have experienced large amounts of sustained growth over the past 40+ years with especially significant growth in the past 15 years. As Gallatin County continues to experience a population influx, Belgrade faces a unique opportunity for economic development and continued population growth. A well-planned transportation system can make the difference between successful growth and good quality of life verses failure to grow and a deteriorating quality of life. As Belgrade continues to grow, it is important to develop a comprehensive transportation plan to properly accommodate and prepare for the city's current and future needs.

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The City of Belgrade and the Montana Department of Transportation (MDT) have partnered to develop this community focused transportation plan. The previous LRTP[1] was the first for Belgrade and was completed in 2002. Changes in land use, substantial upgrades to the community's transportation system, the community's increased interest in transportation related matters, and the outdated nature of the 2002 LRTP, have necessitated a new examination of transportation issues within the Belgrade area. Transportation is a major concern to area residents today and is expected to remain a concern as growth continues and the challenges of accommodating travel needs becomes more difficult.

1.3. STUDY AREA

The study area for the LRTP includes all land within the City of Belgrade and encompasses adjacent lands in Gallatin County where suburban development has occurred and will likely occur in the future. The boundary includes the entire Belgrade urban boundary limits that resulted from the 2010 Census, and a small portion of the Bozeman urban boundary. The study area includes major employers in the area, as well as land that may be used for employment centers in the next twenty years that could possibly be annexed into the city limits. It also includes densely developed residential land uses in the area, and those areas likely to increase the housing supply in the future and subsequently add traffic onto the transportation network. The study area, as presented in **Figure 1**, is important as it defines the limit of the area of focus for the LRTP.

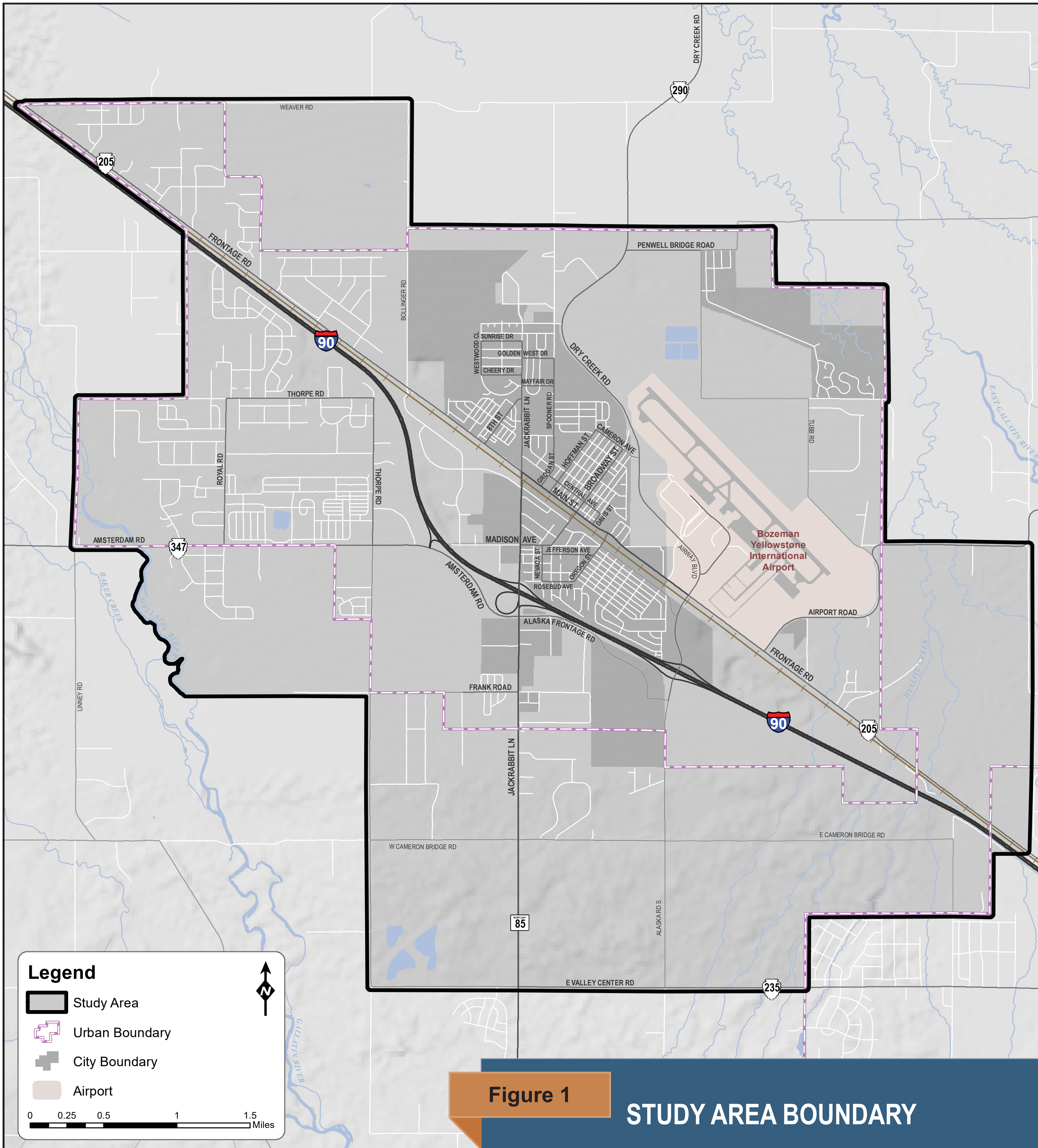


Figure 1

STUDY AREA BOUNDARY

1.4. GOALS AND OBJECTIVES

Development of goals and objectives for the LRTP is a critical first step in the transportation planning process. In addition to capturing all related information from previous community planning efforts, the goals and objectives lay out the general course of action for the LRTP development and represent the community's vision for the future transportation system. Goals and objectives also provide direction on how to achieve the desired outcome. Collectively, they are intended to inform the planning process and set the course of action for future improvements to Belgrade's transportation system.

Numerous local planning documents were reviewed to determine what, if any, transportation related goals and objectives have already been developed within the community. Based on a review of relevant planning efforts within the community, five visionary principles were identified for the LRTP.

VISIONARY PRINCIPLES

1. The community desires a connected, efficient transportation system based on recognized linkages between land use and transportation planning so it serves not only existing, but future development in the community. This type of system allows users to choose what mode of travel they desire, and makes travel more convenient while promoting an active lifestyle by choice for community residents.
2. The community seeks to retain existing businesses and identify opportunities to attract new jobs to enhance the community's economic vitality.
3. Efficient travel and increased mobility will help minimize transportation and associated costs.
4. Transportation influences the quality of life. The community's transportation system should be compatible with the overall environment and context of the Belgrade area, with special consideration given to the conservation of surrounding agricultural lands, open space, and natural resources.
5. The community desires a safe transportation system, and strives for a reduction in crashes, injuries, and fatalities.

Seven goals which support the visionary principles were identified for the LRTP. The individual goals and objectives recognize the need for a balance between safety, mobility, accessibility, cost, and environmental impact. These goals provide broad statements that are intended to direct the overall direction of the LRTP towards the community's vision. While these goal statements do not specify how these desired outcomes would be accomplished, their associated objectives are more specific and identify measures or actions to help attain each goal.

The goals and objectives represent the desired end result of the community's transportation system once projects identified are implemented. They are put forth in hopes of accurately reflecting the condition of planning within the general community, and more specifically reflecting the needs and desires relative to transportation in the Belgrade area.

GOAL 1: Preserve and Maintain the Existing Transportation System.

The transportation system in the Belgrade area is aging, and available funding is not sufficient for the necessary maintenance and preservation activities. There is often competition between funding for new projects as compared to maintenance and operations of the existing system. The short- and mid-term focus should turn to optimizing the existing transportation system to the greatest extent possible.

Objectives:

1.1. Maintain existing roadway systems to optimize their usefulness and minimize life-cycle costs.

1.2. Monitor the performance of key facilities and work with local and regional partners to identify critical deficiencies in the roadway network.

1.3. Use transportation project selection criteria to identify and prioritize maintenance activities and project development.

1.4. Relieve pressures on the existing transportation system through minor infrastructure improvements, maintenance, and system preservation activities rather than expanding the current system.

1.5. Encourage reuse and/or redevelopment around existing transportation facilities.

GOAL 2: Improve the Efficiency, Performance, and Connectivity of the Transportation System.

A transportation system that performs effectively allows users to choose among multiple transportation modes and to use those modes in a safe and efficient manner. An efficient system allows people to move from place to place in as direct a route as possible, allowing them to reduce the amount of time spent in travel, the distance that must be traveled, and the amount of time spent in congested traffic. Connectivity allows citizens to make route decisions and mode choices based on traffic and road conditions, or desired destinations.

Objectives:

2.1. Ensure the current roadway network of collectors, minor arterials, principal arterials, and the interstate is adequate to safely and efficiently handle projected traffic.

2.2. Identify and implement critical and cost-effective new capacity and operations investments to improve transportation system throughput and reliability.

2.3. Promote the development of an effective roadway network through improvements in intersection and roadway capacity.

2.4. Improve opportunities for active transportation (non-motorized) as part of daily travel mode choice within the community by increasing pedestrian, bicycle, and transit connections.

2.5. Ensure mobility-challenged populations–such as low income residents, persons with disabilities, or senior citizens–have travel options in the Belgrade area.

GOAL 3: Promote Consistency and Coordination between Land Use and Transportation Planning.

Land use decisions affect the quality and quantity of transportation infrastructure throughout the study area. Linking transportation and land use planning is important to help ensure that the transportation system effectively and efficiently serves existing and future development within the community. This coordination helps ensure that existing and future industrial and commercial areas, service centers, and housing concentrations are adequately connected to the Gallatin Valley's transportation system and appropriately located to preserve the quality of life in the community. Policies and partnerships should be developed to protect the capacity of the transportation system to strengthen the coordination between land use and transportation planning.

Objectives:

3.1. Integrate land use planning and transportation planning to manage and develop the transportation system.

3.2. Use transportation project programming to encourage desired development patterns within the community and ensure new development is adequately served.

3.3. Develop and implement consistent access management and corridor preservation standards, ordinances, and plans appropriate to the roadway network and land use throughout the study area.

3.4. Continue to coordinate transportation planning activities with local and regional land use planning activities, including the City and County Growth Policies (and subsequent updates).

3.5. Recognize on-going land use policy discussions about future development and corresponding density between Bozeman, Four Corners, and Belgrade.

3.6. Ensure an environmentally responsible and sound transportation system that minimizes adverse environmental impacts within the community.

GOAL 4: Provide a Safe and Secure Transportation System.

Most community planning efforts recognize the desire for a safe transportation system. Community safety and security can be improved by reducing crashes and improving the ability of emergency responders to quickly and reliably respond to emergencies. Educational programs that help travelers understand the safety concerns associated with various travel modes can also help all users travel with increased confidence and security.

Objectives:

4.1. Develop a "Major Street Network" classifying existing roadways within the study area by functional usage.

4.2. Reduce the rates of fatalities and crashes occurring on all transportation facilities.

4.3. Identify barriers to prompt and effective emergency response.

4.4. Implement safety initiatives and educational programs for all modes of transportation.

4.5. Facilitate safe and secure movements of goods and freight.

GOAL 5: Support Economic Vitality of the Community.

All economic activity relies on a functioning, diverse transportation network. Vehicle, freight, air, transit, rail, and non-motorized infrastructure all have a purpose to serve when linking economic vitality to the costs of doing business. Transportation in terms of economic vitality is only one component of a successful business environment. High quality schools, diversity in housing types, low debt, availability of infrastructure, and access to a highly skilled workforce all contribute to the economic success of a community.

Objectives:

5.1. Optimize the transportation system to meet the needs of Belgrade and its citizens, including employment centers, industrial and commercial areas, and users of Bozeman Yellowstone International Airport.

5.2. Provide attractive and convenient transportation facilities that attract and retain business, young professionals, families, and older adults.

5.3. Facilitate the movement of goods and freight to commercial and industrial centers.

GOAL 6: Protect and Enhance Environmental Sustainability, Provide Opportunities for Active Life-styles, and Conserve Natural and Cultural Resources.

Both the FAST Act[2] planning factors and the livability principles from HUD/EPA/USDOT[3] point to quality of life concerns in the development of LRTPs. Not only are impacts to the environment taken more seriously, but increasingly, citizens are demanding a more holistic approach to transportation. The preservation of natural features, historic and cultural resources, as well as promoting a healthy, active lifestyle, are priorities of this LRTP and current Federal transportation planning guidance.

Objectives:

6.1. Promote transportation projects, plans and/or programs that encourage reducing fuel consumption, reducing vehicle miles of travel, and thereby minimizing air pollution.

6.2. Coordinate transportation planning activities with appropriate federal, state, and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation.

6.3. Engage stakeholders and the public in the decision-making stage of the transportation planning process.

GOAL 7: Promote a Financially Sustainable Transportation Plan.

A financially sustainable transportation plan is necessary to guide the transportation decision-making process for future years. Transportation facilities that provide options to the public, reduce time spent traveling, reduce fuel consumption, and make the best use of limited public funds for infrastructure improvements are desirable. Not only are costs related to the cost of building facilities, but there are also associated costs of time spent in vehicles. A sound financial base for the transportation system is provided through responsible management of public assets and resources and identification and implementation of funding strategies to ensure long-term balanced investment in the transportation system.

Objectives:

7.1. Identify available and potential funding mechanisms for transportation system improvements including federal and state gas tax revenue, impact fees, transportation bond issues, local option gas taxes, and other revenue funding sources used in similar cities.

7.2. Encourage cooperation between public, private, and non-profit organizations in the development, funding, and management of transportation projects.

7.3. Promote cost-effective recommendations that balance transportation system needs with available funding and expected expenditures.

7.4. As funds become available for transportation projects, place priority for funding on those projects and programs identified in the LRTP.

1.5. OUTREACH AND PUBLIC INVOLVEMENT

Education and public outreach are essential parts of fulfilling the responsibility to successfully inform the public about the transportation planning process. The development of the LRTP involved early communication with interested parties to help identify needs, constraints, and opportunities to determine reasonable improvements given available resources and local support.

Community, stakeholder, agency, and other involvement were important components to this planning process. The goal of the outreach effort was to have significant and ongoing public engagement. A number of strategies were utilized to disseminate information and elicit meaningful participation. These opportunities included:

- Providing information on the critical elements included in the transportation planning process within the LRTP study area;
- Providing input and asking questions throughout the planning process; and
- Presenting findings and recommendations.

Public participation means participation in planning by people within the Belgrade community, its citizens and entities, planning and engineering professionals, and those who are not professional planners or government officials. It is a process of taking part in the transportation planning and decision-making that affects the community. Efforts to secure participation were targeted to stakeholders who are individuals or entities that could be significantly affected by the LRTP recommendations or could significantly influence implementation.

A proactive approach was taken to provide an opportunity for the public to be engaged early and with a continuing involvement in all phases of the planning process. For this project, a number of public engagement strategies were utilized to reach the most people possible and elicit meaningful participation.

Belgrade Area Advisory Committee

An Advisory Committee (AC) was established to guide process, review deliverables, and provide technical oversight during the planning process. Meetings were generally held every month. The AC included representatives from the City of Belgrade, MDT, and Gallatin County. The AC was the principal guiding force behind the LRTP.

Public Informational Meetings

Two public informational meetings were held during the LRTP planning process. The first meeting was an open house that allowed community members to discuss and identify the issues and visioning to be addressed as part of the LRTP. This meeting intended to give the community an opportunity to talk with the project team, share their comments and concerns, and to ask any questions they had regarding the Plan. The meeting was held on September 19, 2017 at the Central Valley Fire Training Center.

The second public meeting was held after the preliminary project recommendations were completed. This meeting gave the public the opportunity to review the project recommendations in their entirety and make comments as appropriate. The meeting was held on February 21, 2018 in the Belgrade City Hall Courtroom.

Appendix A contains all public comments received over the course of the planning process.

Special Agency and Stakeholder Involvement

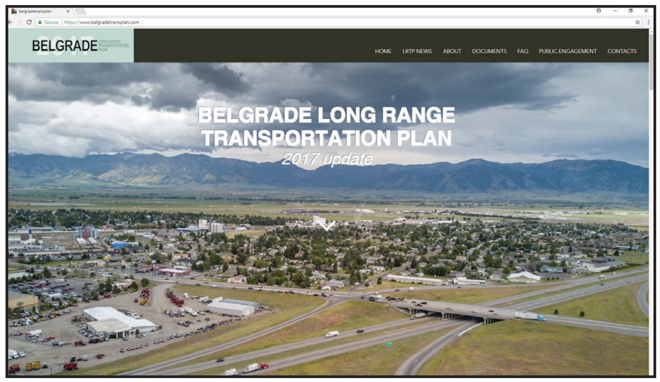
A number of outreach activities to special agencies and other stakeholders occurred throughout the planning process. Targeted outreach occurred with the following groups:

- Belgrade City Commission
- City of Belgrade Department Directors
- Gallatin County Staff & Elected Officials
- MDT Modeling/Planning Staff
- Chamber of Commerce
- Belgrade School District
- Central Valley Fire Department
- Belgrade City Police
- Bozeman Yellowstone International Airport
- Belgrade Community Coalition
- Montana Department of Natural Resources and Conservation

1.5.1. Other Public Outreach Activities

A number of other public outreach activities occurred over the planning duration:

Website: A website was developed for the LRTP (www.belgradetransplan.com) as a landing page for information developed during the planning process. Draft technical memoranda, links to additional resources, frequently asked questions, and contact information were provided on the website. In addition, a Facebook site was created and maintained throughout the process to disseminate information about meetings and the LRTP progress.

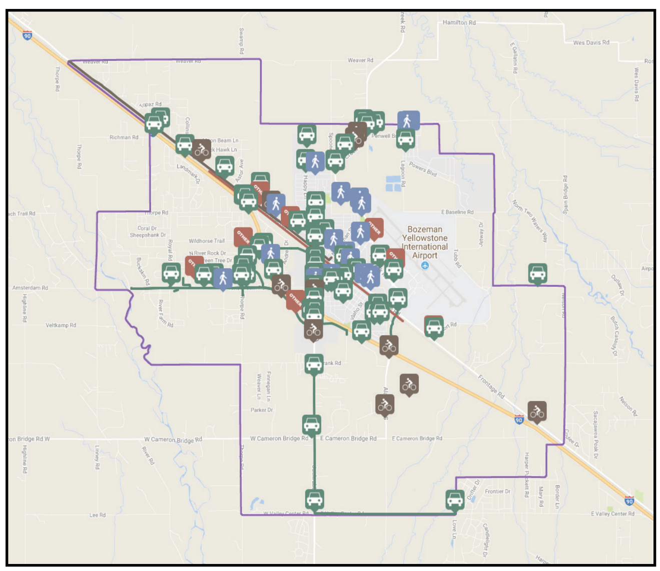


A website was created for the LRTP, (www.belgradetransplan.com).

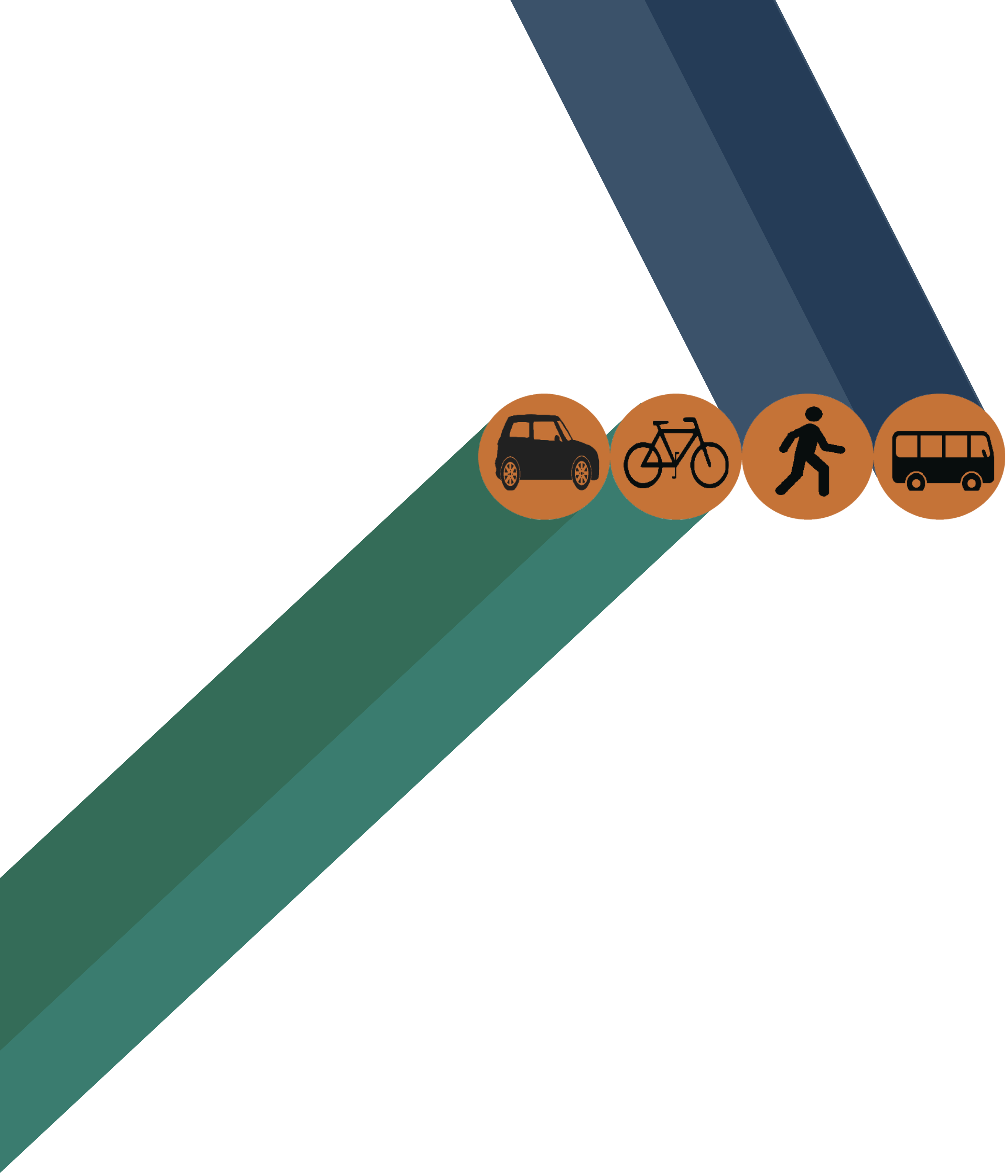
News Releases: Newspaper articles were used during the planning process to help keep the public informed. News releases were issued prior to public meetings to generate interest in the process, and to encourage participation by the public.

Newsletters: Newsletters were created and distributed in hard copy format during the informational meetings. The newsletters were also distributed electronically to various stakeholders and were generally available to the public via the LRTP website.

Wikimapping: An interactive mapping platform, called a "wikimap", was used for the LRTP. The platform allowed the public to provide feedback on the transportation network via an online map. Users were asked to provide comments related to transportation at spot or roadway segment locations. There were a total of 137 unique comments made on the platform, with an additional 228 sub comments and 323 likes/dislikes made on the comments.



Over 365 unique comments were made on the interactive commenting platform.



CHAPTER 2: State of the Community

2.1. OVERVIEW

To clearly understand the needs of a community, it is important to evaluate the state of the existing land use, transportation network, social, and economic conditions of the community. To achieve this task for the Belgrade community, information was collected on many aspects of the transportation system, socioeconomic conditions, and land use. Available and collected data were used to establish existing conditions for the community. The existing conditions were used to determine issues and concerns related to the transportation system.

2.2. SOCIOECONOMICS

Local and regional population and economic characteristics have important influences on motor vehicle travel in the Belgrade area. The study area for the LRTP includes all of the land within the City of Belgrade and encompasses adjacent lands in Gallatin County where suburban development has occurred and will likely occur in the future. Although not directly within the study area, population and employment growth occurring in the incorporated areas of Bozeman, Manhattan, and Three Forks and in the unincorporated Four Corners area is an important consideration for the LRTP. Belgrade's residents work, shop, attend educational institutions, and recreate in these areas of the Gallatin Valley and their commuting patterns have impacts on the local transportation system.

The City of Belgrade's population grew by 465 percent between 1970 and 2010.

2.2.1. Population and Demographic Trends

Gallatin County has been one of Montana's fastest growing counties over the last 30 years. In terms of numeric increases, Gallatin County has seen the most new residents of any county in the state since 1980. The total population of Gallatin County grew from 32,505 in 1970 to 89,513 in 2010—adding more than 57,000 residents. With the exception of the 1980s, the county's population has increased by more than 30 percent every decade since 1970. Population growth during the 1980s was still notable and the number of county residents increased by nearly 18 percent between 1980 and 1990.

Likewise, the City of Belgrade experienced significant growth over the 1970-2010 period as the city's population grew from 1,307 to 7,389 residents. With the exception of the 2000s, the City of Belgrade's population showed increases of between 46 and 79 percent during the other decades of the 1970-2010 period. Over the 1970-2010 period, the population of Gallatin County grew by more than 175 percent and the City of Belgrade's population grew by 465 percent. On a percentage basis, the city's population growth during the 40-year period was 2.7 times greater than that seen for Gallatin County as a whole and 4.7 times greater than seen for the City of Bozeman.

Both the State of Montana and the United States (U.S.) showed population increases during each decade between 1970 and 2010 but the rates of increase were well below those seen in Gallatin County, the cities of Belgrade and Bozeman, and in all unincorporated areas of Gallatin County. The population of the U.S. and State of Montana grew by about 52 and 42 percent, respectively, between 1970 and 2010.

The population of unincorporated areas of Gallatin County increased by 311 percent over the 1970-2010 period, with significant growth seen during the 1970s and after 1990. In 2010, the number of residents living outside incorporated communities in Gallatin County was 40,184 (4.1 times higher than in 1970). The majority of the unincorporated area population in 2010 lived in the greater Gallatin Valley area between Bozeman, Belgrade and Four Corners and along the I-90 and Frontage Road corridor west of Belgrade.

Table 1 shows the total populations for Gallatin County, the City of Belgrade, the City of Bozeman, and unincorporated areas of the county over the 1970 to 2010 period. The table also shows the overall percent change in residents since 1970. Population data for the State of Montana and the nation provide benchmarks to help compare local population growth trends.

Table 1: Historic Population Data for Gallatin County and State of Montana

Area	1970	1980	1990	2000	2010	2016*	Compound Average % Change (1970-2010)
Gallatin County	32,505	42,865	50,463	67,831	89,513	104,502	**2.57%**
City of Belgrade	1,307	2,336	3,422	5,728	7,389	8,254	**4.09%**
City of Bozeman	18,670	21,645	22,660	27,509	37,280	45,250	**1.94%**
All Unincorporated Areas	9,768	15,914	21,231	30,293	40,184	46,010	**3.43%**
State of Montana	694,409	786,690	799,065	902,195	989,415	1,042,520	**0.89%**
United States	203,392,031	226,545,805	248,709,873	281,421,906	308,745,538	323,127,513	**1.01%**

**Estimate as of July 1, 2016*

Source: U.S. Bureau of the Census, Current Estimates Data, available at: https://factfinder.census.gov/

2.2.1.1. Age Distribution

Three age categories (residents less than 18 years old, residents 18 to 64 years old, and residents 65 years and over) were considered in the analysis of age distribution. As discussed earlier, the populations of Gallatin County and the City of Belgrade have steadily and significantly increased between 1970 and 2010. The county's population is also notably younger than that of the state and nation. According to the American Community Survey (ACS), the median ages for residents of Gallatin County and the City of Belgrade are 33.2 years and 31.9 years, respectively. This compares to median ages of 37.6 years for all U.S. residents and 39.7 years for all Montana residents. The median age is the age at the midpoint of the population (i.e. half of the population is older than the median age and half of the population is younger).

The ACS data shows Gallatin County, as a whole, has few residents in the "less than 18 years old" category and fewer residents in the "65 years and over" category than either the state or nation. More than 28 percent of the residents of the City of Belgrade were less than 18 years of age and about 7 percent of city residents were 65 years or older according to the ACS data. The share of the city's population in both of these age groups represents a notable variation from similar statistics for county, state and national populations. The age group from 18 to 64 generally represents the working-age population. The ACS data for the 2011-2015 period showed the City of Belgrade had fewer residents in this broad age group than the county and the state.

A review of the ACS data also showed the following age characteristics for the residents of Gallatin County and the City of Belgrade:

- Residents aged 5-19 (generally representing the school age population) comprised 18.7 percent of the county's population and 21.6 percent of the city's population.
- Residents aged 25-34 represented the largest age group in both Gallatin County (16 percent) and the City of Belgrade (21.6 percent).
- 16.2 percent of the city's residents and 12 percent of county residents were under 10 years of age.

2.2.1.2. Personal Commuting and Travel Characteristics

According to the ACS, residents in about 96 percent of all occupied housing units in Gallatin County had access to one or more vehicles to commute to work or meet other personal needs. In the City of Belgrade, 98 percent of residents had access to at least one vehicle.

Information about the number of workers (16 years and older) and their commuting characteristics is also available from the ACS. The ACS information provided estimates of the total share of workers who commute or work at home, the transportation modes used by commuters, and the mean travel times to work for commuters. **Table 2** presents commuting characteristics for workers in the Gallatin County and the City of Belgrade. Similar statistics for the State of Montana and the United States are provided for comparison.

Table 2 shows that about 82 percent of commuting workers in Gallatin County rely on personal vehicles or carpools for transportation to work destinations. Nearly 90 percent of commuting workers in the City of Belgrade drove alone or carpooled to their places of employment. Few workers in the City of Belgrade were estimated to walk to work. **Table 2** suggests public transportation options are more limited for Montana residents as compared to elsewhere in the United States. Commute times for workers in the Gallatin County and the City of Belgrade are similar to those of other Montana workers but are well below those seen by all commuters nationally.

The ACS data showed workers in Belgrade had commute times of 17.9 minutes during the 2011-2015 period. This commute time suggests residents are working at jobs outside the Belgrade community, most likely in the Bozeman area.

Table 2: Mode of Transportation to Work (2011-2015)

Subject	City of Belgrade	Gallatin County	State of Montana	United States
Number of Workers 16 Years and Older	**4,204**	**51,306**	**478,238**	**143,621,168**
Commuted to Work	*95.6%*	*93.2%*	*93.8%*	*95.6%*
Worked at Home	*4.4%*	*6.8%*	*6.2%*	*4.4%*
Transportation Mode				
Drove alone, car, truck, van	*74.6%*	*72.5%*	*75.2%*	*76.4%*
Carpooled	*15.2%*	*9.1%*	*10.4%*	*9.5%*
Public Transportation (excluding taxicabs)	*	*0.6%*	*0.8%*	*5.1%*
Walked to Work	*0.3%*	*6.3%*	*4.9%*	*2.8%*
Other means of commuting	*5.5%*	*4.6%*	*2.5%*	*1.8%*
Mean Travel Time to Work	**17.9 min**	**17.5 min**	**18.1 min**	**25.9 min**

Source: U.S. Bureau of the Census, American Community Survey (ACS) Profile Report: 2011-2015 (5-year estimates), available at: http://census.missouri.edu/acs/profiles/

** Data unavailable*

2.2.1.3. Housing Units

The Census Bureau identifies a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements.

Table 3 lists the number of housing units that existed within Gallatin County and the City of Belgrade during past decennial censuses and as of the mid-year 2016 estimate made by the Census Bureau. Overall, the number of housing units in the county increased by 24,546 units (a 143 percent increase) during the 1980-2010 period with significant increases in the number of housing units recorded during each of the last two decades in the county. This trend is similar for the City of Belgrade which showed an increase of 2,309 units (a 266 percent increase) between 1980 and 2010 with nearly 1,900 of the housing units added between 1990 and 2010. This is likely due to Belgrade's convenient commuting distance to Bozeman and generally lower housing costs.

The newly developed Ryen Glenn and Meadowlark Ranch subdivisions are home to many Belgrade residents.

The data show that the population per housing unit decreased for all geographies considered over the 1980-2010 period. The population per housing unit in Gallatin County and the City of Belgrade were almost the same at 2.12 and 2.33 persons per housing unit, respectively, at the time of the 2010 Census.

Because not all housing units are occupied, it is interesting to consider the number of residents per occupied housing unit. At the time of the 2010 Census, more than 86 percent of the housing units in Gallatin County were occupied and over 93 percent of those in the City of Belgrade were occupied. If only occupied housing units are considered, the resulting population per housing unit rates are 2.45 people per unit in the county and 2.49 people per unit in the City of Belgrade.

Table 3: Number of Housing Units (1980-2010)

Area	1980	1990	2000	2010	2016
Gallatin County					
Population	42,865	50,463	67,831	89,513	104,502
Total Housing Units	17,173	21,350	29,489	42,289	47,345
Population per Housing Unit	*2.50*	*2.36*	*2.30*	*2.12*	*2.20*
City of Belgrade					
Population	2,336	3,422	5,728	7,389	8,254
Total Housing Units	865	1,294	2,239	3,174	*
Population per Housing Unit	*2.70*	*2.64*	*2.56*	*2.33*	--
All Unincorporated Areas					
Population	15,914	21,231	30,293	40,184	46,010
Total Housing Units	6,949	9,298	13,559	18,826	*
Population per Housing Unit	*2.29*	*2.28*	*2.23*	*2.13*	--

Source: U.S. Bureau of the Census, Census of the Population

** Data unavailable*

2.2.2. Employment and Income Trends

As of 2015, Gallatin County is Montana's third most populous county, while the City of Belgrade is the state's eleventh largest city. The Bozeman Micropolitan area, which includes the entire county, is the fourth fastest growing micropolitan area in the U.S. and the fastest growing in terms of population gain. The economy of Gallatin County is diverse with construction, government, public and higher education, manufacturing, technology, retail trade, services, outdoor recreation, and agriculture all playing notable roles. Montana State University (MSU) comprises the largest component of Gallatin County's economic base.

Belgrade is one of the fastest growing communities in Montana.

The most recent available data show that total full and part-time employment in the county was 78,504 in 2015 with more than 98 percent of the jobs being non-farm related employment. Total full and part-time employment in Gallatin County in 2015 was 261 percent higher than that recorded in 1980. This means total employment in the county increased 3.6 times since 1980. Over this 35-year period, the compound annual increase in employment in Gallatin County was about 7.5 percent per year.

MSU is the largest employer in Gallatin County with over 4,000 total jobs in 2016.

The service industry experienced the highest growth between 1980 and 2015, where the total number of jobs increased by nearly 28,700 over the period. Other industry sectors showing sizable increases in employment since 1980 include: finance, insurance and real estate (net gain of 6,694 jobs); construction (net gain of 6,095 jobs); and retail trade (net gain of 5,105 jobs). The industries showing the lowest gains in employment between 1980 and 2015 were federal and civilian government; the military; mining; and agricultural services and forestry.

MSU is the largest employer in Gallatin County. As of fall 2016, MSU employed 3,318 permanent faculty and staff, and 761 graduate teaching and research assistants. Of the 3,318 permanent employees, 2,484 were classified as full time and 834 were part time employees. Large employers in the Belgrade area include the Belgrade School District, Bozeman Yellowstone International Airport, and Bozeman Health Belgrade Clinic. The largest private employers in Gallatin County during 2015[4] include:

- Bozeman Deaconess Hospital (1,000+ employees);
- Oracle America (250-499 employees);
- Town Pump (250-499 employees);
- Walmart (250-499 employees); and
- 16 other businesses with 100 to 249 employees.

2.3. LAND USE AND DEVELOPMENT

Land use plays a critical role in shaping transportation networks. Land use decisions affect the transportation system and can increase viable options for people to access work and recreation sites, goods, services, and other resources in the community. In turn, the existing and future transportation system may be impacted by the location, type, and design of land use developments through changes in travel demands, travel mode choices, and travel patterns.

2.3.1. Historic Development Patterns and Current Land Uses

From the time of first settlement in the late 1800s and through the 1930s, Belgrade experienced a substantial expansion with the establishment of new businesses and other community developments. However, Belgrade was privy to the effects of the Great Depression and, in those years, quickly became a quiet community centered around agriculture. Finally, after the Second World War, Belgrade began to see economic prosperity as existing businesses expanded and new ones were formed. In the late 1980s and into the 1990s, Belgrade continued to grow rapidly and today, is one of the fastest growing communities in Montana.[5] As this is the case, land use in the Belgrade area is seeing a large shift from agricultural to residential land use.

Although Belgrade has a longstanding history as a farming community, the increasing desire from its residents to grow the community, diversify the economy, and increase the number of jobs, has shifted land use from agricultural to non-farm uses over the years. Following the adoption of the 1999 Belgrade Area Plan, the city started to make some major advancements. In 2004, substantial upgrades to the city's sewer treatment facility abled Belgrade to consider petitions for annexations for residential, commercial, and retail land uses. The approved annexations total over 650 acres, or roughly one square mile of land, which is nearly a third of the total land owned by the City (as of the 2010 census).

To keep up with the growth trends, Belgrade developed the *2006 Belgrade Area Growth Policy*[6] which examines both historic and anticipated growth and uses those trends to provide policy recommendations for efficient land use. The Growth Policy applies to the City of Belgrade and its 4.5-mile planning jurisdiction. Concentrated development is encouraged within and adjacent to city limits and as distance increases from the city, the Growth Policy encourages a continued preservation of farm land and open space as well as protection of the East and West Gallatin Rivers. The Rivers were once a popular location within the Belgrade area where a residential development took place. However, the Growth Policy has discouraged further development in this area due to the unpredictable nature of the rivers and past tendencies to change their course during high water periods.

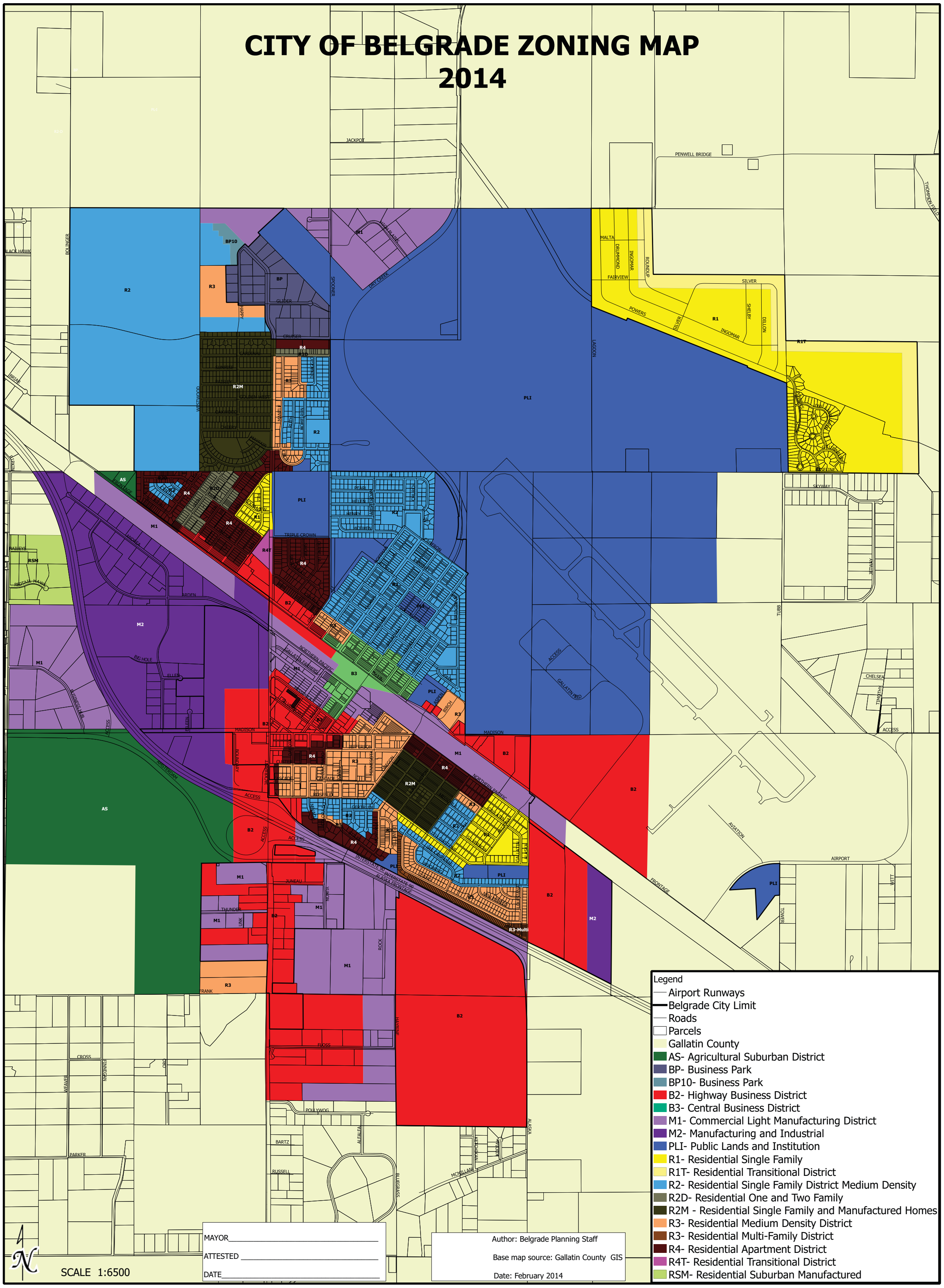
Today, the areas east of Belgrade are dominated by the Bozeman Yellowstone International Airport and large open gravel pits but also contain several residential developments. Areas west of Belgrade have a mix of residential, commercial, industrial, and agricultural land uses. The current trend is expected to continue into the foreseeable future with a growing number of residential developments.

Figure 2 depicts current land uses, as of February 2014, for the community as compiled by the Belgrade Planning Staff.

2.3.2. Future Land Use

Figure 3 presents a future land use map for the Belgrade area from the *2007 Gallatin Field Airport Master Plan*[7] which was modified from the *2006 Belgrade Area Growth Policy* to include the location of airport lands. In general, the future land use plan for the city seeks to keep growth concentrated within and near the current city limits and allow medium to low density development to occupy the outermost regions of the planning area. The map is divided into five different categories: Belgrade Zoning, High Density, Medium Density, Low Density, and Airport Lands.

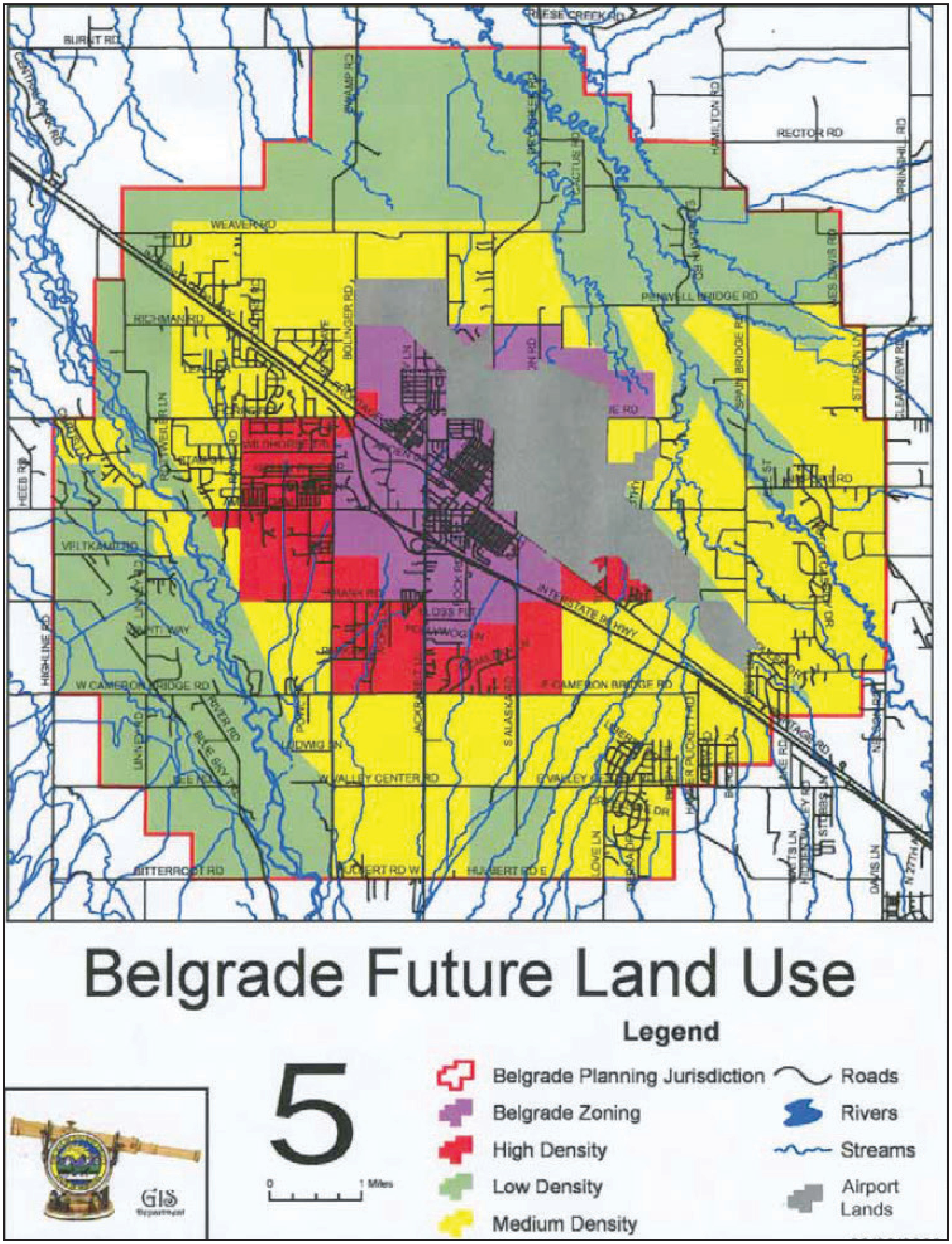
Figure 2 CITY OF BELGRADE ZONING MAP



Source: http://www.ci.belgrade.mt.us/planning/zoning_map.pdf

Figure 3

BELGRADE FUTURE LAND USE



Source: https://www.bozemanairport.com/pub/documents/Master%20Plan%20Chapter%201.pdf

2.4. TRANSPORTATION NETWORK

Current information about the transportation system was analyzed to establish the existing traffic conditions and to determine current problem areas. Existing data were provided by MDT, Gallatin County and the City of Belgrade. Additional data were collected in 2017 to supplement the available information. Using a combination of the supplied and collected data, the existing operational characteristics of the transportation network were determined.

2.4.1. Major Street Network

A transportation system is made up of a hierarchy of roadways, with each roadway being classified according to certain parameters. The parameters include, but are not limited to, geometric configuration, traffic volumes, spacing in the community's transportation grid, speed, and adjacent land use. Each of these characteristics helps define the role that each segment of roadway plays within the overall network. The method by which these roles are defined is widely known as functional classification. Travel through a community involves movement through a network of roads. Functional classification defines the nature of travel within the network in a logical and efficient manner by defining the objectives that any particular road or street should meet to effectively move trips through the entire network.

For this evaluation, emphasis was placed on roadways within the study area that are functionally classified as collectors, minor arterials, or principal arterials. **Figure 4** on the next page presents the major street network for the study area. The figure shows existing roadway classifications. Note that the functional classifications shown in the figure may not represent the "Federally approved" functional classification system, rather, it shows the locally adopted classifications. These classifications are used for planning purposes and may not be representative of actual conditions.

Included in the current study area are roadways with functional classifications of interstate system, principal arterial, minor arterial, collector routes, and local streets. The following list provides general descriptions of these functional classifications:

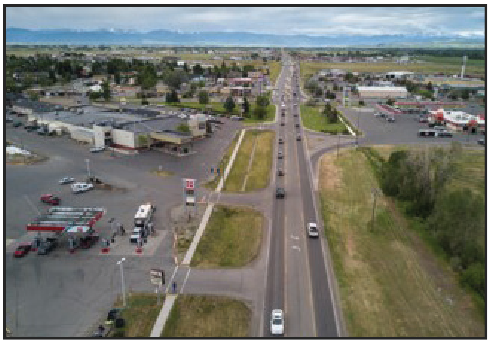
Interstate Highways

The main purpose of an interstate highway is to provide for both regional and interstate transportation of people and goods. Primary users include all types, ranging from local residents and commuters, to travelers and freight operators. Interstate highways characteristically have fully controlled access (provided by a limited number of interchanges), high design speeds, and place a high priority on driver comfort and safety. The interstate system has been designed as a high-speed facility with all road intersections being grade separated.

Interstate Highway - I-90

Principal Arterial

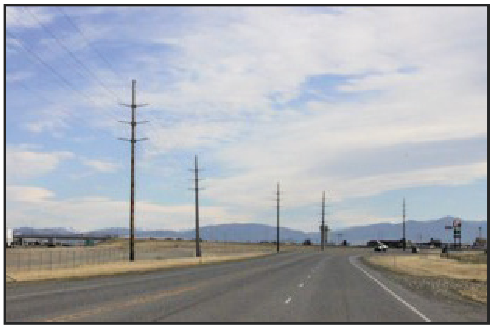
The purpose of a principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an area. This classification of roadway carries a high proportion of the total traffic. Most of the vehicles entering and leaving the area will utilize principal arterials. Significant intra-area travel, such as between central business districts, outlying residential areas, and major suburban centers, is typically served by principal arterials.



Principal Arterial- Jackrabbit Lane

Minor Arterial Street System

The minor arterial street system interconnects with and supplements the principal arterial system. Minor arterials accommodate trips of moderate length at a somewhat lower level of travel mobility, as compared to principal arterials. They distribute travel to smaller geographic areas in addition to providing some access to adjacent lands.



Minor Arterial- Amsterdam Road

Collector Street System

The collector street network provides links from residential, commercial, and industrial areas to the arterial street network. This type of roadway differs from those of the arterial system in that collector roadways may traverse residential neighborhoods. The collector system distributes trips from the arterials to the user's ultimate destinations while also collecting traffic from local streets in the residential neighborhoods and channeling the traffic to the arterial system.

Collector Street- Spooner Road

Local Street System

The local street network comprises all facilities not included in the higher functional classes. The primary purpose of local streets is to permit direct access to abutting lands and connections to higher systems. Most local streets also provide residential and commercial access. Usually, service to through-traffic movements is intentionally discouraged either through low speeds or other traffic calming measures.

Local Street - Rosebud Avenue

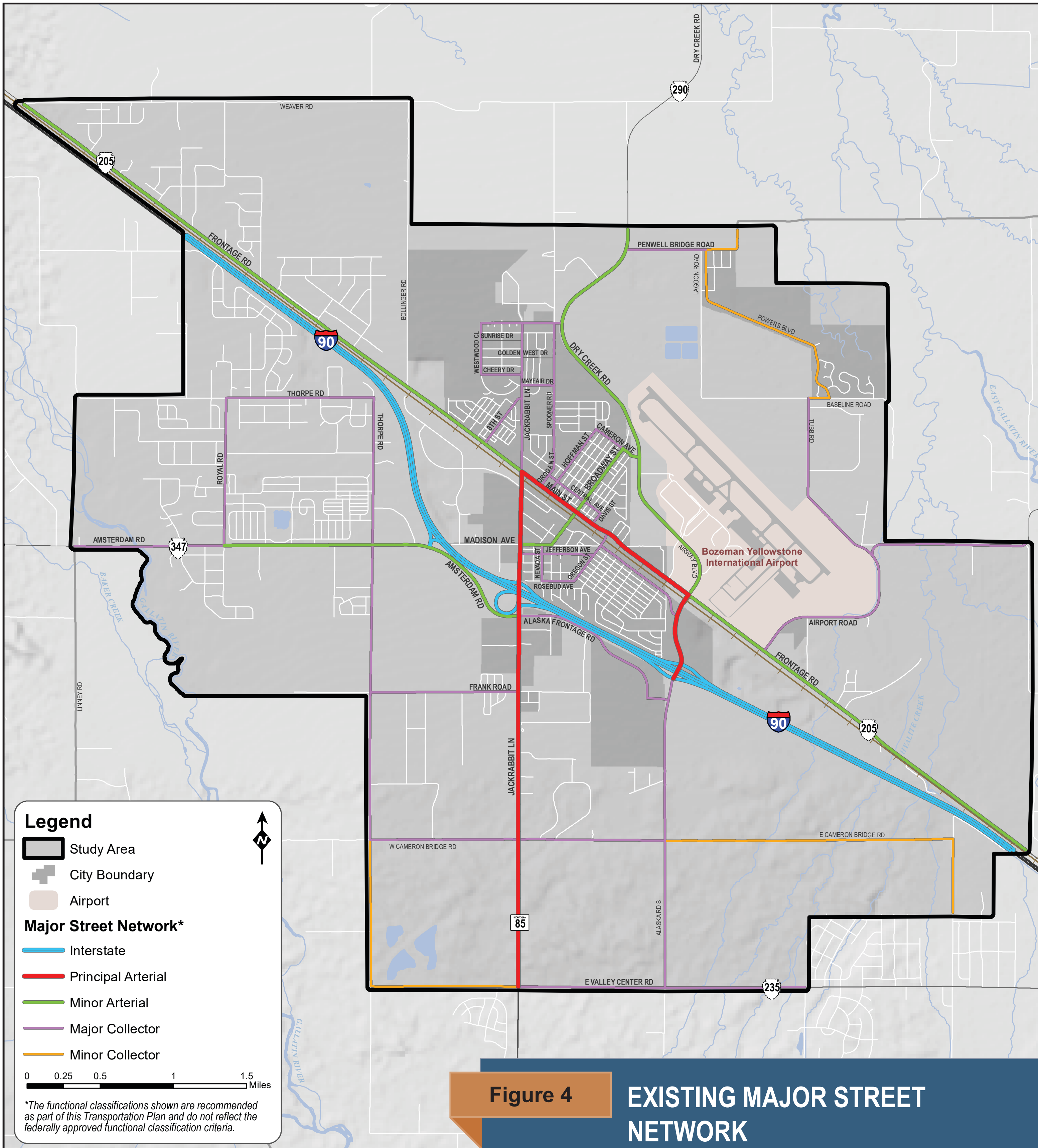


Figure 4 EXISTING MAJOR STREET NETWORK

2.4.2. Active Transportation Network

As awareness of the physical and environmental benefits of active transportation increases, cities have experienced a heightened demand for facilities which accommodate active transportation options and public transportation choices. The City of Belgrade is no exception. The focus of the active transportation network will be on non-motorized mode choices, such as biking and walking, but will also include the public transportation options available to residents. **Figure 5** shows the existing active transportation network in the study area.

2.4.2.1. Bicycle and Pedestrian Facilities

Belgrade has limited bike and pedestrian accommodations available to its residents, as such, there are many opportunities for improvement to the non-motorized transportation network. Connectivity of such facilities remains one of Belgrade's biggest challenges in regards to accommodating active transportation modes. The following list describes the existing bicycle and pedestrian facilities in the study area. The data provided in this section is from the Gallatin County GIS Trails Shapefile and includes additional data that was collected during field review. At this time, approximately 14.22 miles of bicycle and pedestrian facilities existed, excluding sidewalks.

Bike Lanes

Bike lanes are a type of separated bikeway that uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movement by both bicyclists and motorists. Belgrade has only two bike lanes, their combined length totaling roughly 1.25 miles.

The bike lane on Grogan Street/Spooner Road is 0.71 miles long and the bike lane on Penwell Bridge Road is 0.5 miles long. The bike lane on Penwell Bridge Road is only on the eastbound side of the roadway and is buffered with striping and a continuous rumble strip.

Existing bike lane along Spooner Road

Shared Use Paths

Shared use paths are off-street paved trails that are designated for the use of bicyclists, pedestrians, and other non-motorized users such as skateboarders and rollerbladers. Examples include those along Thorpe Road and Royal Road on the west side of I-90. Gallatin County reported 6.88 miles of asphalt paved shared use paths in the study area.

Existing shared-use path along Amsterdam Road

Natural Surface Trails

There are some natural surface trails in Belgrade. These trails serve as both transportation and recreational facilities. Within Belgrade, these trails are located near subdivisions and tend to serve more of a recreational purpose. There are 2.64 miles of natural surface trails reported in Belgrade.

Sidewalks

There are sidewalks alongside some of the main streets throughout the study area, however there are still many locations where the existing pedestrian facilities lack connectivity. In addition to sidewalks located adjacent to the roadways, there are also 3.44 miles of sidewalk reported within the study area which serve as alternate paths for pedestrians. These sidewalks are mostly found in neighborhoods.

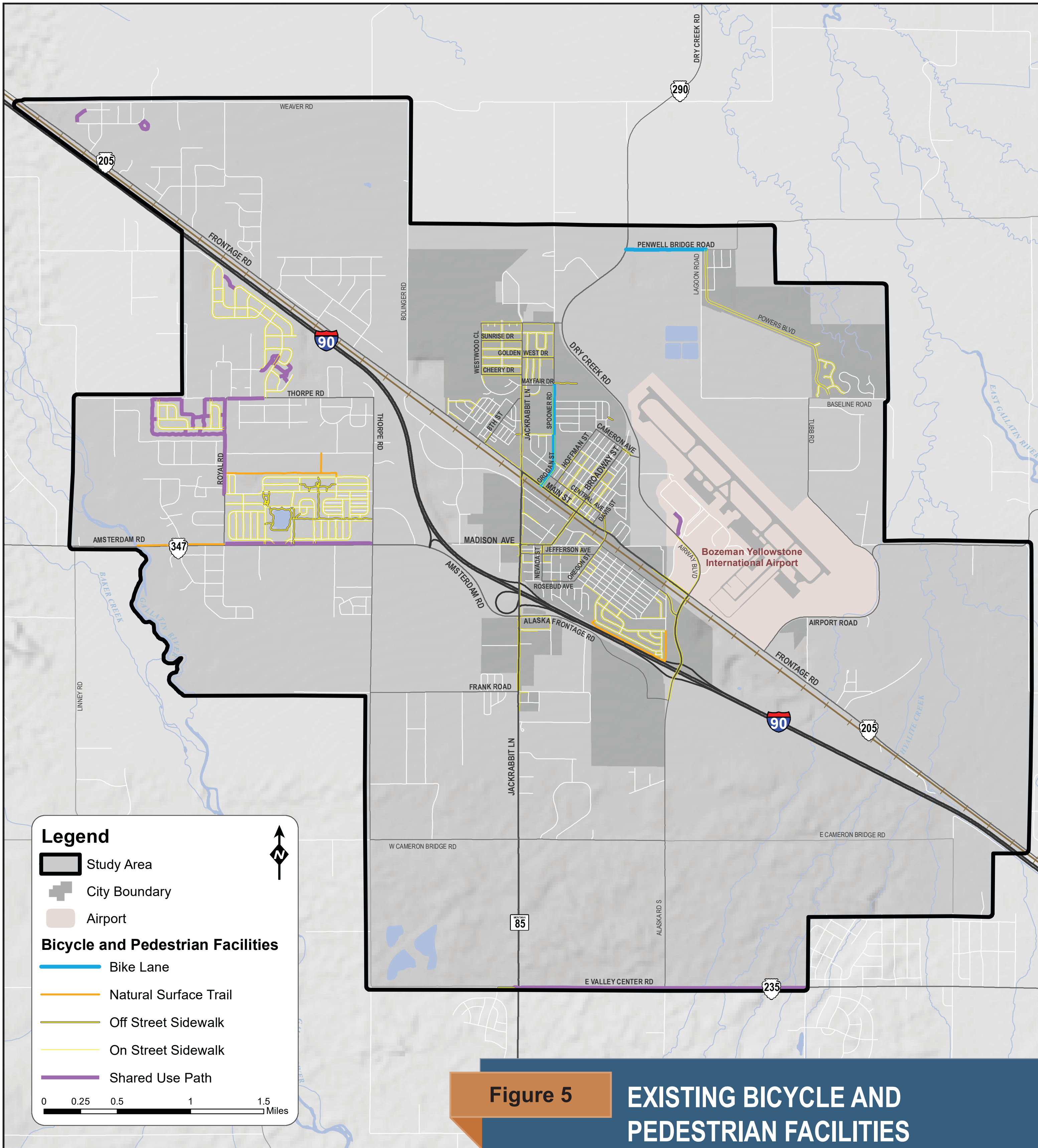


Figure 5

EXISTING BICYCLE AND PEDESTRIAN FACILITIES

2.4.2.2. Transit Facilities

Streamline provides fixed route public transportation in Bozeman, Belgrade, and Livingston. Streamline currently operates one fare-free route in Belgrade, the Greenline Express. This route was created to meet increasing demand for public commuter service between Belgrade and Bozeman. Beginning in Belgrade every weekday, the first bus leaves from the Belgrade bus stop (Smith and Missoula) at 6:35 AM and heads into Bozeman with several stops along the way before reaching MSU. The Greenline makes six trips a day between Belgrade, Four Corners, and Bozeman – two in the morning, two in the afternoon, and two in the evening – with the last stop in Belgrade at 7:00 PM.[8]

Streamline Ridership Trends

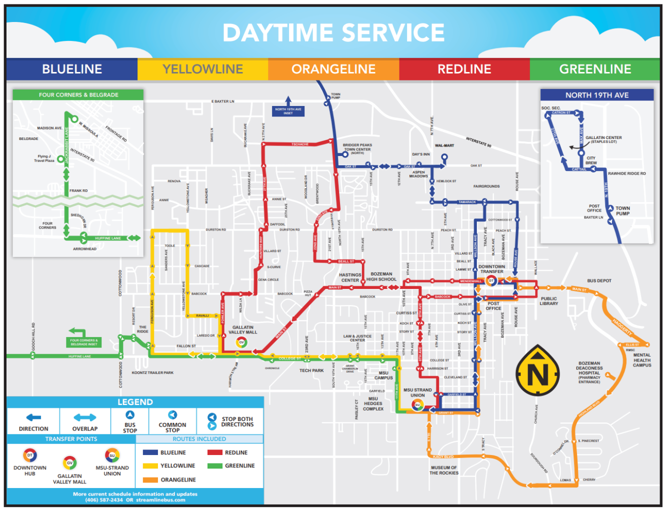
Approximately 70 percent of the Greenline's ridership is comprised of MSU students and faculty. Sixty-two (62) percent of riders use the Greenline service to commute to and from work. In 2012, there were nearly 20,000 boardings in Belgrade. Streamline's Business Plan was updated in 2012 and some historic data are available. In the month of October in 2012, on average, 21.48 passengers per day boarded the Greenline at the stop in Belgrade (Smith and Missoula). The morning peak hour sees the most ridership in Belgrade with significant mid-day and evening peaks as well. Demand is expected to continue growing but lack of funding continues to limit service.

Streamline currently operates one fare-free route in Belgrade, the Greenline Express.

Pedestrian and Bicycle Connectivity to Transit

Due to Streamline's limited service in Belgrade, many of the Belgrade riders say they have to drive to a bus stop (47 percent) while others walk or bike to the bus stop (48 percent). The median travel time for walkers was five minutes and for bikers, 10 minutes. Recently, Streamline decreased the number of stops in Belgrade from two to one and provided the one stop (Smith and Missoula) with a Park and Ride facility. A second stop was previously located at the Flying J Travel Plaza.

Throughout the entire Streamline service area, bus stop amenities are varied and range from high-quality custom designed shelters with benches and information to simple bus stop signs with a route timetable. Walking and bicycling are natural compliments to transit use. Transit use can be improved in Belgrade by high-quality pedestrian and bicycle facilities that can fill in the "first or last mile" of transit journeys. There are some sidewalks connecting to the bus stop from the west but there are still many barriers to pedestrian mobility surrounding the bus stop.



The Greenline Express travels between Bozeman, Four Corners, and Belgrade along Huffine Lane and Jackrabbit Lane.

2.4.3. Freight and Rail Network

Although freight volumes have declined in the past decade nationwide, Montana freight and rail companies are optimistic that they can maintain volumes by providing service to all commodities. As long as this proves true, Belgrade will continue being situated along busy freight and rail routes. Understanding how freight and rail interact with the rest of the transportation network will help ensure that as the demand for these services fluctuate, all other transportation modes can continue to move safely and efficiently about the transportation network.

2.4.3.1. Freight and Heavy Vehicles

The City of Belgrade is situated near the junction of I-90 and Montana Highway 85 (MT-85). I-90 connects Belgrade with Billings and I-94 to the east and Butte and I-15 to the west. MT-85 extends south and meets with US Highway 191 (US-191) and MT-84 in Four Corners. US-191 then extends south to West Yellowstone where it connects to US-20. MT-84 travels west to its junction with US-287 in Norris. Each of these routes serve regional, national, and international trade. As such, it is important that delivery vehicles are able to travel through the area in a safe and effective manner.

Downtown Belgrade experiences heavy truck traffic throughout the day.

While heavy vehicles traveling from the east can access all of these junctions from Bozeman, Belgrade is sometimes the more attractive option due to the higher speed limits and a lower number of traffic signals. Within the study area, of major concern is the volume of heavy vehicle traffic transferring between I-90 and MT-85 (Jackrabbit Lane). Traffic counts from MDT along the Jackrabbit Lane/MT-85 corridor indicate that an annual average daily total (AADT) of commercial vehicles is 2,257, or roughly 9.3 percent of the total traffic along this segment in 2015.[9]

Large volumes of truck traffic are generated by the gravel pits east of Belgrade city limits. Previously, these trucks traveled through the city along Main Street in order to access I-90. With the recent construction of the East Belgrade Interchange, however, heavy truck traffic has been directed through the new interchange.

The location of trucking activity centers can greatly influence the transportation network as a whole. For example, if a business wishes to receive daily deliveries from heavy vehicles, they would need to ensure that the trucks have a safe an accessible location to unload goods. If a loading dock or large parking area were not available, it is possible the truck would have to stop in the roadway while unloading. This would block traffic and may create a safety hazard. Main Street in Belgrade is an area of particular concern in regards to truck traffic and its associated congestion. An additional concern is that trucks coming from the gravel pits traveling down Main Street tend to leave behind dust and gravel on the streets, making the area undesirable for pedestrians. However, many of the businesses that generate high volumes of truck traffic tend to be located in industrial or commercial areas that allow for large unloading areas. **Figure 6** presents the areas that generate high percentages of truck activity within the study area. Also shown on the figure is the percentage of heavy vehicle traffic that was observed at various intersections throughout the study area. The data were collected in conjunction with the level of service analysis discussed in **Section 2.5.2.**

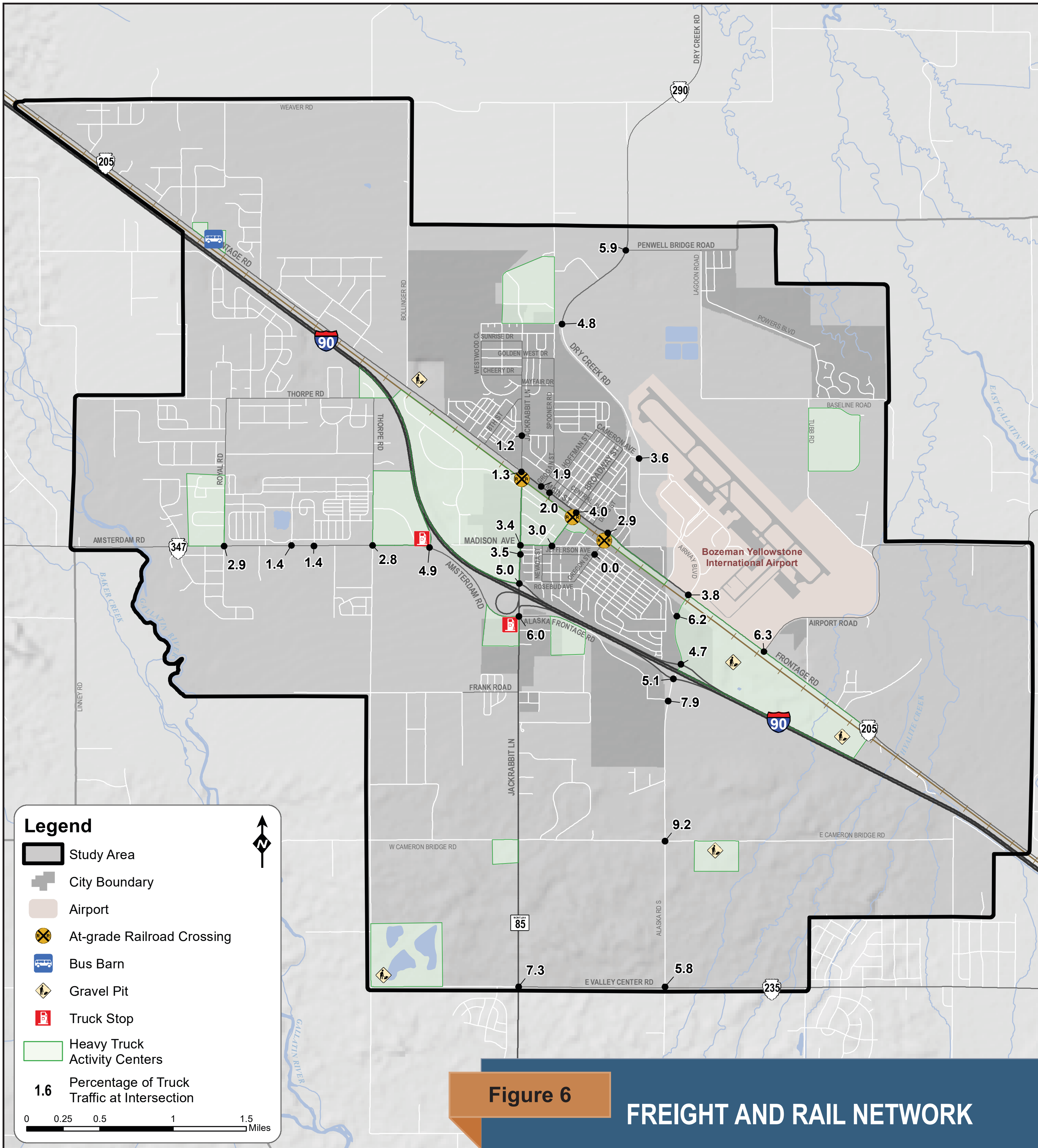


Figure 6
FREIGHT AND RAIL NETWORK

2.4.3.2. Rail

The main rail line through Belgrade is currently owned by BNSF Railway (BNSF) and is leased to Montana Rail Link (MRL). The line is designated as Subdivision Two – Spurling to Helena. Speed limits range from 50 to 60 miles per hour on the main track. As many as 28 trains travel through the Belgrade area daily. Through trains average approximately 110 cars per train.

Belgrade has three at-grade rail crossings at Jackrabbit Lane, at Broadway Street, and at Oregon Street (refer to **Figure 6**). The *Montana Rail Grade Separation Study*[10] conducted in 2016 evaluated both the Jackrabbit Lane and Broadway Street crossings as part of the top 25 crossings in Montana needing improvements, based upon delay and safety issues. Providing a grade separation at Broadway Street was determined infeasible due to site conditions and potential impacts to surrounding buildings, infrastructure, residences, and street connectivity. The Jackrabbit Lane crossing, combined holistically with the Broadway Street crossing, was further investigated and identified as a high priority at-grade crossing in Montana.

The railroad crossing at Jackrabbit Lane is one of three at-grade crossings in Belgrade. Frequent train crossings cause significant travel delays.

The findings of the 2016 study determined that the Jackrabbit Lane crossing has the greatest number of daily vehicle volumes of all crossings analyzed with daily traffic volumes over 16,400 AADT in 2014 and projected volumes of 32,690 AADT in 2034. Frequent train crossings of the roadway currently cause significant traffic delays. The study concluded that grade separation of Jackrabbit Lane from the railroad would help minimize delays and congestion, while also increasing safety. A variety of constraints led to the conclusion that an underpass was the most feasible solution as it required minimal changes to the surrounding roadway network.

2.4.4. Airport Road Network

The Bozeman Yellowstone International Airport (previously known as Gallatin Field Airport) is located adjacent to Belgrade to the northeast and has been included in the study area. In 2007, the airport updated their *Airport Master Plan* to investigate future growth and to outline anticipated improvement projects. The proposed development projects in the plan are aimed at helping accommodate the airport's growing needs and keep operations running smoothly. The report projected 100 percent growth for the airport within the 20-year planning horizon (2025). These forecasts have generally held true for the past ten years, making the Bozeman Yellowstone International Airport the busiest airport in Montana in 2017.

The Bozeman Yellowstone International Airport is located northeast of Belgrade and was the busiest airport in Montana in 2017.

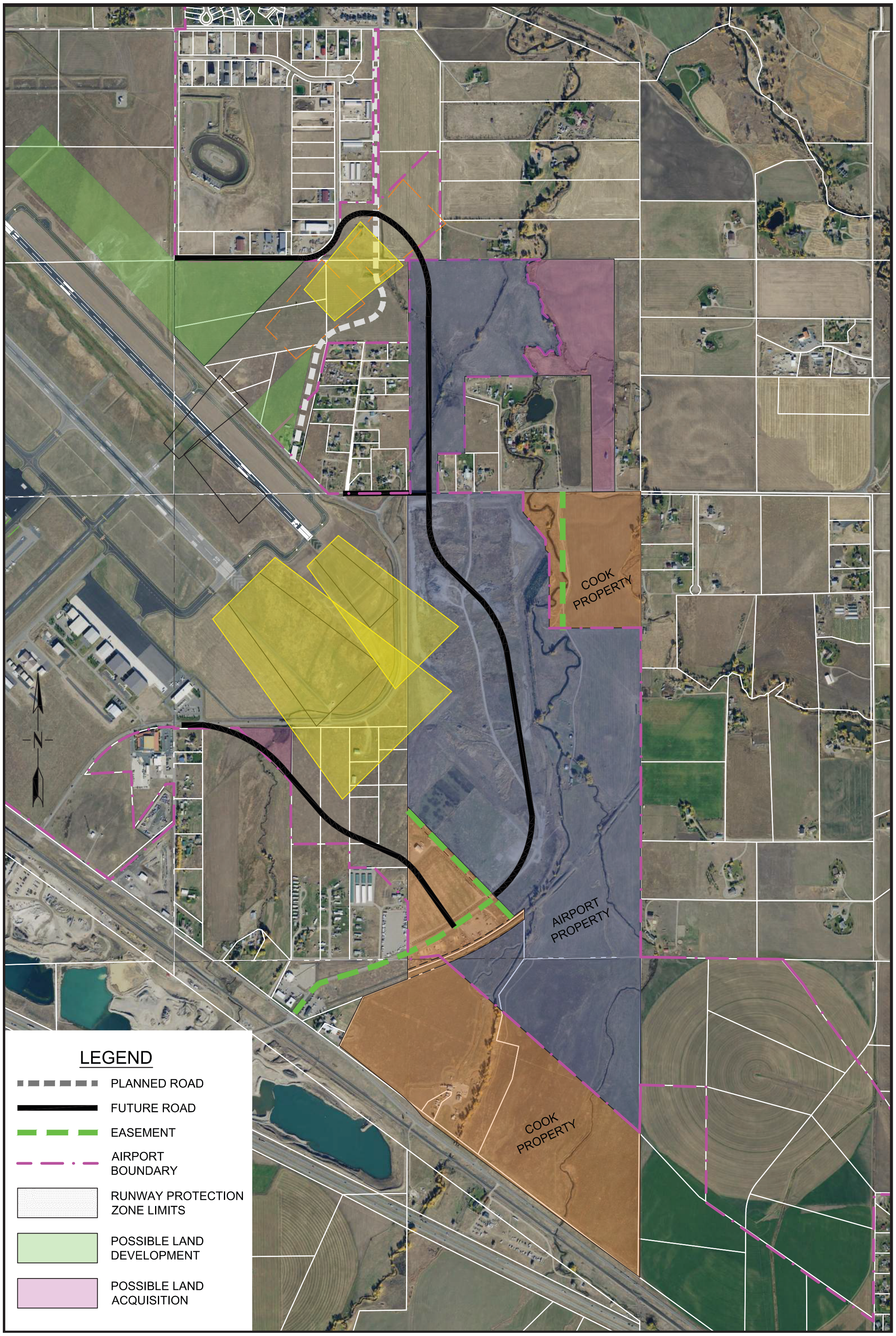
The airport has a substantial impact on Belgrade's road network. The I-90 East Belgrade Interchange was constructed in 2015 and provides easy airport access for interstate travelers and has helped improve traffic flows in Belgrade. The Master Plan proposes multiple airport expansion projects including the addition of new runways and the relocation of existing roadways, among other projects.

The Master Plan proposes the relocation of Lagoon Road and Baseline Road. This would involve moving Lagoon Road east to run parallel with Powers Blvd before running south to meet with Baseline Road at the existing intersection of Tubb Road and Baseline Road. Baseline Road would then continue further south (east of Jetway Drive) before curving to the west around the existing houses built along Timothy Lane until it meets again with Tubb Road. Additional discussions with the airport have noted a desire to made additional changes to the transportation network. It is generally preferred to extend Dollar Drive north to connect to Tubb Road via Jetway Drive. Due to safety issues along Airport Road and other general issues, it is preferable to remove the portion of Airport Road that curves around the airport boundary. Dollar Drive would then connect to the remaining part of Airport Road approximately at the intersection of Tower Road. The proposed road relocations could have an impact on travel patterns within the existing Belgrade road network. **Figure 7** shows the airport's proposed relocations. The relocations are merely for discussion purposes only and do not represent final plans.

The amount of land currently owned in northeastern Belgrade by the airport is substantial. In addition to physical property, the airport controls additional land through clear zone easements, development rights, and leases. Around the time of the Master Plan Update, the airport, in conjunction with Gallatin County and the City of Belgrade, created an avigation easement area for the lands surrounding the airport. The easement identifies height restrictions and permits lawful operation of aircraft in the area. **Figure 7** shows the land which is currently owned by the Gallatin Airport Authority and potential land acquisition.

Figure 7

AIRPORT LAND OWNERSHIP AND PROPOSED ROAD RELOCATIONS



Source: Bozeman Yellowstone International Airport, May 2018

2.5. TRANSPORTATION CONDITIONS

In order to get an accurate representation of the existing roadway network in Belgrade, it was necessary to collect and analyze a significant amount of data. The data aids in the understanding of how the current road network is operating and gives a basis for determining future planning needs.

2.5.1. Existing Roadway Volumes and Capacity

Existing roadway traffic data were collected by MDT, Gallatin County, and the City of Belgrade. The data were used to establish traffic conditions and to provide reliable data on historic traffic volumes. The most recently available AADT counts were used to represent existing conditions.

The capacity of the roadways is of critical importance when looking at the growth of the community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, users experience congestion and vehicle delay. As such, it is important to investigate the size and configuration of the existing roadways and to determine if these roads need to be expanded to accommodate the existing or projected traffic demands.

The capacity of a roadway is based on various features including the number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. However, for planning and comparison purposes, theoretical roadway capacities were developed based on simplistic roadway configurations. **Table 4** presents the capacities, given in vehicles per day, that have been used for this work. These values are not intended to be used to set any thresholds for roadway performance, but rather provide general information to be used for comparison purposes.

Table 4: Theoretical Roadway Capacity

Road Configuration	Capacity (vpd)*
2 Lane	12,000
2 Lane – Divided/TWLTL**	18,000
3 Lane	18,000
4 Lane	24,000
4 Lane – Divided/TWLTL**	32,000
Interstate	68,000

** Values represent planning level daily capacities developed for this LRTP and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on roadway design features and access control.*

*** Two-way Left-turn Lane*

A roadway's capacity, and associated volume-to-capacity (v/c) ratio, can be used as a comparison tool when looking at the transportation system. The v/c ratio of a roadway is defined as the traffic volume on the roadway divided by the capacity of the roadway. **Figure 8** presents the resultant v/c ratios for the existing major street network. The v/c ratios help identify potential capacity deficiencies on the transportation system.

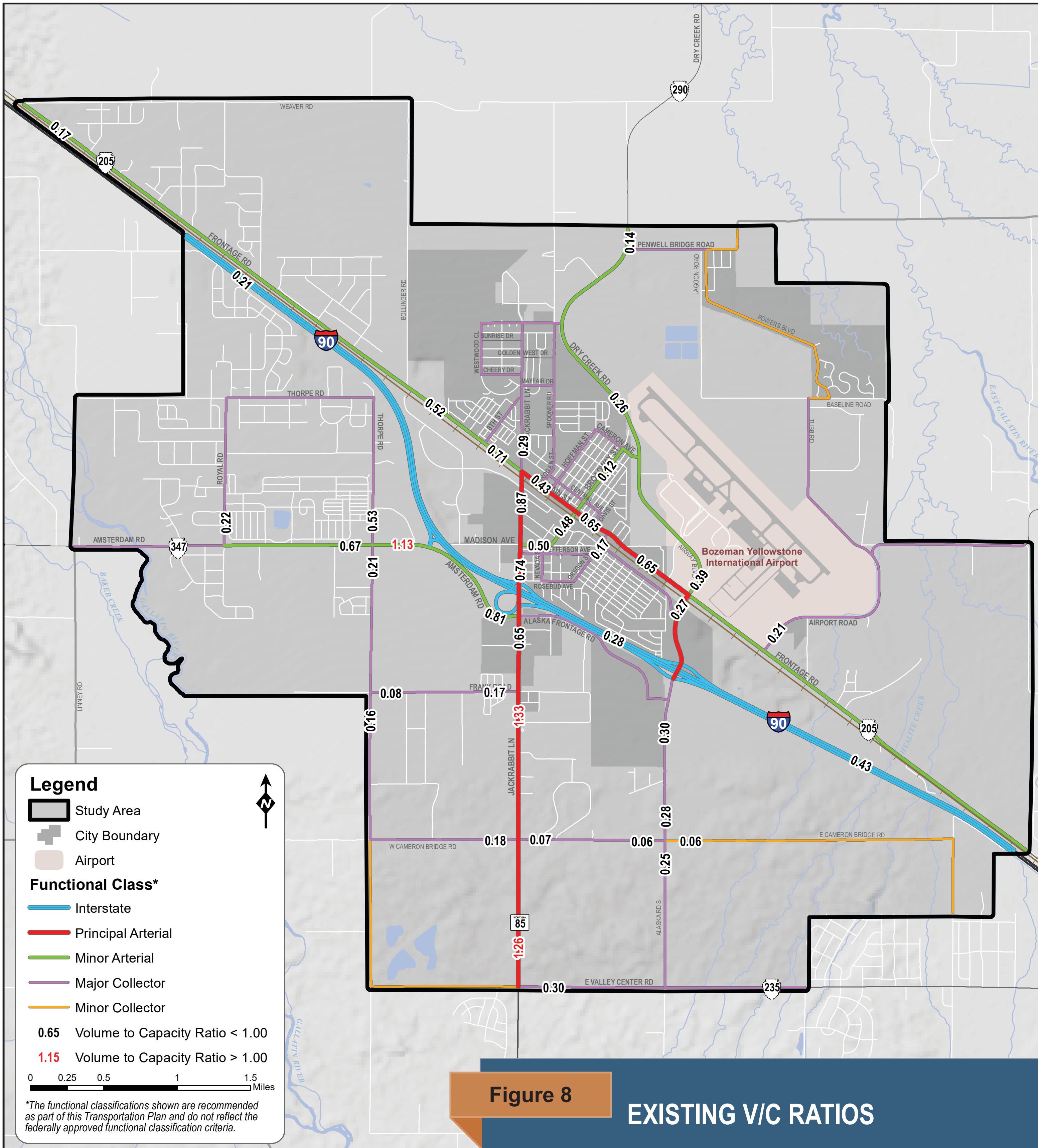


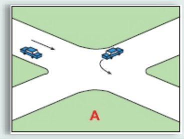
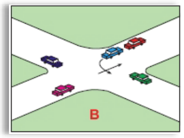
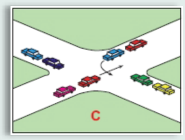
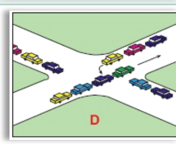
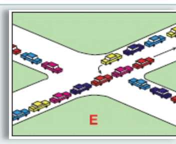
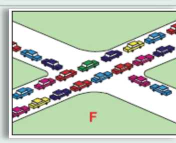
Figure 8

EXISTING V/C RATIOS

2.5.2. Intersection Operations

Urban road systems are ultimately controlled by the efficiency of the major intersections. High amounts of vehicle delay at major intersections directly reduces the number of vehicles that can be accommodated along the road during peak hours. Intersection performance is evaluated in terms of vehicle delay. The amount of vehicle delay experienced at an intersection correlates to a measure called level of service (LOS). LOS is used as a means for identifying intersections that are experiencing operational difficulties, as well as a means for comparing multiple intersections. The LOS scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using the intersection. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion.

Table 5: Intersection Level of Service Descriptions

LOS	Intersection	Description
A		• Free flow • Low Volumes • <1 vehicle in queue • **Signalized:** most vehicles do not stop • **Unsignalized:** Very easy to find acceptable gap
B		• Mostly free flow • Somewhat low Volumes • Occasionally 1+ vehicles in queue • **Signalized:** vehicles clear in one green phase • **Unsignalized:** Very easy to find acceptable gap
C		• Smooth flow • Moderate Volumes • Standing queue of at least 1 vehicle • **Signalized:** Individual cycle failures may occur • **Unsignalized:** Acceptable gaps found regularly
D		• Approaching unstable flow • High volume/capacity ratios • Standing queue of vehicles upon arrival • **Signalized:** Individual cycle failures are noticeable • **Unsignalized:** Hard to find acceptable gap
E		• Unstable flow • Volumes at or near capacity • Standing queue of vehicles upon arrival • **Signalized:** Individual cycle failures are frequent • **Unsignalized:** Hard to find acceptable gap
F		• Saturation condition • Volumes over capacity • Standing queue of vehicles upon arrival • **Signalized:** Many individual cycle failures • **Unsignalized:** Very hard to find acceptable gap

LOS is one approach to evaluating traffic operations. Intersection LOS defines intersection performance in terms of vehicle delay and does not factor in alternative travel modes nor does it take into consideration the health of the overall transportation system. Intersection LOS is often based on a single hour, or peak hours, for which the system is most congested. A broader approach to improving the transportation system, not just reducing peak hour delay at single intersections, should be taken.

Also note that in this analysis intersections were analyzed on an individual basis. This means that LOS was determined based on the total number of vehicles traveling through the intersection during the peak hour. Consequently, intersection queues that form as a result of delay at nearby intersections were not accounted for in this analysis. In other words, at many of the intersections in the study area, peak hour traffic causes gridlock which only allows low volumes of traffic to travel through the intersection, numerically, this results in a better LOS.

A total of 29 intersections were evaluated within the study area. Data were collected during the spring of 2017 at 17 of the 29 intersections (6 signalized and 11 unsignalized locations). Each intersection was counted during the peak hours, defined as 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Turning movement counts were obtained from MDT for 5 additional intersections (1 signalized and 4 unsignalized locations), and from other sources for 7 additional intersections (1 signalized and 6 unsignalized locations). Data at the MDT count locations were collected on various dates over the past few years. While the other counts were collected in the fall of 2017. The existing LOS for the intersections evaluated are presented in **Figure 9.**

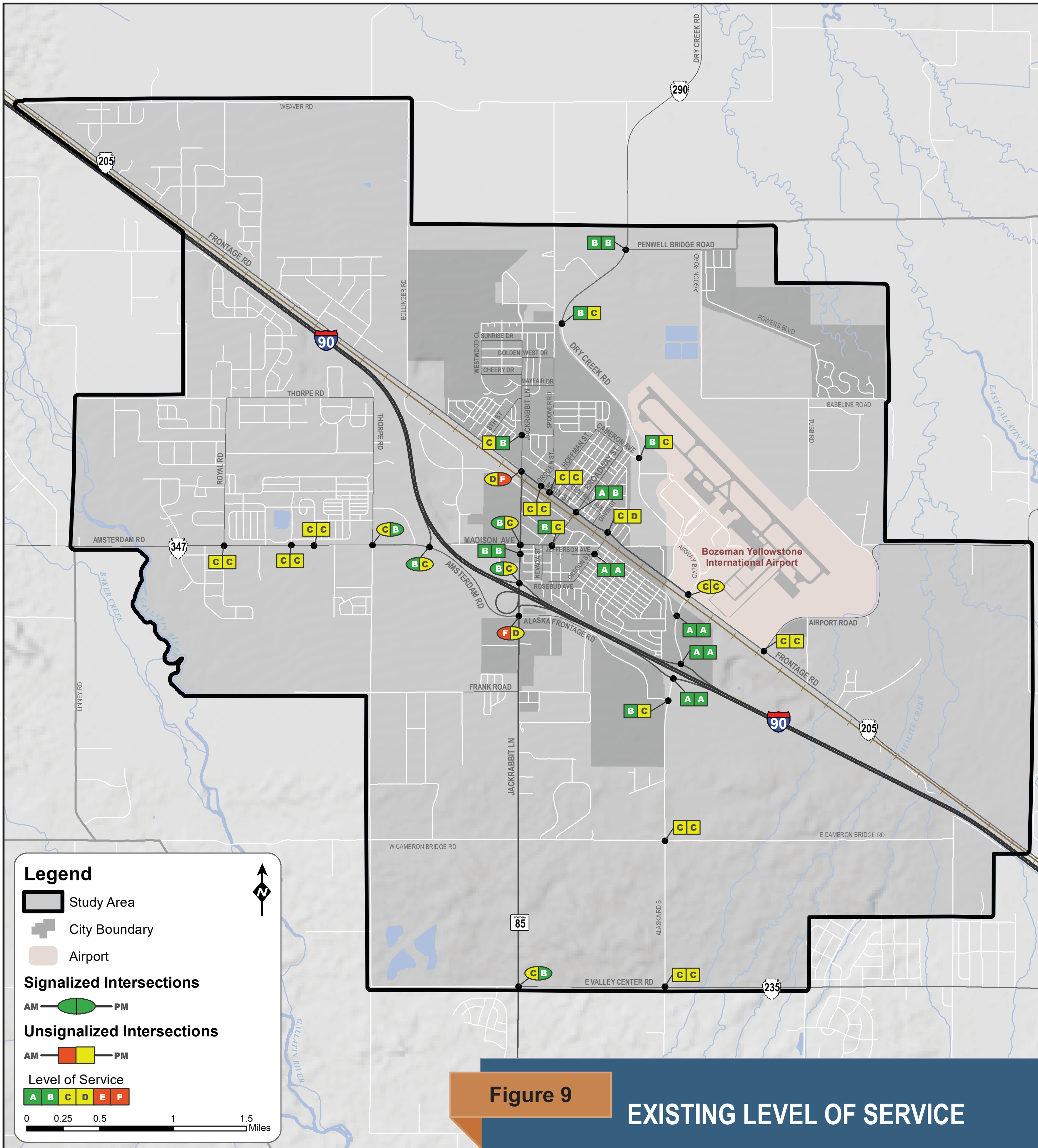


Figure 9

EXISTING LEVEL OF SERVICE

2.5.3. Active Transportation Data

Providing an accurate picture of pedestrian and bicycle activity within any community is difficult. Data are typically not available or not comprehensive enough to form a complete picture of active transportation behavior. Data for vehicles are, by comparison, much more readily available. The following subsections summarize available data pertaining to active transportation.

2.5.3.1. Journey to Work/Commuting (ACS) 2011-2015 Data

The US Census has long been one of the only readily available sources of data to measure general levels of transportation choices. The data are limited to commute based trips and do not reflect the spectrum of potential trip types available. The ACS has supplemented the 10-year cycle of the US Census to provide additional annual data. For communities the size of Belgrade, annual data are not statistically valid, therefore five-year averages are used. This method provides some insight, however, it is slow to note changes over time. For walking and bicycling, the margins of error are over one percent. **Table 6** compares the City of Belgrade to Gallatin County and the State of Montana.

Commuting patterns have changed slightly when compared with those of the 2000 and 2010 Census. While the margin for error inherent in the ACS is significant, the inconsistency in the data make it difficult to arrive at any concrete conclusions about travel patterns. In 2000, Belgrade reported that 1.58 percent of residents walk to work, 0.30 percent bike, and 0.18 percent ride the bus. In 2010, those numbers increased to 5.77 percent walking, 3.34 percent biking, but dropped to 0.00 percent riding the bus. It is not surprising that active transportation modes increased in popularity, but it is curious that bus ridership would decrease. Streamline began operations in 2006 and many of the riders expressed that the Streamline was their main form of transportation to work. The 2011-2015 ACS estimates report a dramatic decline in active transportation users; 0.30 percent walking, another 0.03 percent biking, and still 0.00 percent taking the bus. Although the margin of error in this dataset is high, it is important to note this trend. A decrease could be due to a larger number of households being constructed at a greater distance from destinations and an increase of workers living in Belgrade and commuting to Bozeman. Additionally, Belgrade has seen an increase in personal vehicle ownership, suggesting that workers are opting to use their personal vehicles to commute rather than to use any active transportation modes.

Table 6: Commute Mode Share and Travel Time

Mode Share	State of Montana	Gallatin County	City of Belgrade
Walking*	4.9%	6.3%	0.3%
Biking*	1.4%	3.4%	0.3%
Driving†	85.6%	81.6%	89.7%
Drove Alone	*75.2%*	*72.5%*	*75.0%*
Transit	0.8%	0.6%	0.0%
Travel Time to Work (mean)	**19.6 min**	**18.9 min**	**19.2 min**

Data: American Community Survey (ACS) Five Year Estimates, 2011-2015

** Due to small sample sizes, the margin of error is approximately 1.2 percent for walking and 1.4 percent for bicycling*

† Driving mode share combines single occupancy vehicles and carpools

2.5.3.2. National Household Travel Survey (NHTS) 2009 Data

Data from the National Household Travel Survey (NHTS) provides mode share data aggregated at the national level for all trips and not just commute to work trips. For example, NHTS indicates that for every one bike to work trip, there are another 1.6 utilitarian bike trips (shopping, personal trips, transporting others, medical or dental visits, meals, or other reasons), 0.5 bike to school trips, and 4.8 social or recreational trips. Overall bike to work trips represent only approximately 7.5 percent of all bike trips nationally. It should be noted that approximately 41 percent of bike trips counted by NHTS are return home trips, indicating many bicyclists perform the initial part of their round trip by other means. While it is likely that travel patterns in Belgrade, particularly recreational based travel, do not match the national averages, it is very likely that the ACS commute mode share noted previously in **Table 6** under represents overall mode share in Belgrade.

2.5.4. Bicycle Operations

Vehicular LOS has been a standard metric for the evaluation of transportation networks for decades. Based on the freedom of movement, vehicular LOS methods often do not apply to non-motorized transportation. As such, transportation professionals have been working to develop a comparable means of evaluation for pedestrians and bicyclists. For these modes, it is the qualitative metrics, or how a street "feels", that may determine how it performs. One tool to analyze the perceived level of traffic stress (LTS) has been outlined in the *Mineta Transportation Institute Report 11-19*[11]. A LTS for bicyclists is determined based on various factors including posted speed limit, street width, traffic volume, and presence of bicycle lanes. The combination of these criteria separates the bicycle network into one of four scores:

LTS 1: Low-stress roadway suitable for all ages and abilities,

LTS 2: Roadway comfortably ridden by the mainstream adult population,

LTS 3: Roadway ridden by the "enthused and confident" cyclists, and

LTS 4: Roadway ridden by the "strong and fearless" cyclists.

Off-street facilities, such as shared use paths, would generally be considered as low-stress environments (LTS 1), while a roadway shared with motor vehicle traffic operating at high speeds would receive a higher LTS score. LTS scores can be used to identify existing areas that may be acting as barriers to bicycle traffic due to high levels of stress. Local streets with low traffic volumes and low speeds can be comfortable for many cyclists despite the shared roadway environment. The LTS analysis focuses specifically on the roadway environment. Shared-use paths offer comfortable facilities for all cyclists and have been score as LTS 1 for this analysis. The results of the LTS analysis are presented in **Figure 10**.

The framework provided by the LTS analysis can be used to identify corridors that may require more intervention than others to provide a comfortable experience for bicyclists. For example, a roadway with a standard six-foot wide bike lane would be scored as LTS 1 if the posted speed limit is 30 miles per hour or less. A roadway with four travel lanes can, at best, be scored at LTS 3 if there are no separated bike lanes. There are currently two corridors with bike lanes within the study area, Grogan Street/Spooner Road and Penwell Bridge Road. Each of these facilities has been scored at LTS 1. Much of the major street network within the study area has been scored at LTS 3 or 4 due to high traffic speeds and volumes and the lack of on-street bicycle facilities.

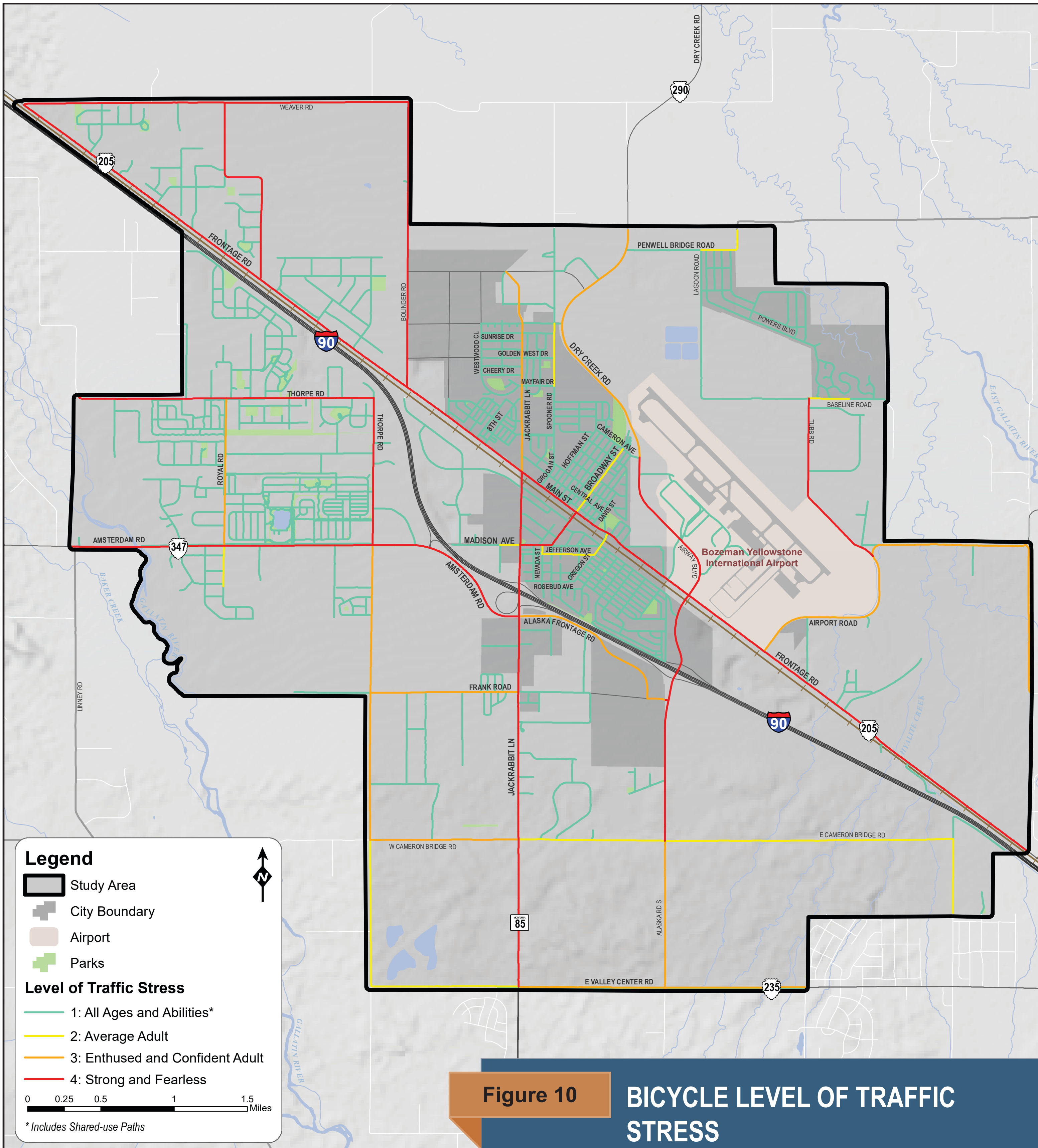


Figure 10 BICYCLE LEVEL OF TRAFFIC STRESS

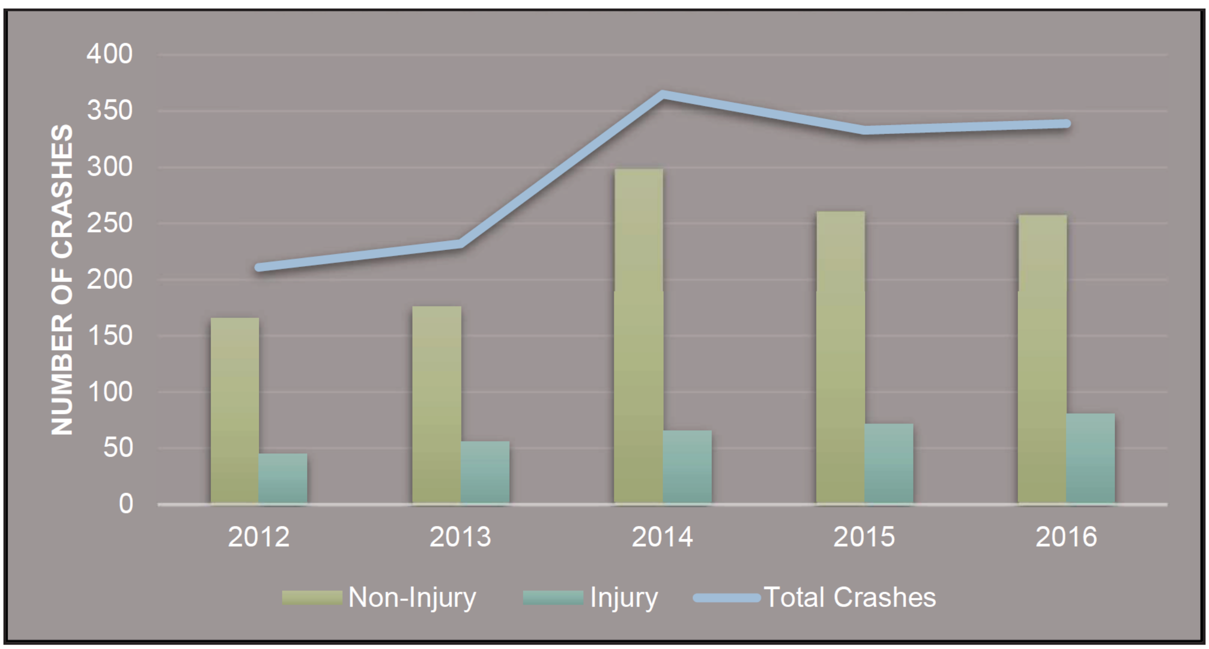
2.6. SAFETY

Crash data were provided by the MDT Traffic and Safety Bureau for the five-year period between January 1st, 2012 and December 31st, 2016. The crash reports are a summation of information from the scene of the crash provided by the responding officer. As such, some of the information contained in the crash reports may be subjective.

According to the MDT crash database, there were 1,480 crashes reported within the study area during the analysis time period. The number of crashes per year increased from 211 crashes in 2012 to 365 crashes in 2014. After 2014 the number of yearly crashes decreased to approximately 340 crashes in both 2015 and 2016. The number of injury crashes steadily increased over the five years, totaling 45 in 2012 and rising to 81 by 2016. The number of non-injury crashes per year in 2012 was 166 crashes and increased to a peak in 2014 with 299 crashes before decreasing to roughly 260 crashes in both 2015 and 2016. The number of injury crashes per year steadily increased by approximately 10 crashes between 2012 and 2016. **Figure 11** presents the total, injury, and non-injury crashes per year for the five-year analysis period.

The spatial distribution of all crashes was plotted based on the reported crash locations. The number of crashes per area were then tallied and are displayed in **Figure 12**. Locations with higher traffic volumes appear to have a higher number of crashes.

Figure 11 NUMBER OF CRASHES PER YEAR



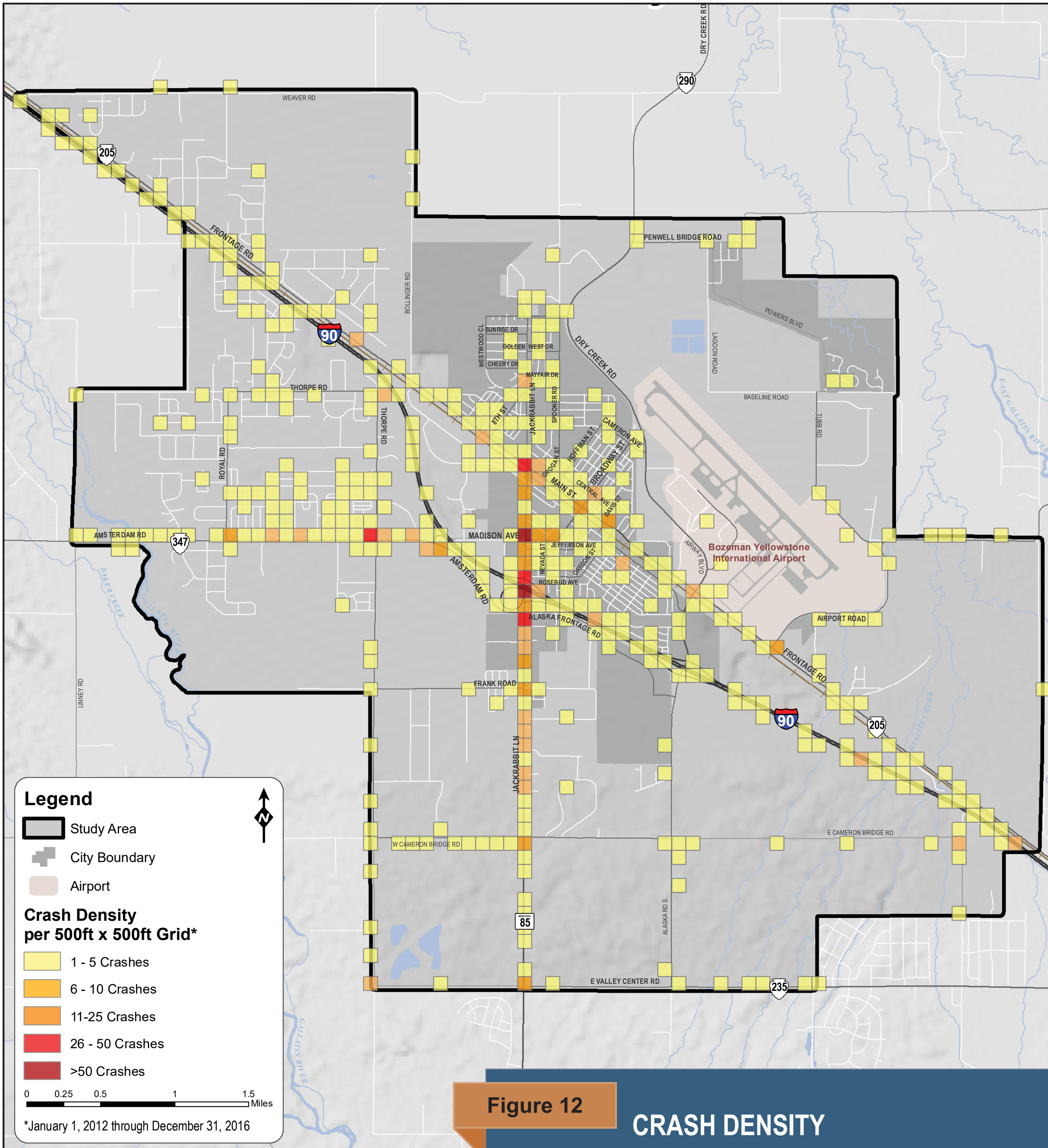


Figure 12

CRASH DENSITY

2.6.1. Crash Severity

Crash severity is categorized based on the most severe injury resulting from the crash. For example, if a crash results in two possible injuries and an incapacitating injury, the crash is reported as an incapacitating injury crash. An incapacitating injury is defined as an injury, other than a fatality, which prevents the injured individual from walking, driving, or normally continuing the activities they were capable of performing before the injury.

During the five-year analysis period, there were a total of 312 injury crashes and 8 fatal crashes, accounting for 21 and 0.5 percent of all crashes, respectively. As a result of multiple individuals being injured in a single crash, a total of 433 individuals were injured during the crash analysis period. Furthermore, 8 individuals sustained fatal injuries during the same period.

The locations of the incapacitating and fatal injury crashes are shown in **Figure 13** on the next page. The following locations appear to have a trend of severe crashes occurring during the analysis period:

- I-90 west of the Amsterdam Road Exit,
- Jackrabbit Lane I-90 Overpass,
- Jackrabbit Lane south of Frank Road,
- Royal Road and Amsterdam Road, and
- Madison Avenue between Broadway and Jackrabbit Lane.

2.6.2. Intersection Crashes

The 29 intersections that were studied for LOS analysis were also investigated for crashes. The crash information was analyzed to identify those intersections with crash characteristics that may warrant further study. Crash rates were used to compare the number of crashes to the daily traffic volume. The rate is expressed as the number of crashes per million entering vehicles as shown in **Equation 1**.

Equation 1:

$$\frac{Total\ Number\ of\ Crashes \times 1{,}000{,}000\ Vehicles}{Vehicles\ per\ day \times Number\ of\ Years \times 365\ days\ per\ year} = Crash\ Rate$$

Equation 2:

$$\frac{(\#PDO \times 1.0) + (\#Injury \times 3.0) + (\#Fatal\ or\ Incap. \times 8.0)}{Total\ Number\ of\ Crashes} = Severity\ Index$$

The severity index was calculated by applying multipliers to crashes based on severity. For the severity index, crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating injury, and fatal or incapacitating injury crashes. Each of these three types was given a different multiplier: 1.0 for PDO, 3.0 for injury, and 8.0 for fatal or incapacitating injury crashes. **Equation 2** was used to calculate the severity index. The severity rate is calculated by multiplying the crash rate by the severity index. **Table 7** presents the intersections with crash severity rates greater than 1.00.

Table 7: High Crash Severity Locations

Intersection	Crash Rate	Severity Index	Severity Rate
Royal Road & Amsterdam Road	1.00	2.82	2.82
Jackrabbit Lane & Amsterdam Road	1.47	1.53	2.24
Airport Road & Frontage Road	1.20	1.86	2.22
Jackrabbit Lane & Madison Avenue	1.64	1.34	2.20
Broadway Street & Madison Avenue	0.53	3.67	1.93
Thorpe Road & Amsterdam Road	1.06	1.75	1.85
Broadway Street & Main Street	1.11	163	1.81
Jackrabbit Lane & Main Street	1.38	1.17	1.62
River Rock Road & Amsterdam Road	0.49	2.67	1.31
I-90 EB On/Off & Amsterdam Road	0.69	1.89	1.30
Oregon Street & Jefferson Avenue	0.88	1.46	1.29
Jackrabbit Lane & I-90 WB On/Off	0.71	1.50	1.07

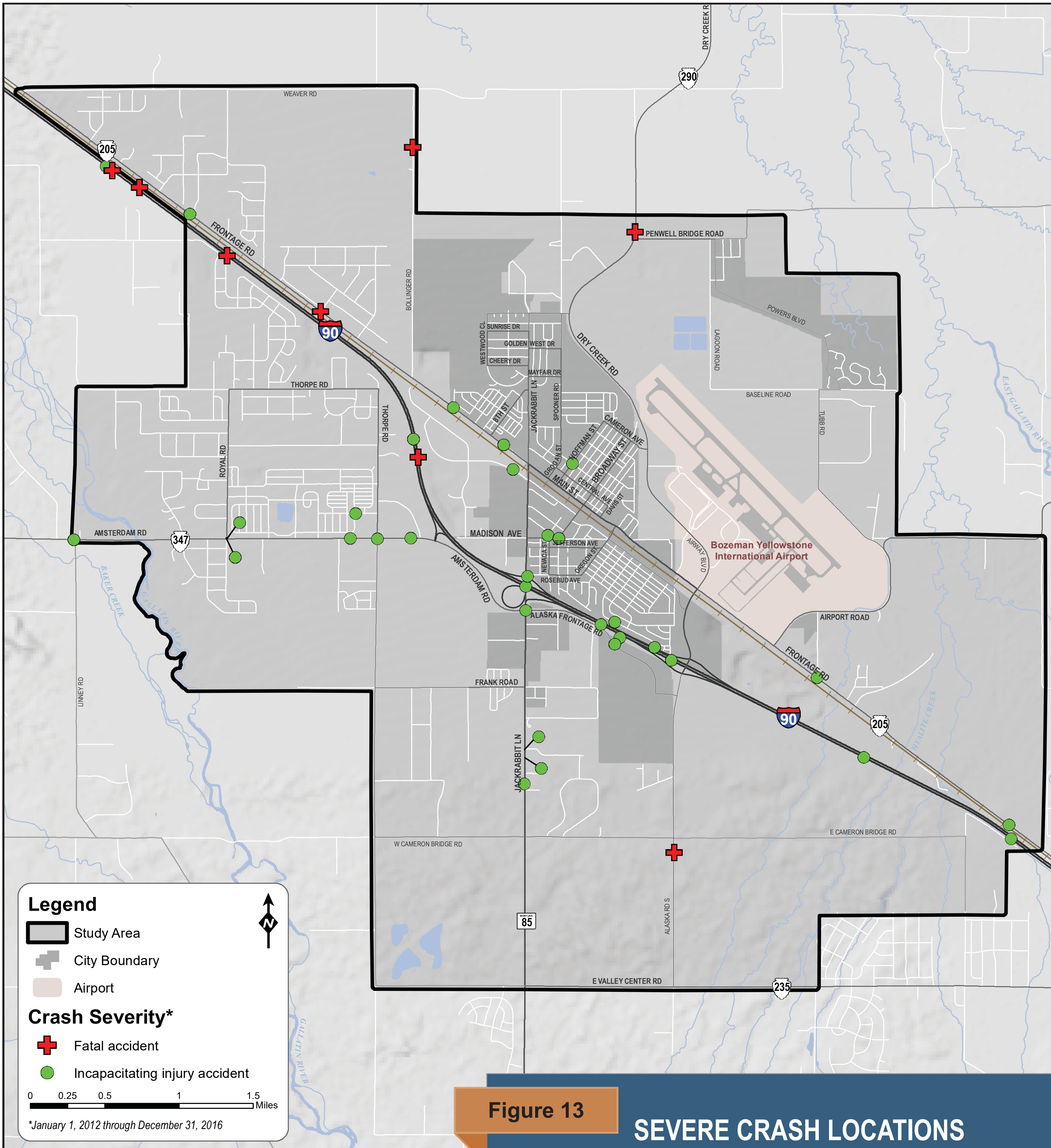


Figure 13

SEVERE CRASH LOCATIONS

2.6.3. Pedestrians and Bicyclists

Bicycle and pedestrian crash data are part of the same data set as the vehicular crash data. All bicycle crashes have the reported crash type listed as bicycle. In contrast, some of the crashes list the collision type as rear-end or right angle but also provide a count for the number of pedestrians involved. These pedestrian-involved crashes were accounted for in the following data analysis. Note that each crash used for this analysis was also included in the prior study area crash analysis.

Intermittent sidewalks along Jackrabbit Lane present a barrier to pedestrian traffic.

Crash data were reviewed for the five-year period between January 1st, 2012 to December 31st, 2016. There was a total of 27 non-motorized crashes. Of the 14 bicycle crashes, 4 resulted in an incapacitating injury, 8 caused an injury, and 2 were property damage only crashes. Of the 13 pedestrian crashes, 3 caused an incapacitating injury, 6 resulted in an injury, and 4 were property damage only crashes. The vast majority of pedestrian- and bicycle-involved crashes occurred at intersections or driveways; essentially, places where vehicle turning movements conflict. Most of these intersections are on Belgrade's arterial and collector system. The following bicyclist and pedestrian crash trends were noted:

The mid-block crossing near Main Street and Oregon Street is frequently used.

- There were 14 crashes involving bicyclists and 13 crashes involving pedestrians in the analysis period.
- Of the 27 total bicycle and pedestrian crashes in the analysis period, 21 crashes (78 percent) resulted in some form of injury, although there were no fatalities.
- 67 percent of total bicycle and pedestrian crashes occurred at an intersection or were intersection related.
- 81 percent of the crashes involving bicycles or pedestrians occurred during daylight conditions.

The crash data indicate a focus on intersection safety may yield reductions in the number of future crashes. Additionally, as fewer pedestrian and bicycle crashes occur on local streets (37 percent), local streets may be another place to invest future improvements such as bicycle boulevards and arterial crossing improvements for pedestrians and bicyclists. **Figure 14** shows the locations of the bicycle and pedestrian crashes within the study area over the past five years.

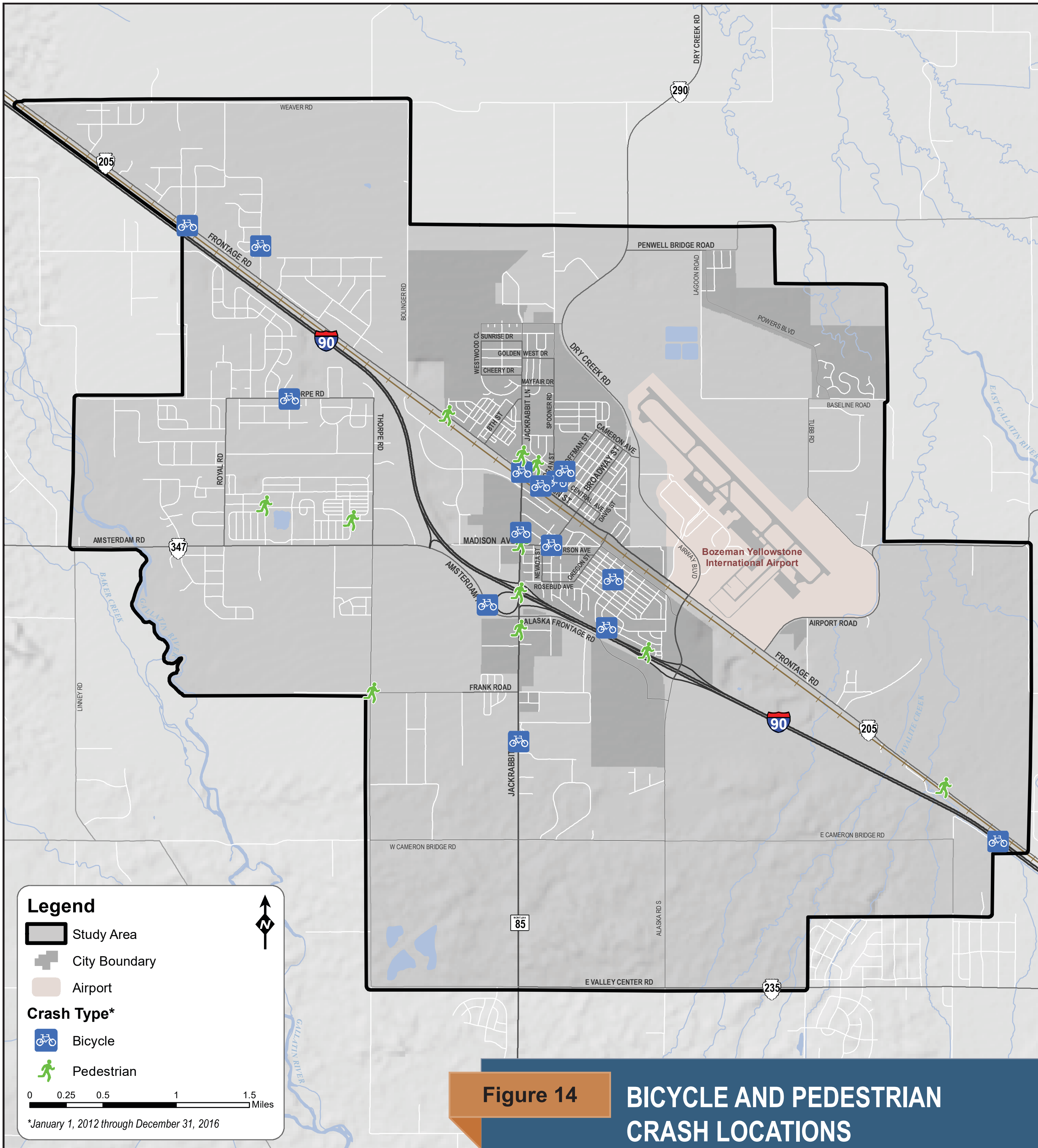
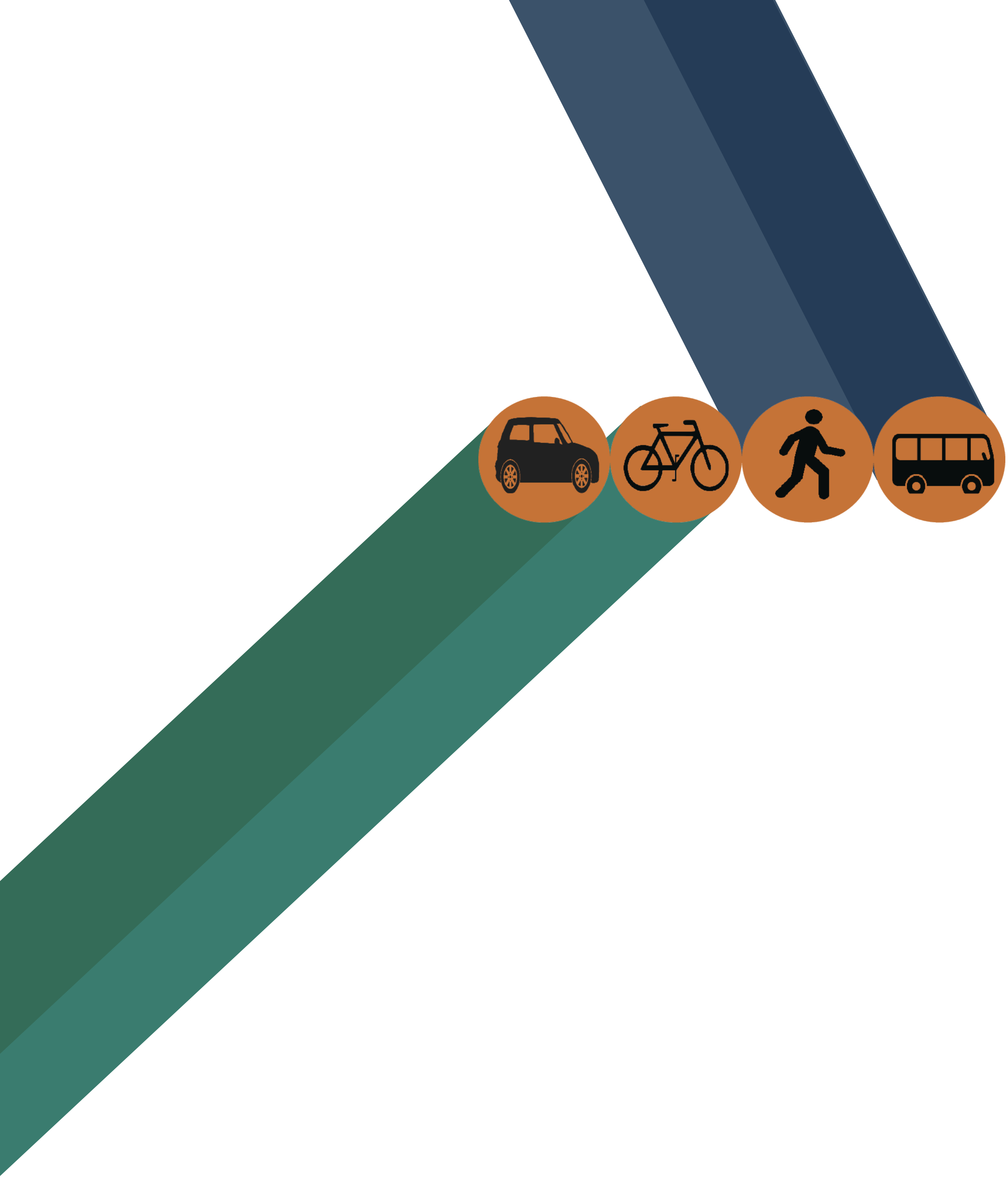
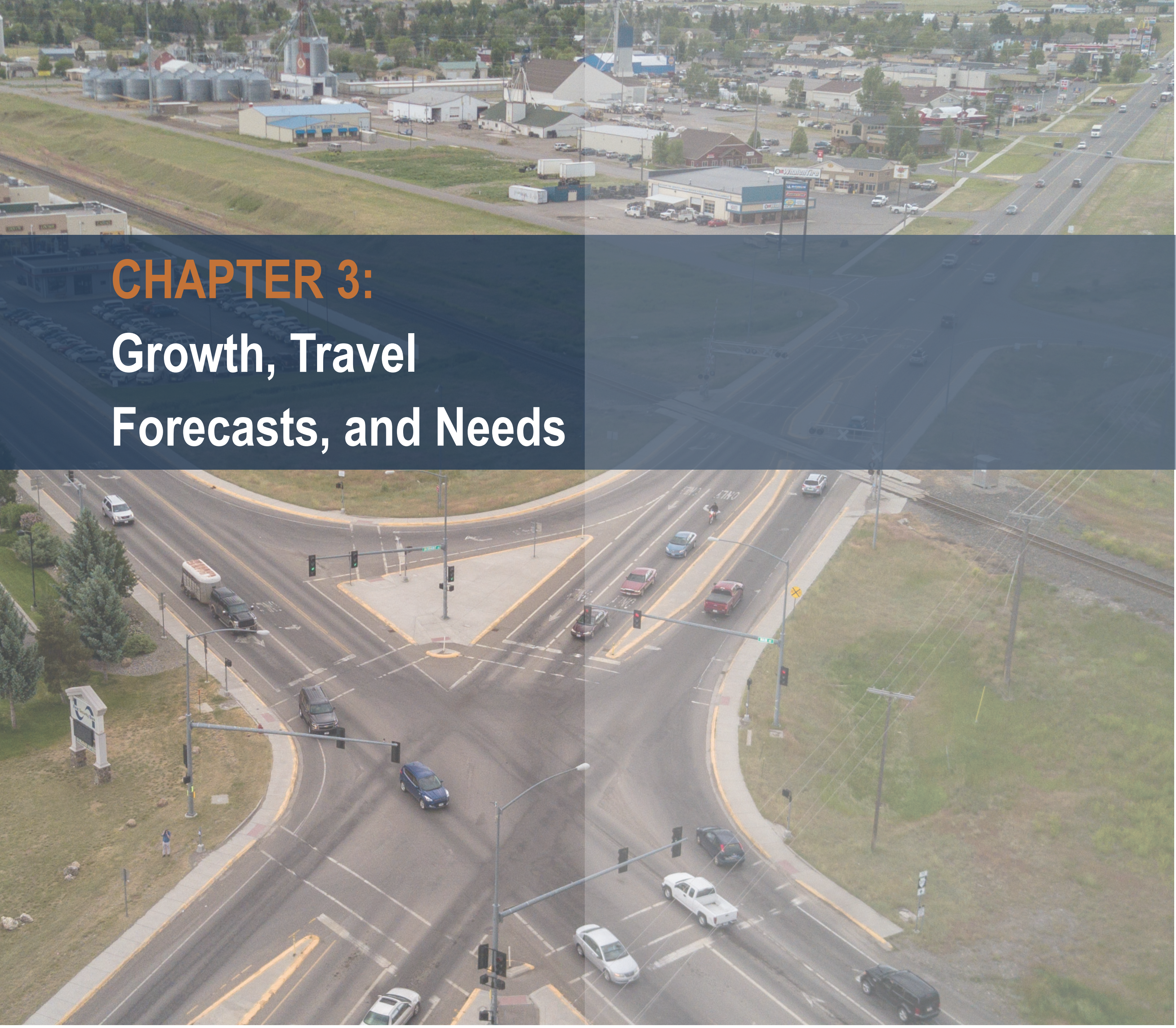


Figure 14 BICYCLE AND PEDESTRIAN CRASH LOCATIONS





CHAPTER 3:
Growth, Travel Forecasts, and Needs

3.1. OVERVIEW

This chapter discusses the background and assumptions used to project growth in the Belgrade area to the year 2040. By using population, employment, and other socioeconomic trends as aids, the future transportation needs were projected. A travel demand model of the transportation system for Gallatin County was built by MDT. Information about future growth was used to allocate residential and employment development to project future conditions. Changes to the transportation system that are committed to occur in the next five years were incorporated into the model to forecast future transportation conditions. An analysis of the projected transportation conditions was performed to estimate how traffic patterns and characteristics may change from existing conditions.

3.2. FUTURE GROWTH AND DEVELOPMENT

Projections are estimates of various characteristics at future dates. They illustrate reasonable estimates of future conditions based on assumptions about current or expected trends. Population and employment projections, in the form of housing units and total jobs, are used to help predict future travel patterns and assess the performance of the transportation system.

3.2.1. Population and Housing Projections

Population and housing totals are used in the TDM to help determine where vehicle trips are originating within the study area. Residential growth is best represented in the model by reporting housing units as the key model input.

Gallatin County

Several sources of population projections for Gallatin County were examined to help understand potential growth within the county. These sources consisted of both published community planning documents and recognized sources for demographic projections. These projections are summarized in **Table 8**.

Table 8: Population Projections for Gallatin County

Estimate or Projection Source	2010	2014	2016	2020	2025	2030	2035	2040	CAGR*
U.S. Census Bureau/CEIC Estimate	89,513	97,322	104,502	--	--	--	--	*194,124***	2.61%
Gallatin County Growth Policy	82,000	--	--	--	--	116,000	--	*137,969***	1.75%
Greater Bozeman Area Transportation Plan[12]									
Low Growth Projection	84,935	--	--	100,037	108,567	117,824	--	138,774**	1.65%
Moderate Growth Projection	87,406	--	--	109,023	121,760	135,986	--	169,618**	2.23%
High Growth Projection	90,727	--	--	121,930	141,350	163,863	--	220,218**	3.00%
Bozeman Community Plan[13]	88,300	--	97,780	107,100	116,450	--	--	*153,574***	1.86%
Bozeman TMP[14]	89,513	99,586	--	--	--	--	--	176,191	2.70%
eREMI Model	89,616	95,470	98,940	105,568	112,302	116,627	119,368	122,432	1.05%
Woods & Poole Economics, Inc.	**89,587**	**97,276**	**103,141**	**113,574**	**127,844**	**143,437**	**160,030**	**177,477**	**2.30%**

** Compound Annual Growth Rate (CAGR) calculated using 2010 population totals and future population projections.*

***Estimated using CAGR applied to population projection.*

For the purposes of the Belgrade LRTP, the Woods and Poole Economics, Inc. (W&P) projections were selected as the preferred set of population projections for Gallatin County. With a projected year 2040 population of more than 177,000, these projections reflect sustained and significant growth in Gallatin County.

City of Belgrade

Population projections for the City of Belgrade are not as readily available as for Gallatin County. The principal sources of projections for the city's population are other published community planning documents including the Belgrade Area Growth Policy (2006) and the Belgrade Area Transportation Plan (2002). Population projections from these sources along with estimates from the 2010 Census and W&P are shown in **Table 9**.

Table 9: Population Projections for the City of Belgrade

Estimate or Projection Source	2010	2014	2016	2020	2025	2030	2035	2040	CAGR*
U.S. Census Bureau/CEIC Estimate	7,389	7,790	8,254	--	--	--	--	*12,852***	1.33%
Belgrade Area Growth Policy	10,000	--	--	20,000	--	--	--	*80,000***	7.18%
Belgrade Area Transportation Plan	8,200	--	--	12,000	--	--	--	*25,699***	3.88%
Woods & Poole Economics, Inc.***	7,389	--	--	--	--	--	--	14,638	2.30%

** Compound Annual Growth Rate (CAGR) calculated using 2010 population totals and next soonest population count.*

***Estimated using CAGR applied to 2010 population count.*

**** Estimated using 2010 Census and Woods & Pool Economics, Inc. CAGR calculated for Gallatin County.*

It is apparent from a review of **Table 9** that substantial variation exists between the population projections for the city. This is due in part to the fact that these planning documents were produced before 2010 Census data became available that firmly established populations for all geographies of the county. Planning studies prior to the 2010 Census data had to rely on older Census data or other information to help estimate population growth trends. Discrepancies in population projections are also partially due to differences in areas of analysis. The Census population estimates reflect population totals only within Belgrade city limits whereas the other sources used larger areas of interest.

While the W&P projections are not available specifically for the City of Belgrade, the 2.30 percent CAGR calculated for Gallatin County was applied to the 2010 Census estimate for the City of Belgrade population for reference purposes. This method results in a projected City of Belgrade population of approximately 15,000 for the year 2040.

Belgrade LRTP Study Area

The share of the population living within the LRTP study area was estimated using Census population data. GIS analysis was used to identify the total population within all census blocks entirely within or crossed by the study area boundary. This analysis established the study area population to be 15,722 in 2010 and 16,970 in 2014. The population of the LRTP study area accounted for just over 17 percent of the county's total population in 2010 and 2014.

In order to have current data for the LRTP, the 2014 population totals were increased to represent 2016 existing conditions. The 2016 baseline conditions for the LRTP study area used the population estimate for Gallatin County provided by W&P and was then proportioned based on the percent of the population within the LRTP study area in the year 2014 (17.04 percent). This percent distribution of the county's population within the Belgrade and Bozeman areas was then carried forward for future projections, being held constant through the year 2040.

The number of housing units is a key component in the TDM model. Housing units represent the population and act as a hub for traffic within the network. According to the 2014 calibrated model, Gallatin County had 99,586 residents distributed among 47,048 housing units. Within the study area, the calibrated model shows a population of 16,970 distributed among 6,879 housing units. The number of occupants per housing unit under baseline conditions is 2.12 and 2.47, respectively, for Gallatin County and the study area.

The number of housing units for the 2016 baseline condition were calculated using the populations from the 2016 baseline condition and the occupancy factors from the 2014 calibrated model. This calculation results in a total of 48,727 housing units in the county and 7,125 housing units within the LRTP study area. The number of housing units within Gallatin County and the LRTP study area by the year 2040 was again determined by dividing the total populations for these geographies by their respective occupancy factors. Applying the occupancy rate to the projected 2040 population for Gallatin County results in 83,846 housing units; an increase of 35,119 from the year 2016. For the LRTP study area, an increase of 5,135 housing units is projected for the year 2040.

For reference, the population and housing units for the City of Bozeman and its unincorporated areas have also been provided for each of the conditions. The data for Bozeman comes directly from the *Bozeman Transportation Master Plan* (TMP). The "Outside Study Areas" data includes all areas within Gallatin County except those areas that are within the Belgrade LRTP study area or the Bozeman TMP study area. **Table 10** shows the projected population of the LRTP study area through the year 2040, which is forecasted to be more than 30,000 residents.

Table 10: Population and Housing Unit Projections

Area	2010 (Census)	2014 (Calibrated Model)	2016 (Baseline)	2040 (Projection)	Net Change (2016-2040)
Gallatin County Total					
Population	89,513	99,586	103,141	177,477	77,891
Housing Units	42,289	47,048	48,727	83,846	36,798
Population per Housing Unit					*2.12*
Belgrade LRTP Study Area					
Population	15,722	16,970	17,576	30,243	13,273
Housing Units	6,373	6,879	7,125	12,259	5,380
Population per Housing Unit					*2.47*
Bozeman TMP Study Area					
Population	49,814	56,924	58,956	100,712	41,756
Housing Units	22,783	26,035	26,964	46,062	19,097
Population per Housing Unit					*2.19*
Outside Study Areas					
Population	23,977	25,692	26,609	46,522	19,913
Housing Units	13,133	14,134	14,638	25,525	10,887
Population per Housing Unit					*1.82*

3.2.2. Employment Projections

Employment numbers are used in the TDM model to help distribute vehicle traffic as accurately as possible within the street and road network. Places with high levels of employment will tend to generate high levels of vehicle traffic. The traffic generated is based, in part, on the type of employment: retail, service, or basic.

Gallatin County

Table 11 presents full and part-time employment data for Gallatin County over the 2010 to 2040 period. In 2010, the total employment for Gallatin County was estimated to be 53,313 with farm and nonfarm employment totaling 1,200 and 64,199, respectively. Future employment projections from W&P for Gallatin County show that total nonfarm employment in the county may reach 132,522 by 2040 (an increase of 60,488 jobs from 2016). This represents a total overall increase of approximately 67 percent in nonfarm employment over the 2016-2040 period and an average increase in employment of 2.2 percent per year. The W&P employment projections suggest that Gallatin County will continue to see steady and significant job growth in the future.

Table 11: Employment Projections to 2040 for Gallatin County

Employment Projection*	2010	2014	2016	2020	2030	2040	Net Change (2016-2040)	CAGR (2016-2040)
Total Full and Part-time Employment	**65,399**	**75,033**	**80,552**	**88,706**	**110,473**	**133,962**	**53,410**	**2.14%**
Farm Employment	*1,200*	*1,324*	*1,343*	*1,372*	*1,421*	*1,440*	*97*	*0.95%*
Nonfarm Employment	*64,199*	*73,709*	*79,209*	*87,334*	*109,052*	*132,522*	*53,313*	*2.20%*

Note: Employment data for 2010 was obtained from US Department of Commerce Bureau of Economic Analysis – Table CA25 and Table CA25N.
Employment data for years 2014-2040 were obtained from the Woods & Poole Economics, Inc. dataset for Gallatin County. Montana.

Belgrade LRTP Study Area

The total employment within the LRTP study area for the year 2014 was extracted from the MDT model. Similar to the process followed to establish baseline population data, GIS analysis was used to identify the total employment within the study area. This analysis established the total employment for the LRTP study area to be 7,175 in 2014. This means that roughly 12 percent of the total employment in Gallatin County occurred within the LRTP study area. Estimates fro 2016 were made based on W&P projections. This resulted in an estimated 7,703 jobs within the study area in 2016.

Table 12 presents employment projections for the year 2040. Future employment was projected using the W&P projected growth rate (2.14 percent). Applying this growth rate to the model's calculated 2016 baseline employment numbers resulted in a total of 5,107 new jobs within the LRTP study area. Outside of the LRTP study area, 38,430 new jobs are projected with 27,325 of those jobs occurring in the Bozeman TMP study area. The percent distribution of retail, service, and basic job classifications was held constant from the 2014 calibrated model for both the 2016 baseline and the 2040 projection.

Table 12: Employment Projections to 2040 for the LRTP Study Area

Area	2010	2014 (Calibrated Model)	2016 (Baseline)	2040 (Projection)*	Net Change (2016 - 2040)
Gallatin County					
Retail	*22,810*	*33,671*	*36,148*	*60,115*	*23,968*
Service	*12,825*	*13,645*	*14,649*	*24,361*	*9,713*
Basic	*12,915*	*13,847*	*14,866*	*24,722*	*9,857*
Total	**48,550**	**61,163**	**65,662**	**109,199**	**43,537**
Belgrade LRTP Study Area					
Retail	*3,084*	*3,527*	*3,786*	*6,297*	*2,511*
Service	*885*	*1,309*	*1,115*	*1,855*	*740*
Basic	*2,435*	*2,609*	*2,801*	*4,658*	*1,857*
Total	**6,404**	**7,175**	**7,703**	**12,810**	**5,107**
Bozeman TMP Study Area					
Retail	*15,004*	*21,720*	*23,318*	*38,857*	*15,540*
Service	*9,196*	*10,050*	*10,789*	*17,979*	*7,190*
Basic	*6,067*	*6,617*	*7,104*	*11,838*	*4,734*
Total	**30,267**	**38,387**	**41,211**	**68,675**	**27,464**
Outside Study Areas					
Retail	*4,722*	*8,424*	*9,044*	*14,961*	*5,917*
Service	*2,744*	*2,556*	*2,744*	*4,527*	*1,783*
Basic	*4,413*	*4,621*	*4,961*	*8,226*	*3,265*
Total	**11,879**	**15,601**	**16,749**	**27,714**	**10,965**

** 2040 projections were based on a 2.14% per year CAGR as calculated based on Woods & Poole projections.*

3.2.3. Allocation of Future Growth

Modeling of future travel patterns out to the year 2040 planning horizon using MDT's travel demand model required identification of future socioeconomic characteristics within each census tract and census block. County population and employment projections were translated into predictions of increases in housing and jobs within Gallatin County, the Belgrade LRTP study area, and the Bozeman TMP study area.

To accomplish this task, the 2016 baseline conditions first had to be established for the model. Since the model was previously calibrated to the year 2014, the additional growth from 2014 to 2016 had to be allocated within the model's census blocks. Allocation of the additional jobs and housing units was based on local knowledge and known new construction between 2014 and 2016. Other areas used a uniform growth rate applied to the model's existing housing and employment numbers. A total of 246 new housing units and 528 new jobs were allocated within the LRTP study area between 2014 and 2016. An additional 929 housing units and 2,824 new jobs were allocated within the Bozeman TMP study area, while 504 additional housing units and 1,148 additional jobs were added to areas within the County.

For 2040 future conditions, initial allocation of the housing and employment growth within the LRTP study area was made based on a review of existing land use and zoning maps for Belgrade and the surrounding county area, city and county growth policies, and other community planning documents. After the initial assignment of housing and employment through the year 2040 was made, a land use workshop was held with various stakeholders on August 22, 2017 to discuss and reach consensus on the distribution of future housing and employment growth within the study area. This enabled local stakeholders to consider and revise the growth assignments as needed based on their knowledge of recent land use trends, land availability, development limitations, land use regulations, planned public improvements, and known development proposals.

Allocation of future housing and employment growth for the Bozeman TMP study area was directly from the TMP. Outside of the study areas, a uniform growth rate was used. A total of 5,135 new housing units and 5,107 new jobs were allocated within the LRTP study area. An additional 19,097 housing units and 27,464 jobs were allocated within the Bozeman TMP study area. Outside these study areas, a uniform growth rate was applied for a total of 10,887 additional housing units and 10,965 additional jobs. **Figure 15** shows where growth is expected to occur in the study area.

The Ryen Glenn Subdivision is located on the northeast side of Belgrade and is one of Belgrade's newest housing developments.

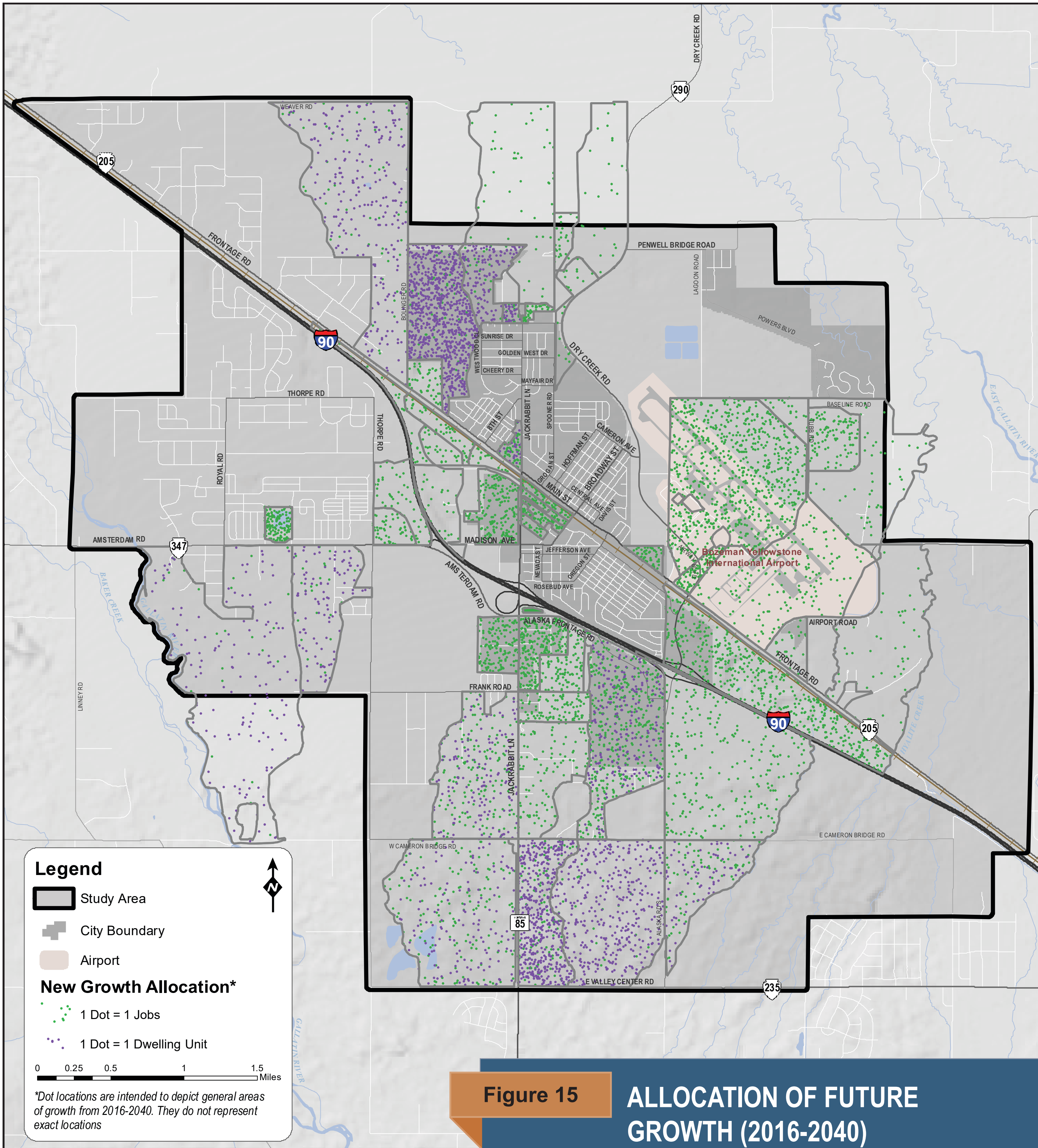


Figure 15 ALLOCATION OF FUTURE GROWTH (2016-2040)

3.3. PROJECTED TRANSPORTATION CONDITIONS

An analysis of the projected transportation system was performed to estimate how traffic patterns and characteristics may change from the existing conditions in the future. The inputs for this analysis include the 2016 existing conditions and forecasted growth in housing and jobs out to the year 2040. The model was used to evaluate the projected 2040 year conditions by applying additional housing and jobs to the existing travel demand model. Census blocks and census tracts were used to distribute the population and employment growth that was projected to occur between 2014 and 2040. In addition, known roadway infrastructure projects expected to be constructed within the next five years were included as part of the projected conditions model.

One assumption that was built into the model is that traffic characteristics will remain similar to those that are seen today. Many factors can influence this assumption, such a fuel prices, technological advances, and other unknown circumstances. Another assumption of the model is that the socioeconomic projections will be realized by the year 2040. Ultimately, the projected conditions model was used as a planning tool to help evaluate how traffic patterns might be affected by anticipated future development.

3.3.1. Projected Roadway Capacity

Projected traffic volumes were estimated using the travel demand model. A comparison of the existing and projected conditions models was made to determine the percent change in traffic volume. The percent change was then applied to known existing AADT count sites to reflect projected daily traffic volumes. In cases where the 2016 travel demand model predicted volumes more than ±30 percent difference from actual existing AADT counts, the 2040 travel demand model volumes were used. **Figure 16** presents the projected v/c ratios for the major street network.

3.3.2. Projected Volume Growth

To visualize where growth is projected to occur in Belgrade, and to aid in the planning process, a map of the projected traffic volume growth on the major street network was prepared. **Figure 17** shows where high traffic growth is expected to occur given the future land use assumptions made. The volumes shown are the difference between the volumes in the 2016 and 2040 travel demand models. This visualization helps identify which roads may need additional investment to accommodate future growth. While some roads currently have little traffic volume and do not currently have capacity issues, future growth may greatly increase traffic volumes and could cause capacity issues if road improvements are not made.

Amsterdam Road is projected to experience growth between now and 2040 likely resulting in volumes that exceed the available capacity.

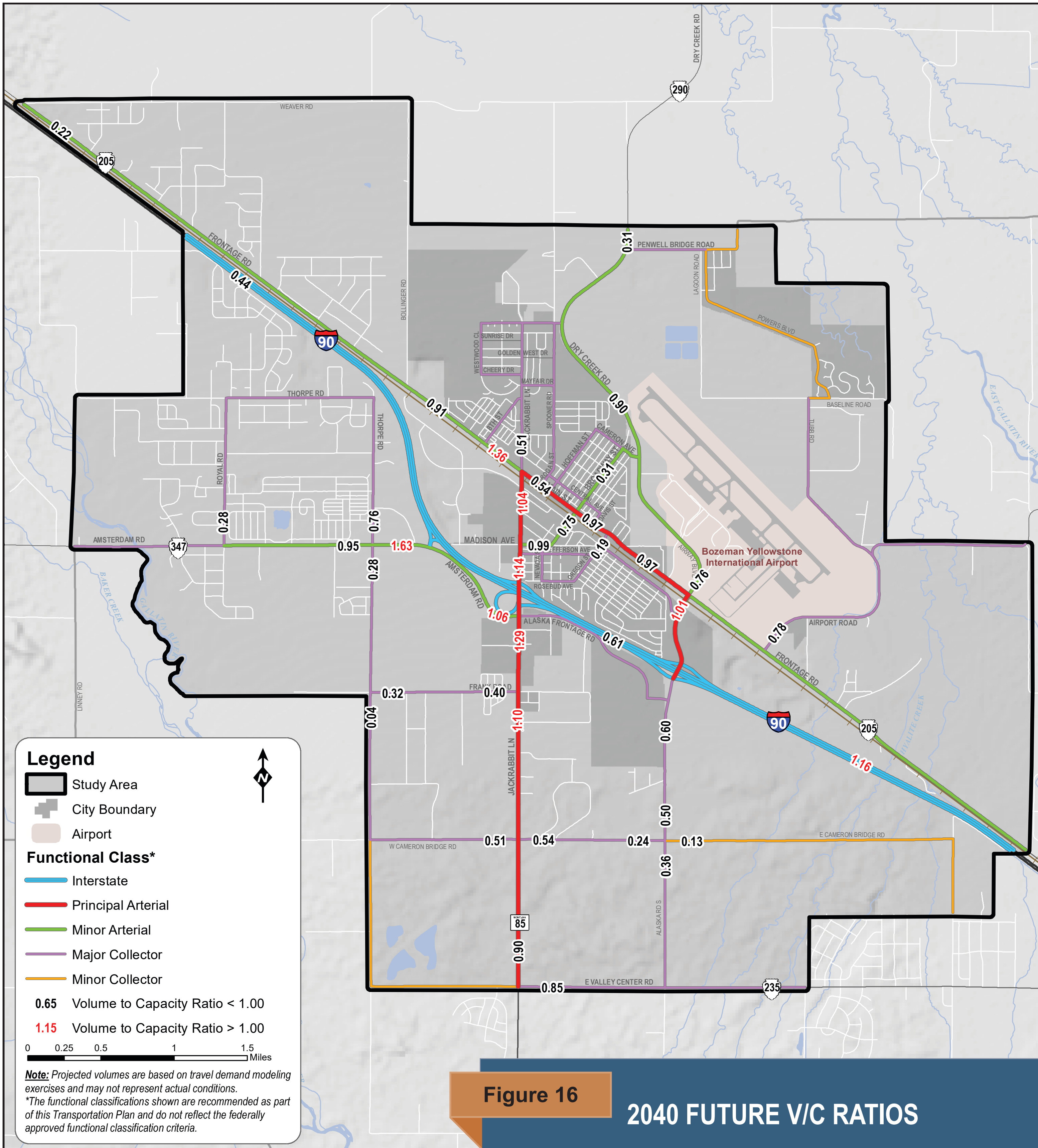


Figure 16

2040 FUTURE V/C RATIOS

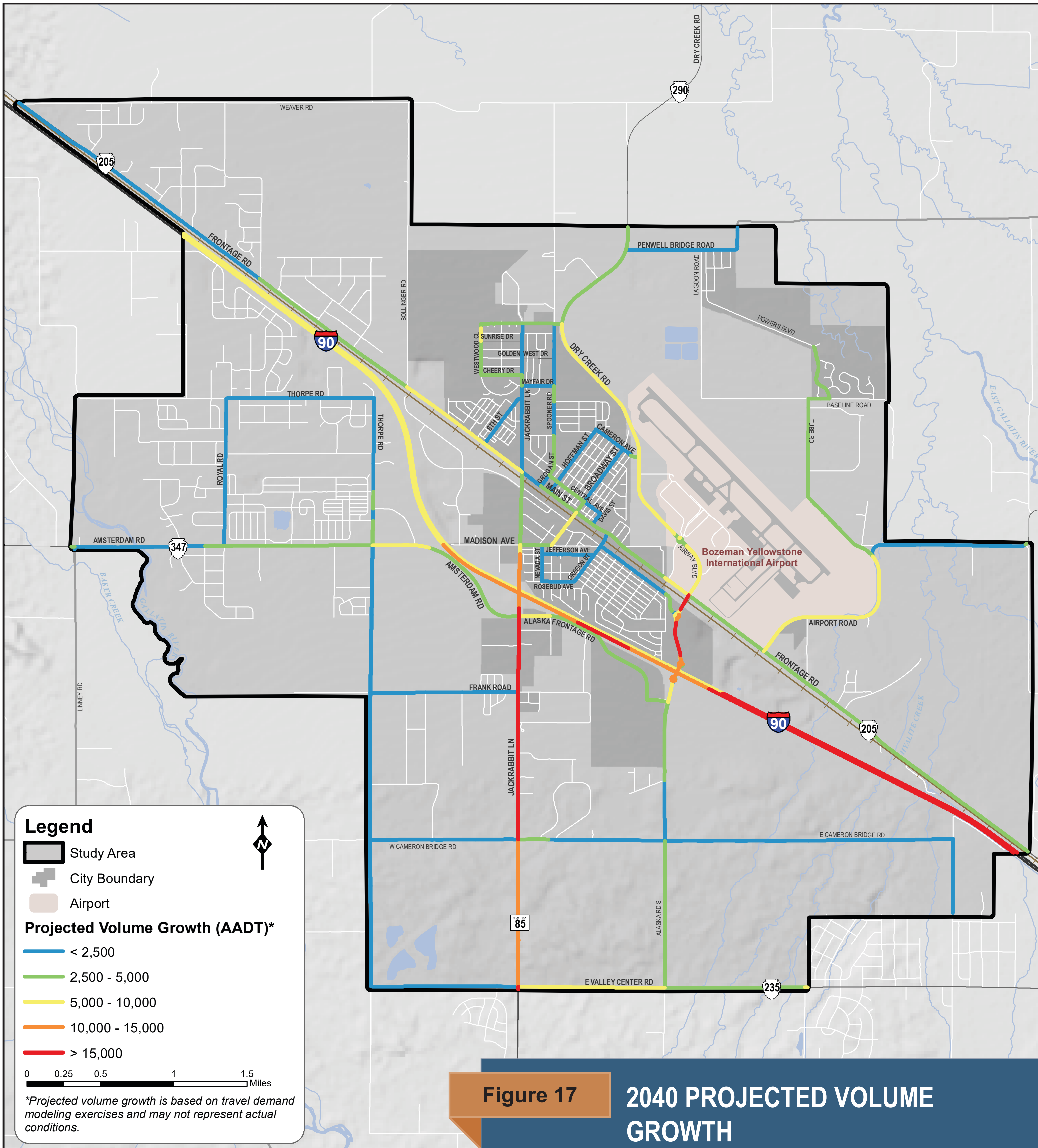
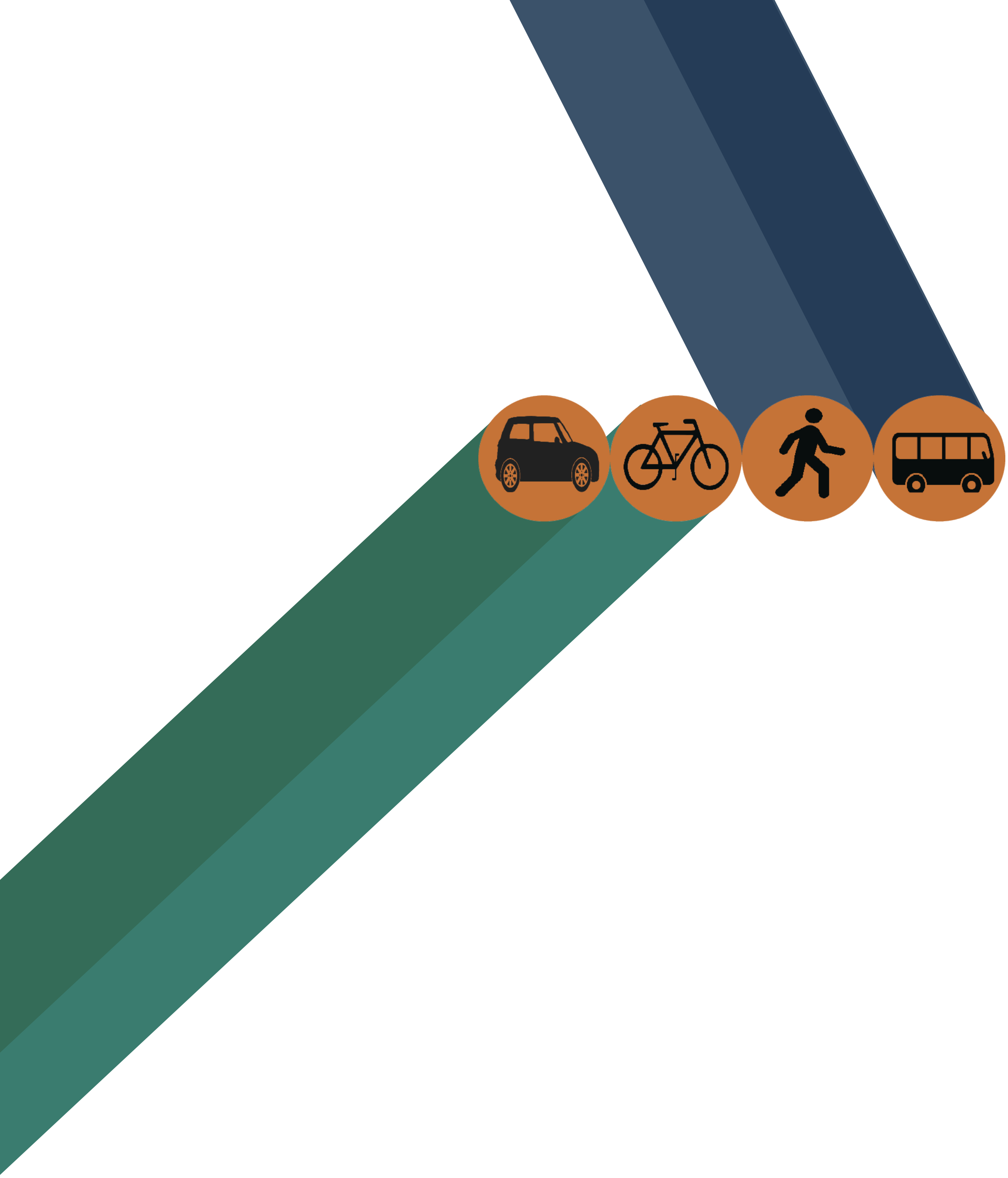
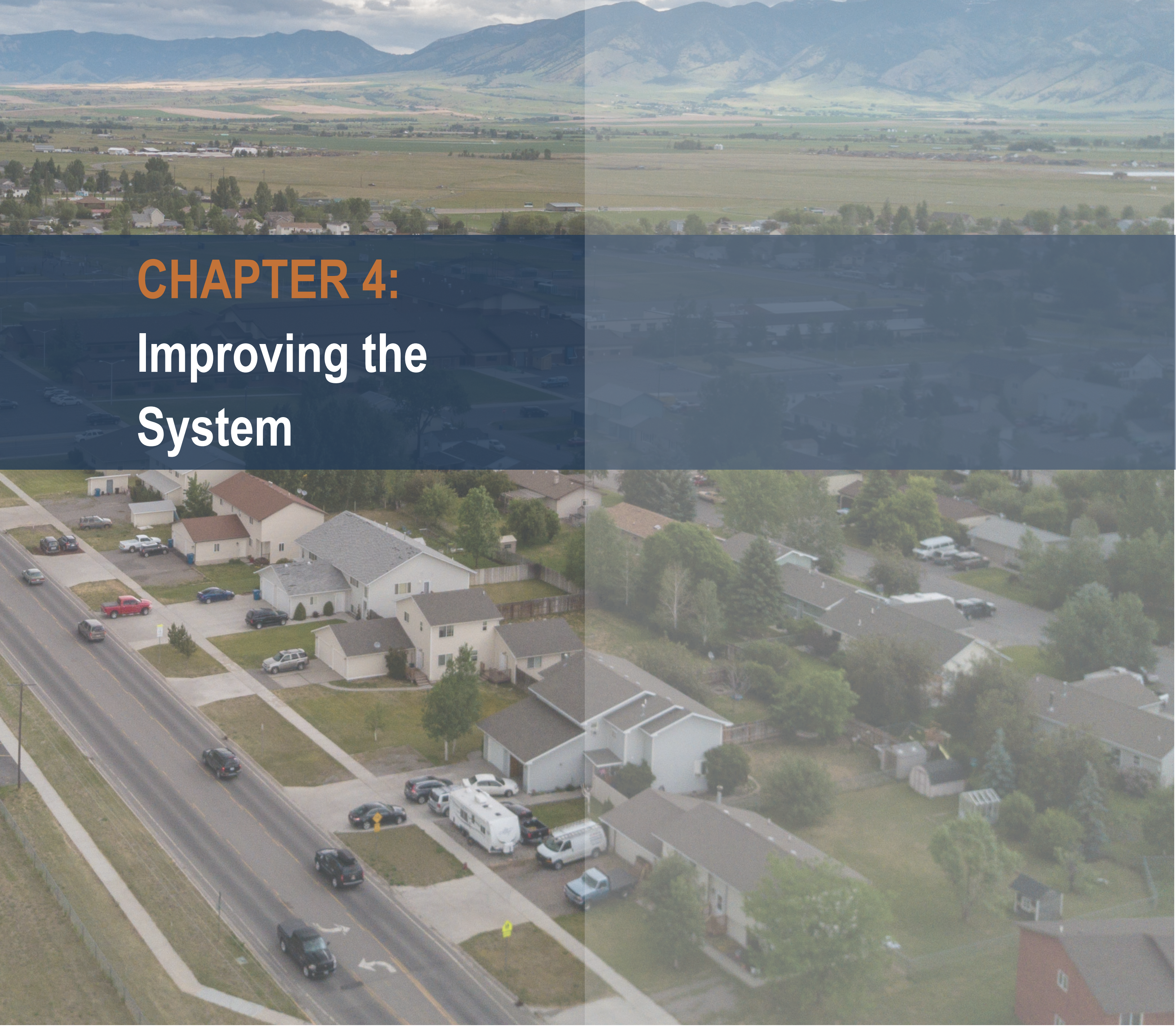


Figure 17

2040 PROJECTED VOLUME GROWTH



CHAPTER 4:
Improving the System



4.1. OVERVIEW

Recommended improvements were developed through a combination of public process, project solicitation from partnering agencies, travel demand modeling, traffic engineering analysis, and policy choices to support LRTP goals and objectives. In most cases, the recommended projects are either needed to meet the anticipated traffic demands for the year 2040 or to bring sub-standard roadways up to current standards based on the functional classification of the roadway. There are two categories of street improvement projects; Major Street Network and Transportation System Management projects. These two categories are consistent with past long range transportation planning efforts completed for the Belgrade community.

4.2. FACILITY RECOMMENDATIONS

A list of recommendations for facility improvements to the transportation system was developed to address current and anticipated future transportation needs. The project recommendations made as part of this LRTP were specifically aimed at improving issues identified along the major street network. The recommendations are focused on areas currently experiencing issues, as well as areas expected to need improvements to accommodate future growth. **Figure 18** at the end of this section shows the location of the facility recommendations.

System deficiencies and needs are often not fundable in the foreseeable future. However, funding opportunities often arise over time and sometimes from unexpected sources. To be prepared to take advantage of such opportunities, the following lists of projects is provided, with no identified funding source or schedule for construction/implementation. It is likely that some of them will become funded at some point during the planning horizon even though a current source may not be known.

Each section contains planning level descriptions of the recommendations along with preliminary project cost estimates. The preliminary project cost estimates are "planning level" estimates and do not include allowances for right-of-way, utility, traffic management, or other heavily variable costs. The cost estimates were developed based on recent projects constructed in the area. The costs are in 2018 dollars with no inflation factor for anticipated construction year. In some cased it may be appropriate to combine project recommendations. For example, combining a project to construct bike lanes with full roadway reconstruction may be more efficient than implementing the projects individually.

4.2.1. Committed Projects

A project is deemed committed if construction is likely to occur within five years and a funding source has been identified and assigned to the project. Committed projects are only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not listed as they will not affect capacity and/or delay characteristics (an example might be a street overlay). **Table 13** lists the projects which are committed within the LRTP study area.

Table 13: Committed Projects

ID	Name	Description	Anticipated Construction	Estimated Cost
COM-1	**Belgrade-South** (Jackrabbit Lane – Frank Road to Hulbert Road)	A project is currently under construction to widen Jackrabbit Lane between Frank Road and Hubert Road to include two travel lanes in each direction, a center two-way left-turn lane, widened shoulders, and a shared use path on the east side of the roadway. The project also includes installation of traffic signals at the intersections with Frank Road and with Cameron Bridge Road.	Currently under construction	$9,324,142
COM-2	**Slope Flattening Belgrade** (Frontage Road – RP 23.0 to RP 24.6)	A project is planned to reconstruct the Frontage Road from Hyalite Creek (RP 23.0) to east of Sacajawea Peak Drive (RP 24.6). The reconstruction project will include wider shoulders (eight feet wide), flatter side slopes, a center left-turn lane, and turn bays at major approaches. The project is intended to address identified safety concerns. The project is anticipated to be let in 2018.	2018	$350k to $1.5M

4.2.2. Transportation System Management Improvements

Transportation System Management (TSM) projects are typically relatively lower cost, "tune-up" type improvements. TSM projects are considered to have a reasonable chance of being implemented within a ten-year timeframe. In some instances, these recommendations may be combined with larger-scale Major Street Network improvement projects (see next section). **Table 14** contains a summary of the recommended TSM improvements identified for the Belgrade area and are not listed in any particular order with respect to priority.

Many of the TSM projects include recommendations for traffic signals or roundabouts. Both types of intersection control treatments have different initial set-up and long-term maintenance costs. The costs for building a roundabout and a traffic signal are quite different. Generally, initial capital costs are less for a traffic signal compared to a roundabout. Part of the reason is that a roundabout may need more property within the actual intersection. In the long-term, however, roundabouts eliminate hardware, maintenance and electrical costs associated with traffic signals, which can cost between $5,000 and $10,000 per year. Roundabouts are also favorable during power outages. Unlike traditional signalized intersections, which must be treated as a four-way stop or require police to direct traffic, roundabouts continue to work like normal.

Table 14: Transportation System Management Recommendations

ID	Name	Description	Estimated Cost
TSM-1	**Amsterdam Road/ Royal Road Intersection**	It is recommended that the intersection be evaluated for additional traffic control, such as signalization or construction of a roundabout, to accommodate existing and future demand and to improve safety. It may be desirable to coordinate improvements to this intersection with any future expansion/reconstruction of Amsterdam Road. **MSN-9** recommends that Amsterdam Road be reconstructed to a five-lane minor arterial standard east of Royal Road. Non-motorized crossing accommodations are also recommended due to the shared use path on the north side of Amsterdam Road.	$750k to $1.5M
TSM-2	**Amsterdam Road/ River Rock Road Intersection**	It is recommended that the intersection be evaluated for additional traffic control, such as signalization or construction of a roundabout, to accommodate existing and future demand and to improve access to the school. There are some traffic signal hardware components and pedestal bases already installed at the intersection which may allow for easier installation of a traffic signal with the current intersection configuration. If further intersection modifications are desired in the future, such as inclusion of additional lanes and sidewalk, a larger reconstruction project would be necessary. It may be desirable to coordinate any major intersection reconstruction improvements to this intersection with any future expansion/ reconstruction of Amsterdam Road. **MSN-9** recommends that Amsterdam Road be reconstructed to a five-lane minor arterial standard east of Royal Road. Non-motorized crossing accommodations are also recommended due to the shared use path on the north side of Amsterdam Road.	$350k to $1.5M
TSM-3	**Jackrabbit Lane/ Amsterdam Road/ Alaska Frontage Road Intersection**	It is recommended that this intersection be evaluated for addition of protected left-turn signal phasing. The eastbound approach should also be evaluated to determine if widening could occur to accommodate dual left-turn lanes. Note that the intersection is timed in coordination with several other signals along the Jackrabbit Lane corridor. Any changes to signal timing would require retiming of the other coordinated signals which may result in additional overall delay along the corridor. Ultimately, this intersection will need to be fully reconstructed as part of larger improvement (see **MSN-7** and **MSN-10**) to accommodate existing and projected demands.	$500k to $1.5M

ID	Name	Description	Estimated Cost
TSM-4	**Jackrabbit Lane/ Madison Avenue Intersection**	Now that the East Belgrade Interchange is complete, it is recommended that the intersection be re-evaluated for the addition of northbound and southbound protected left-turn phasing. It is also recommended that the southbound leg be reconstructed to include two through lanes. The addition of a southbound through lane would also require the removal of the eastbound right-turn slip lane. It may be desirable to develop this project in conjunction with **MSN-6** which recommends that Jackrabbit Lane be expanded to a five-lane principal arterial standard.	$500k to $1.5M
TSM-5	**Madison Avenue/ Broadway Street// Colorado Street Intersection**	It is recommended that improvements be made to the intersection to better define the free-flow traffic movement and to provide the appropriate traffic control. Options may include construction of a single-lane roundabout or realignment of approach legs. Further evaluation will be needed to determine the appropriate configuration of the intersection. It may be desirable to develop this project in conjunction with **MSN-8** which recommends reconstruction of the Madison Avenue/Broadway Street corridor.	$500k to $2.0M
TSM-6	**Broadway Street/ Main Street Intersection**	It is recommended that the intersection be evaluated for changes to traffic control to improve traffic operations. Potential changes include construction of a traffic signal or a single-lane roundabout. Options to change the intersection may be limited due to right-of-way constraints and the proximity to the at-grade rail crossing on the south leg of the intersection. This recommendation is also included in the *Belgrade to Bozeman Frontage Road Corridor Study*. It may be desirable to develop this project in conjunction with **MSN-3**.	$750k to $1.50M
TSM-7	**Oregon Street/ Main Street Intersection**	It is recommended that the intersection be reconstructed to improve traffic control and operations. Reconstruction of the intersection to include a traffic signal or roundabout would likely require intersection realignment due to the location of the gas station to the north. Intersection reconstruction would result in lower vehicle delay along the minor approach legs. This recommendation is also included in the *Belgrade to Bozeman Frontage Road Corridor Study*. It may be desirable to develop this project in conjunction with **MSN-3**.	$1.0M to $2.50M
TSM-8	**Airport Road/ Frontage Road Intersection**	Public comments have indicated a desire to install a dedicated eastbound left-turn lane due to the high volume of left-turning traffic. This recommendation is also included in the *Belgrade to Bozeman Frontage Road Corridor Study*. Note that the *Gallatin Field Airport 2007 Master Plan Update*[1] indicates a desire by the Airport to modify the road network to the east of the Airport. These modifications would include the obliteration of a section of Airport Road and would reroute traffic onto Dollar Drive. If Airport Road is modified in the future, this recommendation may need to be reevaluated. It may be desirable to develop this project in conjunction with **MSN-4**.	$500k to $750k
TSM-9	**Cruiser Lane/ Dry Creek Road Intersection**	As development occurs in the area, it is recommended that the intersection be evaluated for an increased level of traffic control such as a roundabout or traffic signal.	$500k to $1.50M
TSM-10	**I-90 Corridor Study (Belgrade to Bozeman)**	An assessment of the Interstate System and interchanges between Belgrade and Bozeman is needed to evaluate current and future issues, constraints, and opportunities to ensure the safe operations. It is recommended that a pre-NEPA/MEPA Corridor Planning Study be completed for I-90 between Belgrade and Bozeman.	$200k to $250k
TSM-11	**I-90 Southwest to Northeast Crossing Study**	There is currently a lack of connectivity between the southwest and northeast sides of Interstate 90 which bisects the Belgrade community. Further study and evaluation is needed to determine the feasibility of an overpass/underpass across the Interstate, and, if deemed feasible, where the best location for a new crossing would be.	$150k to $300k

4.2.3. Major Street Network Improvements

Major Street Network (MSN) improvements are typically larger scale projects that may take many years to implement. The MSN improvements are envisioned as long-term improvements needed to address network demands and existing or projected capacity issues. **Table 15** contains a summary of the recommended MSN improvements identified for the LRTP study area and are not listed in any particular order with respect to project priority.

Table 15: Major Street Network Recommendations

ID	Name	Description	Estimated Cost
MSN-1	**Frontage Road** (Weaver Road to Bolinger Road)	It is recommended that the roadway be reconstructed to rural minor arterial standards to address safety concerns. Widened shoulders, recoverable side slopes, and dedicated left-turn lanes/center left-turn lane are recommended.	$7.0M to $8.5M
MSN-2	**Main Street** (Bolinger Road to Jackrabbit Lane)	It is recommended that the roadway be reconstructed to urban minor arterial standards to address safety and capacity concerns. Non-motorized facilities should be constructed as presented in **SW-7**.	$3.0M to $4.0M
MSN-3	**Main Street** (North Quaw Boulevard to Gallatin Field Road)	This recommendation is also included in the *Belgrade to Bozeman Frontage Road Corridor Study*. It may be desirable to develop this project in conjunction with **TSM-6** and **TSM-7**. Non-motorized facilities should be constructed as presented in **SW-1**.	$3.5M to $4.5M
MSN-4	**Frontage Road** (West of Airport Road to Hyalite Creek)	It is recommended that this roadway be reconstructed to rural minor arterial standards, consisting of one travel lane in each direction, widened shoulders, and recoverable side slopes. Reconstruction of this segment is envisioned to connect the recently completed East Belgrade Interchange project with the planned slope flattening project (**COM-2**). This recommendation is also included in the *Belgrade to Bozeman Frontage Road Corridor Study*. It may be desirable to develop this project in conjunction with **TSM-8**.	$2.0M to $3.0M
MSN-5	**Jackrabbit Lane** (Mayfair Drive to Cruiser Lane)	As future development occurs, it is recommended that the roadway be reconstructed to urban minor arterial standards to be consistent with the southern portion of the corridor. A center left-turn lane, shoulders/bike lanes, curb, gutter, and sidewalks are recommended. Non-motorized facilities should be constructed as presented in **SW-10** and **BIKE-1**.	$1.5M to $2.0M
MSN-6	**Jackrabbit Lane** (Main Street to Madison Avenue)	It is recommended that the roadway be reconstructed to urban principal arterial standards to accommodate existing and projected traffic demands. Two travel lanes in each direction, center left-turn lane or turn bays at major intersections, shoulders/bike lanes, curb, gutter, and sidewalks on both sides of the roadway are recommended. An evaluation of access control and opportunities to consolidate approaches should also be explored. It may be desirable to develop this project in conjunction with **TSM-4** and **MSN-12**. Non-motorized facilities should be constructed as presented in **SW-11**, **BIKE-2**.	$3.0M to $4.5M
MSN-7	**I-90 Westbound Off-ramp/ Jackrabbit Lane** (Belgrade Interchange to Amsterdam Road)	It is recommended that the Jackrabbit Lane overpass be widened/reconstructed to accommodate additional travel lanes and provide for non-motorized accommodations. Reconstruction of the I-90 westbound off-ramp to increase capacity is also recommended. The feasibility of reconstructing the ramp and overpass structure is unknown at this time due to various potential constraints. A detailed traffic and engineering study will be necessary to determine project feasibility and configuration. It may be desirable to develop this project in conjunction with **TSM-3**. Non-motorized facilities should be constructed as presented in **SW-12**, **BIKE-3**, and **SPOT-6**.	$12.5M to $20.0M

ID	Name	Description	Estimated Cost
MSN-8	Madison Avenue and Broadway Street (Jackrabbit Lane to Main Street)	It is recommended that the Madison Avenue/Broadway Street corridor be reconstructed to minor arterial standards, consisting of paved on-street parking/shoulder/bike lanes, curb and gutter, and continuous sidewalks. It may be desirable to develop this project in conjunction with **TSM-5**, **SW-13**, **BIKE-7**, and **SPOT-3**.	$1.5M to $2.0M
MSN-9	Amsterdam Road (Royall Road to Thorpe Road)	It is recommended that the roadway be reconstructed to urban minor arterial standards to accommodate existing and future demand. It is suggested that the roadway be reconstructed with two travel lanes in each direction, center left-turn lane/turn bays at major intersections, and appropriate non-motorized accommodations. It may be desirable to develop this project in conjunction with **TSM-1** and **TSM-2**.	$5.0M to $6.0M
MSN-10	Amsterdam Road (Thorpe Road to Jackrabbit Lane)	It is recommended that the roadway be reconstructed to urban minor arterial standards to accommodate existing and future demand. Two travel lanes in each direction, turn bays at major intersections, shoulders, and appropriate non-motorized accommodations are recommended. It may be desirable to develop this project in conjunction with **TSM-3**.	$6.0M to $7.0M
MSN-11	Frank Road (Jackrabbit Lane to Alaska Road South)	It is recommended that the existing portion of Frank Road east of Jackrabbit Lane be reconstructed to urban minor arterial standards. One travel lane in each direction, shoulders/on-street parking, bike lanes, sidewalks, curb and gutter, and center turn lane/turn bays at major intersections are recommended. It is also recommended that the roadway be extended from its current eastern terminus to Alaska Road South. Future projections indicate planned commercial and industrial growth in the area. This new connection would provide alternate connectivity to the Jackrabbit Lane corridor and to the East Belgrade Interchange. The corridor would also serve as an alternate east/west route to Amsterdam Road. Non-motorized facilities should be constructed as presented in **SW-15** and **BIKE-5**.	$2.5M to $3.0M
MSN-12	Jackrabbit Lane Grade Separated Rail Crossing	Construct grade separated rail crossing as recommended in the *Montana Rail Grade Separation Study*. An underpass would require that the nearby intersections of Northern Pacific Avenue/Arden Drive and Main Street be reconstructed to match the new profile of the Jackrabbit Lane intersection. It is recommended that two travel lanes in each direction be included to accommodate existing and future demands. It may be desirable to coordinate this improvement with **MSN-6** which recommends reconstruction of Jackrabbit Lane to increase roadway capacity.	$17.0M to $18.5M
MSN-13	Cruiser Lane (Dry Creek Road to Westwood Circle)	It is recommended that the roadway be reconstructed to urban major collector standards to accommodate existing and future demands. One travel lane in each direction, bike lanes, on-street parking, and sidewalks are recommended. Non-motorized facilities should be constructed as presented in **SW-9** and **BIKE-10**.	$1.5M to $2.5M
MSN-14	South Alaska Road (Frank Road to Valley Center Drive)	It is recommended that the roadway be reconstructed to rural major collector standards to accommodate existing and future demands. One travel lane in each direction and widened shoulders are envisioned. Non-motorized facilities should be constructed as presented in **SUP-5**.	$4.0M to $6.0M

4.2.4. Future Road Connections

The major street network consists of all interstate principal arterial, non-interstate principal arterial, minor arterial, and collector routes. Expansion of the major street network will occur in the future as the area develops. The future connections shown are conceptual in nature and may vary based on factors such as topography, wetlands, land ownership, and other unforeseen factors. The purpose of the connections is to illustrate the anticipated build-out of the major street network. It is likely that many of the corridors shown will not be developed into roads for many years to come. On the other hand, if development occurs in the area, the recommended road network will ensure that the arterial and collector roads will be established in a fashion that produces an efficient and logical future road system.

The future road connections are not intended as project recommendations, rather, they are intended to be built as development occurs and needs arise in the future. **Figure 18** shows the anticipated future road connections as dashed lines. Additional connections and/or changes to the future road connections may be necessary and should be assessed as future development occurs. A full visionary major street network is discussed in **Chapter 5**.

When the East Belgrade Interchange was constructed, a small part of Frank Road was constructed, connecting Alaska Frontage Road to Alaska Road South. A future extension of Frank Road is envisioned.

On the east end, Frank Road turns to a dirt road just west of Jackrabbit Lane. Frank Road terminates at Rock Road which often experiences heavy truck traffic due to the various freight centers located in this area.

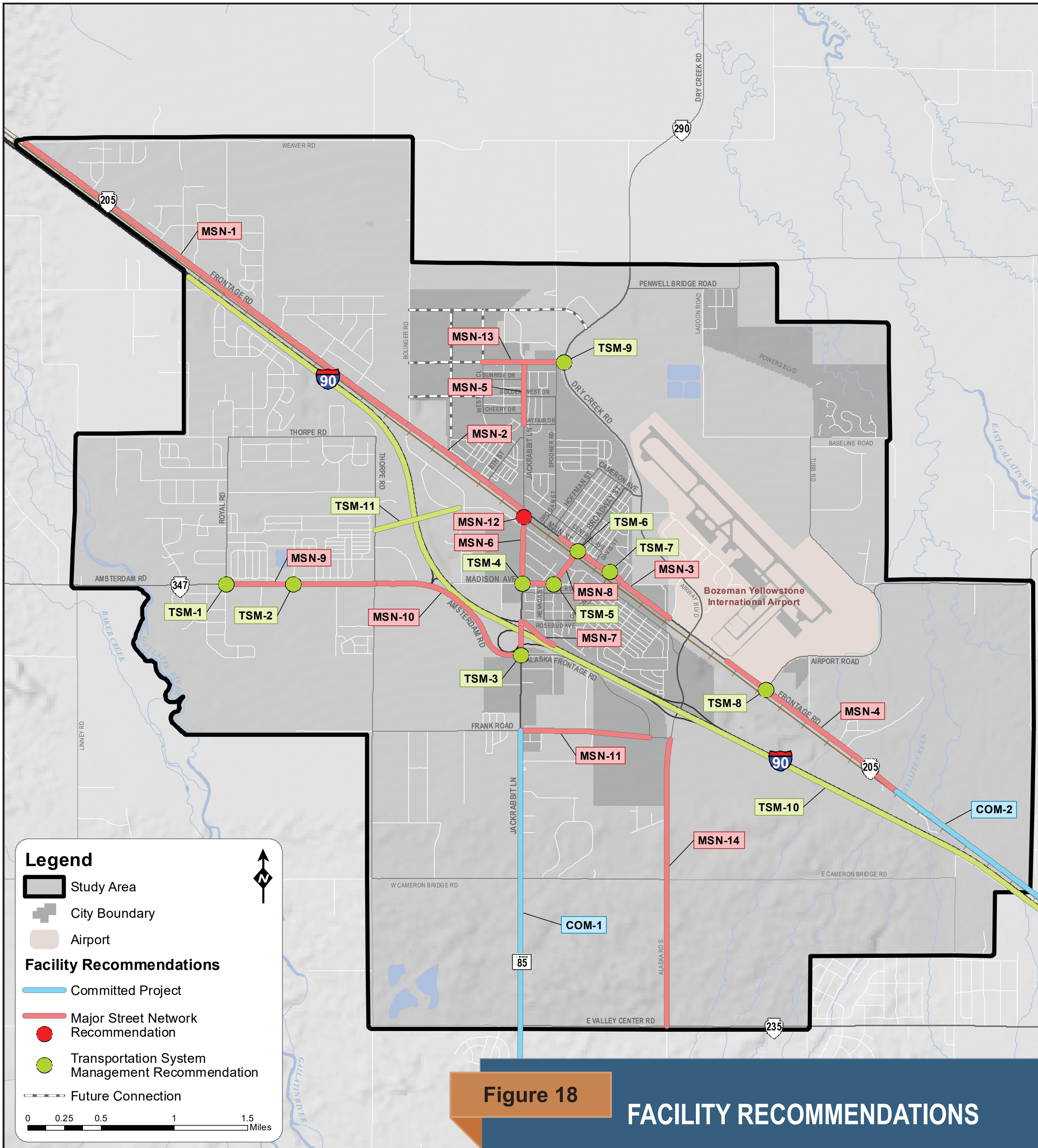


Figure 18

FACILITY RECOMMENDATIONS

4.3. NON-MOTORIZED NETWORK RECOMMENDATIONS

This section presents recommendations for improvements to the non-motorized network. While many non-motorized facilities may be constructed in conjunction with other transportation projects, some may require stand-alone projects to complete. Some improvements are specific to either pedestrians or bicycles, others may benefit many transportation modes. The identified recommendations are intended to address previously identified non-motorized connectivity gaps and are meant to compliment the major street network. The recommended improvements to the non-motorized network are shown in **Figure 19** at the end of this section.

Note that any non-motorized network change constructed within MDT right of way is subject to all existing MDT policies including, but not limited to, *POL 8.03.001 Shared Use Paths In MDT R/W*. Additionally, in cases with limited ability to increase the width of the roadway due to the built environment and where competing design features are recommended (i.e. parallel parking vs. bike lanes), cautionary measures should be taken when carrying out the recommendations in the LRTP.

4.3.1. Sidewalks

A complete sidewalk network provides safe transportation for pedestrians. Currently, many residential areas of the study area lack sidewalks altogether, while other areas have gaps in the network. The following recommendations are not fully exhaustive for the major street network, rather they are meant to address the largest gaps in the sidewalk network which have the highest priority needs. **Table 16** lists the sidewalk projects which were identified for the Belgrade area and are not listed in any particular order with respect to priority.

Table 16: Sidewalk Recommendations

ID	Location	Description	Estimated Cost
SW-1	**Main Street** *Jackrabbit Lane to Gallatin Field Road*	Multiple gaps in the sidewalk network along Main Street currently exist, particularly between Kennedy Street and the west end of the East Belgrade Interchange project (Gallatin Field Road). Evidence of existing demand for safe pedestrian routes can be seen in the form of social paths along various portions of this segment of Main Street. It is recommended that the sidewalk network be completed to provide a continuous connection between Belgrade and the airport. The project would likely require construction of curb, gutter, and drainage features. Sidewalks could be constructed as a stand-alone project, or in conjunction with roadway reconstruction as recommended in **MSN-3**.	$500k to $650k
SW-2	**Davis Street / Central Avenue** *Main Street to Lewis and Clark Park*	There are gaps in the sidewalk network along Davis Street between Main Street and Central Avenue. The sidewalk along Central Avenue ends at the gravel parking lot for the Lewis and Clark Park. During wet and inclement weather, the gravel parking lot can cause challenges for many non-motorized users. It is recommended that the sidewalk network be completed to connect Main Street to Lewis and Clark Park via Davis Street and Central Avenue.	$30k to $50k
SW-3	**Broadway Street** *Main Street to Cameron Avenue*	Sidewalks exist on the majority of Broadway Street with some remaining gaps. It is recommended that the sidewalk network be completed to help improve pedestrian safety and accessibility along Broadway Street.	$125k to $175k
SW-4	**Hoffman Street** *Main Street to Park Avenue*	There are gaps in the sidewalk network along Hoffman Street between Main Street and Belgrade High School. It is recommended that a fully connected pedestrian network be developed along Hoffman Street.	$30k to $45k
SW-5	**Park Avenue** *West of Hoffman Street*	Sidewalk exists for the majority of Park Avenue except for one small section on the north side of the roadway just west of Hoffman Street. It is recommended that this missing piece be constructed to provide a complete connection to Belgrade High School.	$5k to $10k

ID	Location	Description	Estimated Cost
SW-6	**Triple Crown Road** *Jackrabbit Lane to Spooner Road*	Triple Crown Road provides access to Belgrade Middle School and connects Jackrabbit Lane to Spooner Road. There is a continuous sidewalk on the north side of the road and some gaps along the south side. It is recommended that the sidewalk network be finished along the south side of the road.	$20k to $35k
SW-7	**Frontage Road** *8th Street to 13th Street*	The Frontage Road continuous to see commercial and mixed residential development west of Jackrabbit Lane. Sidewalks are currently in place between Jackrabbit Lane and 8th Street. It is recommended that the sidewalks be extended to connect to 13th Street, which is currently at the edge of the City of Belgrade boundary. This connection would serve existing and future residences and would create a continuous connection to downtown Belgrade. Sidewalks could be constructed as a stand-alone project, or with roadway reconstruction as recommended in **MSN-2**.	$100k to $150k
SW-8	**Jackrabbit Lane** *Cruiser Lane to Happy Lane*	There are currently no sidewalks on either side of Jackrabbit Lane north of Cruiser Lane. It is recommended that sidewalks be constructed on both sides of the roadway to connect current and future developments to the rest of the pedestrian network.	$75k to $125k
SW-9	**Cruiser Lane** *Dry Creek Road to Westwood Circle*	Gaps in the sidewalk network along Cruiser Lane exist along undeveloped parcels and in front of commercial development on the northeast side. It is recommended that the sidewalk network be complete to provide for a continuous connection along Cruiser Lane. Sidewalks could be constructed as a stand-alone project, or with roadway reconstruction as recommended in **MSN-13**.	$85k to $120k
SW-10	**Jackrabbit Lane** *Mayfair Drive to Cruiser Lane*	There are currently no sidewalks on the east side of Jackrabbit Lane between Mayfair Drive and Cruiser Lane. It is recommended that sidewalks be constructed to complete the network. Sidewalks could be constructed as a stand-alone project, or with roadway reconstruction as recommended in **MSN-5**.	$115k to $160k
SW-11	**Jackrabbit Lane** *Madison Avenue to Arden Drive*	There are currently no sidewalks on the west side of Jackrabbit Lane between Madison Avenue and Arden Drive. It is recommended that sidewalks be constructed to complete the network. Sidewalks could be constructed as a stand-alone project, or with roadway reconstruction as recommended in **MSN-6**.	$100k to $135k
SW-12	**Jackrabbit Lane** *Amsterdam Road to Albertsons*	There are currently no sidewalks on the west side of Jackrabbit Lane between Amsterdam Road and the entrance to Albertsons. It is recommended that sidewalks be constructed to complete the network. Note that a stand-alone project to construct sidewalks between Amsterdam Road and the I-90 westbound ramps would be difficult and costly due to the narrow overpass structure and the location of the eastbound on-ramp. Sidewalks could be added to this segment with roadway reconstruction as recommended in **MSN-7**. Additionally, a separated pedestrian overpass structure may be needed as presented in **SPOT-6**. North of the westbound ramps, sidewalks could be constructed as a stand-alone project if desired.	$100k to $135k
SW-13	**Madison Avenue** *Jackrabbit Lane to Nevada Street*	There remains a gap in the sidewalk network along the south side of Madison Avenue between just east of Jackrabbit Lane and Nevada Street. It is recommended that sidewalks be constructed to complete the network. Sidewalks could be constructed as a stand-alone project, or with roadway reconstruction as recommended in **MSN-8**.	$20k to $35k
SW-14	**Alaska Frontage Road** *Jackrabbit Lane to Frank Road*	There are currently sidewalks on the south side of Alaska Frontage Road between Jackrabbit Lane and the Bozeman Health Belgrade Clinic. The area is projected to see increased commercial and industrial development in the future. It is recommended that sidewalks be constructed along the corridor as new development occurs in the area.	$450k to $700k
SW-15	**Frank Road** *Jackrabbit Lane to Alaska Road South*	An extension of Frank Road between Jackrabbit Lane and Alaska Road South is recommended in **MSN-11**. The area is projected to see increased commercial and industrial development in the future. Sidewalks should be constructed as part of the roadway reconstruction and extension recommendation.	$550k to $800k

4.3.2. Shared-Use Paths

Shared-use paths are typically asphalt paved paths that restrict use to non-motorized travel modes. Both pedestrians and bicyclists may use these paths. Given the mixed environment, it is recommended that the paths are a minimum of 10-feet in width. These paths generally, but are not required to, run parallel to existing motorized transportation facilities. Existing shared-use paths can be found on Amsterdam Road, Royal Road, Jackrabbit Lane (currently under construction), and Valley Center Road. **Table 17** presents the shared-use paths which were identified for the Belgrade area and are not listed in any particular order with respect to priority.

Table 17: Shared-Use Path Recommendations

ID	Location	Description	Estimated Cost
SUP-1	**Royal Road** *Amsterdam Road to N River Rock Drive*	Complete the existing shared-use path on the west side of Royal Road from Amsterdam Road to West Shore Drive. With the completion of this project and **SUP-2**, a continuous path would exist around the one-mile square made up of Amsterdam Road, Royal Road, and Thorpe Road.	$130k to $200k
SUP-2	**Thorpe Road** *Landmark Drive to Amsterdam Road*	Construct a shared-use path from Landmark Drive to Amsterdam Road along Thorpe Road. On the east/west portion of Thorpe Road it is recommended that the path be constructed on the south side of the road. On the north/south portion of Thorpe Road it is recommended that the path be constructed on the west side of the road. With the completion of this project and **SUP-1**, a continuous path would exist around the one-mile square made up of Amsterdam Road, Royal Road, and Thorpe Road.	$675k to $1.0M
SUP-3	**Amsterdam Road** *Clovehitch Road to Jackrabbit Lane*	Construct a shared-use path along Amsterdam Road from Clovehitch Road to Jackrabbit Lane. It is recommended that the path be constructed on the south side of the roadway to limit conflicts between non-motorized users and motorized vehicles. This project should be completed in conjunction with **SPOT-4**.	$575k to $850k
SUP-4	**Madison Avenue** *Amsterdam Road to Jackrabbit Lane*	Construct a shared-use path along Madison Avenue from Jackrabbit Lane to the western terminus of Madison Avenue. Construction of this project in conjunction with the pedestrian tunnel given in **SPOT-5** would be critical to providing a complete non-motorized connection. This connection would improve non-motorized connectivity from the River Rock area to retail sites near Jackrabbit Lane and Madison Avenue. Currently, pedestrians wishing to travel from the River Rock area to Belgrade proper must cross I-90 using the Jackrabbit Lane overpass which does not have sufficient non-motorized accommodations.	$160k to $240k
SUP-5	**Alaska Road South** *Valley Center Road to Frank Road*	Construct a shared-use path along Alaska Road South between Frank Road and Valley Center Road. This path would connect the East Belgrade Interchange area with the existing shared use path along Valley Center Road. It is recommended that the path be constructed on the west side of Alaska Road based on potential development on that side of the roadway. This project can be constructed in conjunction with **MSN-14** or as a stand-alone project.	$775k to $1.2M
SUP-6	**Dry Creek Road** *Airway Boulevard to Penwell Bridge Road*	Construct a shared-use path along Dry Creek Road between Airway Boulevard and Penwell Bridge Road. There is an existing trail bed and millings in place between Airway Boulevard and Cameron Avenue, however, the existing path is in poor condition and it is recommended that it be formalized with asphalt construction.	$900k to $1.4M
SUP-7	**East Madison Avenue** *Main Street to Gallatin Field Road*	Construct a shared-use path between Main Street and Gallatin Field Road along East Madison Avenue. This path would create a more direct connection between downtown Belgrade and the Airport.	$150k to $220k

ID	Location	Description	Estimated Cost
SUP-8	**Airport Service Drive** *Dry Creek Road to Airport Terminal*	Construct a shared-use path connection along Service Drive, which accesses the airport on the north side from Dry Creek Road. The connection would provide non-motorized accommodations to the airport from the northern part of Belgrade and would connect to the proposed shared used path along Dry Creek Road (**SUP-6**).	$90k to $130k
SUP-9	**East Madison Avenue** *Broadway Street to Oregon Street*	Construct a shared-use path along East Madison Avenue between Broadway Street and Oregon Street. This path, along with **SUP-10**, would create a more direct connection to the East Belgrade Interchange area.	$120k to $180k
SUP-10	**Northern Pacific Avenue** *Oregon Street to Airway Boulevard*	Construct a shared-use path to connect the neighborhoods south of Northern Pacific Avenue with downtown Belgrade and the East Belgrade Interchange. The corridor currently lacks sidewalks along the majority of the roadway. It is unknown if a shared-use path could be constructed on the north side of the roadway due to the presence of the railroad and right-of-way constraints.	$220k to $320k
SUP-11	**Northern Pacific Avenue** *Broadway Street to Davis Street*	Construct a shared-use path between Broadway Street and Davis Street to connect the south side of Belgrade to downtown Belgrade. There is an informal dirt roadway along this segment which appears to have been constructed on private property.	$50k to $75k
SUP-12	**Frontage Road** *Airway Boulevard to Study Area Boundary*	Construct a shared-use path along the north side of Frontage Road from Airway Boulevard to the eastern extent of the study area. This path would create a connection between Belgrade and destinations to the east along Frontage Road and ultimately Bozeman. This path is recommended as part of the *Belgrade to Bozeman Frontage Road Corridor Study*.	$1.5M to $2.0M
SUP-13	**Cameron Avenue** *Hoffman Street and Dry Creek Road*	Construct a shared-use path between Hoffman Street and Broadway Street along Cameron Avenue. This path would connect the area near Belgrade High School with Dry Creek Road and other proposed non-motorized facilities.	$135k to $200k
SUP-14	**Hoffman Street** *Cameron Avenue to Allison Avenue*	Construct a shared-use path between Allison Avenue and Cameron Avenue along Hoffman Street. This section of Hoffman Street currently has no pedestrian facilities. During events at Belgrade High School, a high volume of vehicles park along Hoffman Street and walk to their destinations. This connection, along with other recommended improvements, would create a cohesive non-motorized network in the area around the High School.	$75k to $115k
SUP-15	**North High School Campus** *Spooner Road to Hoffman Street*	Construct a shared-use path connecting Spooner Road and Hoffman Street along the northern edge of the Belgrade High School Campus. This path would create a pedestrian connection across the High School Campus eliminating the campus as a potential barrier.	$90k to $130k
SUP-16	**Penwell Bridge Road** *Dry Creek Road to Roundup Boulevard*	Construct a shared-use path along the south side of Penwell Bridge Road. This path, along with **SUP-6** would create a non-motorized connection between the Ryen Glen/Meadowlark subdivisions and the rest of Belgrade.	$300k to $450k
SUP-17	**Sports Field Connection** *Jackrabbit Lane to Dry Creek Road*	Construct a shared-use path from Jackrabbit Lane to Dry Creek Road between Saddle Park Elementary School and Kathy Hollensteiner Park. This path would provide a non-motorized connection between the school campus, multiple sports fields, and Lions Park.	$250k to $375k

4.3.3. On-Street Bike Lanes

On-street bicycle lanes help to improve safety and mobility for bicycle users. Generally speaking, bicycle lanes should be four-feet wide or greater with a preference for five-foot wide lanes. Bicycle lanes should not be used as a pedestrian facility. As such, it is common to see bike lanes parallel to pedestrian facilities. Depending on the characteristics of the roadway of which the bicycle lanes are part of, they may not be suitable or desirable for all users. Additional care must be given to intersection treatments for bicycle lanes due to the possible conflict points between bicyclists and motorists.

The following recommendations have been made to address gaps in the bicycling network throughout the study area and assume that the bicycle lanes would be constructed in both directions along the listed route. Many of these locations have paved shoulders that may be of adequate width to accommodate a bicycle lane and would only require the proper striping and signing. Others, however, may require the expansion of the paved width and are therefore more expensive. **Table 18** lists the bike lane projects identified for the Belgrade area and are not listed in any particular order with respect to priority.

Table 18: Bike Lane Recommendations

ID	Location	Description	Estimated Cost
BIKE-1	**Jackrabbit Lane** *Main Street to Cruiser Lane*	Between Main Street and Mayfair Drive, the roadway is approximately 44 feet wide. It may be possible to restripe the roadway to include bike lanes along the shoulders at the expense of a narrower center turn lane. North of Mayfair Drive, the roadway is recommended for reconstruction with **MSN-5**. On-street bike lanes should be included when the roadway is reconstructed.	$250k to $325k
BIKE-2	**Jackrabbit Lane** *Madison Avenue to Main Street*	Jackrabbit Lane has varying shoulder widths between Madison Avenue and Main Street. The majority of the corridor has shoulders wide enough to accommodate bike lanes with new striping. The corridor is also recommended for reconstruction with **MSN-6**. On-street bike lanes could be striped as a stand-alone project, or they could be added when the roadway is reconstructed.	$25k to $45k
BIKE-3	**Jackrabbit Lane** *Amsterdam Road to Madison Avenue*	Jackrabbit Lane has shoulders wide enough to accommodate bike lanes with new striping between Madison Avenue and the I-90 westbound ramps. Between the westbound ramps and Amsterdam Road, the roadway width is constrained by the narrow overpass structure. The narrow portion of the corridor and overpass structure are recommended for reconstruction with **MSN-7**. On-street bike lanes would need to be developed when the roadway is reconstructed.	n/a
BIKE-4	**Alaska Frontage Road** *Jackrabbit Lane to Frank Road*	This connection would help to improve access to the proposed development near the East Belgrade Interchange. A portion of the route may have shoulders that are wide enough to stripe as bicycle lanes without an increase in pavement width.	$350k to $500k
BIKE-5	**Frank Road** *Jackrabbit Lane to Alaska Road South*	This connection would help to improve access to the proposed development near the East Belgrade Interchange. This route should be included with the future extension of Frank Road as recommended in **MSN-11**.	n/a
BIKE-6	**Airway Boulevard** *Frank Road to Gallatin Field Road*	This connection would further link the East Belgrade Interchange to the rest of the non-motorized network. Some sections of this route may have shoulders of adequate width and may only require striping. Bicycle accommodations through the three roundabouts on this route would also need to be addressed.	$60k to $90k

ID	Location	Description	Estimated Cost
BIKE-7	**Madison Avenue / Broadway Street** *Jackrabbit Lane to Main Street*	This route would create a connection between retail locations near Jackrabbit Lane and Madison Avenue to recreation sites on the north end of Broadway Street. The existing roadway appears to have shoulders wide enough to accommodate bike lanes through restriping. Some removal of on-street parking may be necessary, however. This corridor is recommended for reconstruction with **MSN-8** which is recommended to include on-street bike lanes.	$115k to $165k
BIKE-8	**Broadway Street** *Main Street to Cameron Avenue*	On-street bike lanes are recommended to provide non-motorized connectivity between downtown Belgrade and the northeastern portion of town, including Heck/Quaw Elementary School. Portions of the corridor appear wide enough to include bike lanes through restriping, while others may require some shoulder widening. This corridor is recommended for reconstruction with **MSN-8** which is recommended to include on-street bike lanes.	$115k to $165k
BIKE-9	**Spooner Road** *Mayfair Drive to Cruiser Lane*	Extend the existing bicycle lanes on Spooner Road from Mayfair Drive to Cruiser Lane. This route would complete the existing bicycle lanes on Spooner Road and create a connection to the athletic fields between Mayfair Drive and Cruiser Lane. Additionally, a connection to Dry Creek Road would be established.	$225k to $300k
BIKE-10	**Cruiser Lane** *Dry Creek Road to Westwood Circle*	This route would connect the northwestern portion of Belgrade to Dry Creek Road. This corridor is recommended for reconstruction with **MSN-13** which is recommended to include on-street bike lanes. Without reconstruction, the addition of bike lanes would require removal of on street parking on at least 1 side of the roadway. A future extension of Cruiser Lane west to Bolinger Road is also envisioned and should include bike lanes.	$25k to $45k

4.3.4. Bicycle Boulevards

Bicycle boulevards are routes in which a shared road environment may be preferred over dedicated bicycle facilities. As a general rule, shared road environments have low vehicular volumes along with low vehicle speeds. Local roads are preferred for these facilities. Shared lane markings, share the road signage, and other bicycle wayfinding signage can be used to define a bicycle boulevard.

The following recommendations have been made to further address gaps in the bicycle network throughout the study area. **Table 19** presents the bicycle boulevard projects identified for the Belgrade area and are not listed in any particular order with respect to priority.

Table 19: Bicycle Boulevard Recommendations

ID	Location	Description	Estimated Cost
BB-1	**Central Avenue** *Grogan Street to Davis Street*	Develop Central Avenue as a bicycle boulevard between Grogan Street and Davis Street using shared lane markings and signage. The corridor would provide a bicycle friendly alternative to Main Street. Note that the roadway has stop signs at most intersections which may limit the desirability for bicycle users.	$15k to $30k
BB-2	**Mayfair Drive** *Jackrabbit Lane to Spooner Road*	Develop Mayfair Drive between Jackrabbit Lane and Spooner Road as a bicycle boulevard using shared lane markings and signage. This route would provide a connection between the proposed bike lanes on Jackrabbit Lane and Spooner Road (**BIKE-1** and **BIKE-9**).	$7.5k to $15k
BB-3	**Golden West Drive** *Jackrabbit Lane to Spooner Road*	Designate Golden West Drive between Jackrabbit Lane and Spooner Road as a bicycle boulevard using shared lane markings and signage. This route would provide a connection between the proposed bike lanes on Jackrabbit Lane and Spooner Road (**BIKE-1** and **BIKE-9**).	$7.5k to $15k

ID	Location	Description	Estimated Cost
BB-4	**Powers Boulevard** *Penwell Bridge Road to Baseline Road*	Designate Powers Boulevard between Penwell Bridge Road and Baseline Road as a bicycle boulevard using shared lane markings and signage. This route would provide a connection between the proposed shared-use path on Penwell Bridge Road and the Ryen Glen and Meadowlark subdivisions.	$50k to $100K
BB-5	**Colorado Street and Custer Ave** *Madison Avenue to Jackrabbit Lane*	Designate Colorado Street and Custer Avenue from Madison Avenue to Jackrabbit Lane as a bicycle boulevard using shared lane markings and signage. This route should be designated in conjunction with **SPOT-1**. This would create a connection between proposed bike lanes on Madison Avenue and Broadway with proposed pedestrian amenities along Jackrabbit Lane.	$10k to $20k

4.3.5. Spot Improvements

Non-motorized spot improvements are intended to address specific concerns or challenges found within the study area. These projects are intended to address gaps in the non-motorized network or to improve existing facilities that may not be performing as desired. The following recommendations are not exhaustive, rather they represent large gaps and barriers in the network. Spot improvements are presented in **Table 19**. The following spot improvements were identified for the Belgrade area and are not listed in any particular order with respect to priority.

Table 20: Spot Improvement Recommendations

ID	Location	Description	Estimated Cost
SPOT-1	**Custer Avenue Tunnel** *Custer Avenue to west side of Jackrabbit Lane*	Construct a pedestrian tunnel under Jackrabbit Lane at Custer Avenue. Connect with a shared-use path to Jefferson Avenue on the east side and the Albertsons entrance on the west side. This connection would improve pedestrian connectivity across Jackrabbit Lane and create a more direct route between residential and commercial areas.	$850k to $1.1M
SPOT-2	**Lewis and Clark Park** *Main Street, west of Oregon Street*	Improve the existing pedestrian crosswalk across Main Street at Lewis and Clark Park. This crosswalk is heavily used and is located in a complex roadway environment. Increasing the visibility of pedestrians and the crosswalk could help to improve safety for all users. Possible improvements could include pedestrian activated flashing LED warning signs, overhead pedestrian crossing signs, or pedestrian hybrid beacons. This project could be completed in conjunction with **TSM-7** or as a stand-alone project.	$15k to $100k
SPOT-3	**Madison Avenue** *Intersection of Madison Avenue and Nevada Street*	Improve the existing pedestrian crosswalk across Madison Avenue at Nevada Street. The north end of this crosswalk is located in the middle of a parking area. As a result, the crosswalk is not located such that drivers may not be expecting pedestrians. Increasing the visibility of pedestrians and the crosswalk could help to improve safety for all users. Possible improvements could include pedestrian activated flashing LED warning signs, overhead pedestrian crossing signs, or pedestrian hybrid beacons.	$15k to $100k
SPOT-4	**Amsterdam Road** *Near Clovehitch Road*	It is recommended that the existing buried pedestrian tunnel under Amsterdam Road near Clovehitch Road be uncovered and utilized to connect the north and south sides of Amsterdam Road. This project should be completed in conjunction with **SUP-3**.	n/a
SPOT-5	**Madison Avenue Tunnel** *Amsterdam Road to Madison Avenue*	Construct a pedestrian tunnel connecting Amsterdam Road with Madison Avenue under I-90. This connection would improve non-motorized connectivity between the River Rock area and retail areas near Jackrabbit Lane and Madison Avenue. This projected should be completed in conjunction with **SUP-4**.	$1.1M to $1.5M

ID	Location	Description	Estimated Cost
SPOT-6	**Jackrabbit Lane** *I-90 overpass*	Construct a separate non-motorized overpass of I-90 on the west side of the existing overpass structure. Pedestrian accommodations would be required on both the eastbound and westbound on-ramps. For the westbound on-ramp, crosswalks and associated phasing could be added to the existing traffic signal. For the eastbound on-ramp, it is likely that a pedestrian activated traffic signal would be needed. This project should be constructed in conjunction with **SW-12** and/or **MSN-7**.	$2.0M to $3.0M
SPOT-7	**School Crossings** *Jackrabbit Lane (Triple Crown Road to 8th Street)*	There are multiple unsignalized crosswalks across Jackrabbit Lane between the Belgrade Middle School and Saddle Peak Elementary School. Some of the crosswalks have school crossing guards in the morning and afternoons. The crosswalks experience heavy use during school hours and also during sporting and afterschool events. The heavy-use crossings should be evaluated for additional crossing treatments such as pedestrian activated flashing LED warning signs, overhead pedestrian crossing signs, and/or pedestrian hybrid beacons.	$15k to $100k each

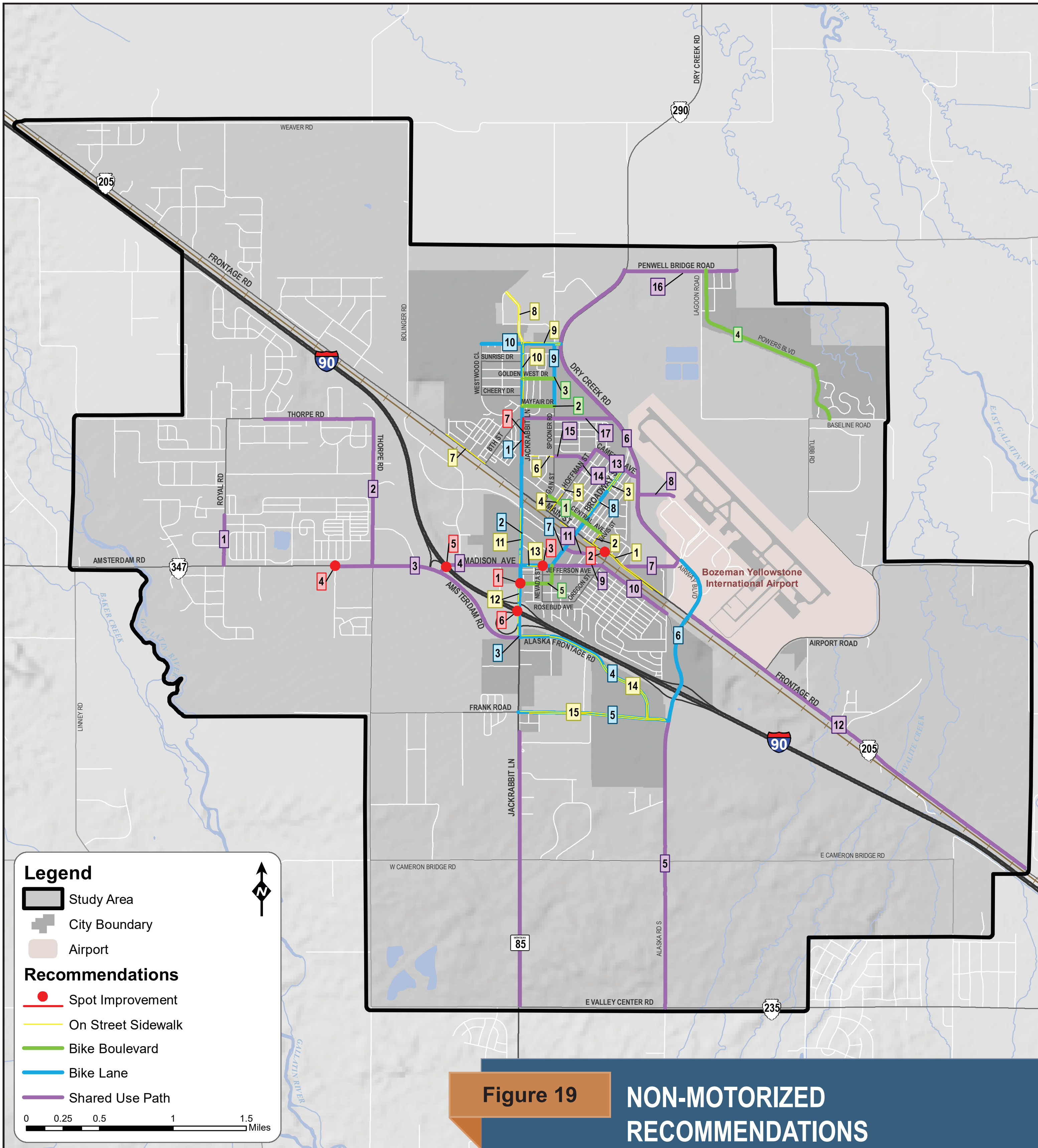


Figure 19 NON-MOTORIZED RECOMMENDATIONS

CHAPTER 5:

Policy and Planning Framework

5.1. OVERVIEW

This portion of the LRTP addresses several topics that link the transportation system to broader quality of life considerations within the community. The LRTP is intended to include long- and short-range programs that lead to the development of an integrated multi-modal transportation system that facilitates the efficient movement of people and goods. The design, modal mix, and location of transportation infrastructure and facilities can directly affect urban form and functions as well as community character.

Current directions in transportation planning place importance on developing transportation systems that help reduce unnecessary travel delays and manage travel demands in ways that create balanced multimodal networks that offer multiple transportation choices. Transportation systems also need to provide facilities and services to help achieve reliable and timely access to jobs, community services, affordable housing, and schools while helping create safe streets and improving economic competitiveness, and enhancing unique community characteristics.

Refer to **Appendix H** for a complete discussion on each of topics in this chapter.

5.2. ROADWAY DESIGN STANDARDS

It is important to have established standards that identify the overall character of various roads within a community. These standards should identify the anticipated amount of right-of-way necessary at full build-out. They should also include all of the design elements necessary such as sidewalks, bicycle facilities, landscaping, and space for utilities and snow storage. The standards should reflect the uses for each type of road, and the applicable traffic volumes anticipated.

Suggested standards were developed (see **Appendix H**) for all of the categories of roads that are found within the Belgrade study area from local and collector roads, to minor and principal arterials. The standards differ depending on the context of the roadway, urban or rural. It is important to note that the functional classifications listed in the *Belgrade Administrative Code*[15] differ from the functional classification designations given in this LRTP. The suggested typical sections were developed for the functional classes in the Belgrade area as they appear on the major street network (**Figure 4**).

A variety of lane widths were included in the suggested road standards. Lane widths vary based on the volume and expected type of traffic on each street. Generally, streets which will carry larger numbers of vehicles and vehicles of larger sizes have been given wider travel lanes.

The suggested standards have not been formally adopted by the City of Belgrade, rather they are intended to be used as a guide in future road construction projects.

5.2.1. Roadway Features

Landscaped boulevards and sidewalks are required on both sides of all urban roads. Boulevards are necessary throughout the community to provide space for snow storage and separation of pedestrians and vehicles. The boulevards also provide space for trees and other forms of corridor landscaping, which are considered an essential ingredient to producing a livable community.

Both flush and raised center medians are also included in various road standards. The use of raised versus flush medians will be determined on a case by case basis and depends on the number of driveways.

Bicycle facilities are suggested in all but the local road standards. Bicycle facilities are not necessary on local streets due to the relatively low traffic volumes and low vehicle speeds. In all other cases, five or six-foot-wide bicycle lanes are required on both sides of the street. A ten-foot-wide combined ped/bike trail option is allowed if the necessary right-of-way is available or provided for the primary arterial typical sections. The use of bicycle facilities that are not in the roadway are a safety concern at cross-street intersections, therefore, this option may be proposed only in cases where there are few minor intersections along the corridor.

This plan has taken a multi-modal approach to the provision of transportation services. Therefore, it is important that the pedestrian and bicycle facilities depicted on the street standards illustrated in this chapter be constructed as a basic component of the initial facility rather than being considered as an optional add-on.

5.2.2. Summary

There will always be special circumstances that must be considered as roadway improvements are contemplated. Context sensitive solutions and designs suggest that roadway improvements can be done in harmony with local community objectives and public interests. The potential does exist that deviations from the proposed typical sections may be warranted via reduced lane widths, on-street parking, building placement and orientation and access control features. These should be evaluated on a case-by-case basis by community leaders.

5.3. TRANSPORTATION DEMAND MANAGEMENT

The Belgrade area is projected to continue growing. The accompanying expansion of transportation infrastructure is expensive and usually lags behind growth. Proper management of demand now will help to maximize the existing infrastructure and delay the need to build more expensive additional infrastructure. Travel Demand Management (TDM) is an important and useful tool to extend the useful life of a transportation system.

TDM strategies are an important part of the Belgrade LRTP due to their inherent ability to provide the following benefits a number of benefits to the commuting public. TDM can provide better transportation accessibility, predictability, commute choices, and enhanced transportation system performance. TDM measures can also be applied to non-commuter traffic, and are especially easy to adapt to tourism, special events, emergencies, and construction.

These changes allow the same amount of transportation infrastructure to effectively serve more people. They acknowledge and work within the mode and route choices which motorists are willing to make, and can encourage a sense of community. Certain measures can also increase the physical activity of people getting from one place to another. Congestion can be reduced or managed on a long-term basis through the use of an integrated system of TDM strategies.

In order to provide a TDM system that will address the needs of the Belgrade area, the elements of the system must be acceptable to the general population. If elements are proposed which are not acceptable, the TDM system goals may not be reached. While some of the strategies may work well in the Belgrade area, it is clear that some may be less affective. To provide a TDM system that is effective in managing demand, a combination of strategies is necessary. TDM strategies, which are, or have been used by other communities in the United States, are listed below:

- Flextime
- Alternate Work Schedule
- Compressed Work Week
- Telecommuting
- Ride Sharing (Carpooling)
- Vanpooling
- Bicycling
- Walking
- Park and Ride Lots
- Car Sharing
- Traditional Transit
- Traffic Calming
- Special Routes/Detours for Emergencies or Special Events
- Linked Trips
- Guaranteed Ride Home Programs for Transit Riders
- Mandatory TDM Measures for Large Employers
- Densification/Mixed Use Elements for New Developments
- Transit Oriented Development

5.3.1. TDM Implementation

Many TDM options are available for use in the Belgrade area. Existing infrastructure is in place to use alternative modes of transportation including transit, walking, and bicycling in some areas, while others will need expansion. There are several major employers in the Belgrade area including city government, the Bozeman Health Belgrade Clinic, the Bozeman Yellowstone International Airport, and the Belgrade School District who could be approached to implement work week adjustments (flex time, alternate work hours, compressed work week) that may help to reduce peak hour congestion.

The Bozeman Yellowstone International Airport is a large traffic generator in the Belgrade area.

With many of Belgrade's residents working in Bozeman, Belgrade has the opportunity to offer and encourage TDM strategies such as park and ride or carpooling to its commuters. Streamline already offers one park and ride facility from Belgrade to Bozeman, but additional stops, routes, or park and ride lots could be beneficial.

The Bozeman Health Belgrade Clinic was recently constructed along Alaska Frontage Road and is a major employer in the Belgrade area.

The Bozeman Yellowstone International Airport is also a large generator of traffic in the Belgrade area. The use of paid parking lots and providing scheduled bus transportation to Big Sky, West Yellowstone, and Gardner has been successful in mitigating SOV trips. Montana State University also provides a student shuttle to and from the airport during peak holiday travel times. These TDM strategies have proved beneficial and continued use and expansion of these strategies should be encouraged.

Based upon this general TDM evaluation, the Belgrade area could benefit from a successful TDM program. Some recommended strategies are listed below.

- Encourage employers to provide alternate work schedules to their employees.
- Implement a guaranteed ride home program for transit users.
- Increase bicyclist access throughout the community for commuting purposes.
- Encourage walking and biking as a commute choice.
- Look at ways to increase transit ridership and transit options.
- Consider factors such as land use and zoning issues when approving non-rural projects in the outlying areas.

5.4. ROADWAY OPERATIONS AND MAINTENANCE

Traditionally, federal, state, and local agencies have allowed their roadways to deteriorate to "fair," or "poor", structural condition and ride quality before steps are implemented to rehabilitate the road. However, that is beginning to change with recent findings showing this management system to be both costly and time consuming. Federal, state, and local agencies are beginning to realize that the most cost-effective way to manage their roadways is to implement a series of low-cost preventative maintenance treatments in order to preserve their roadways and avoid continual rehabilitation. In essence, roadway preservation is a system of planned roadway treatments that are implemented at the optimum time to enhance roadway longevity and maximize the useful life of a roadway while minimizing costs.

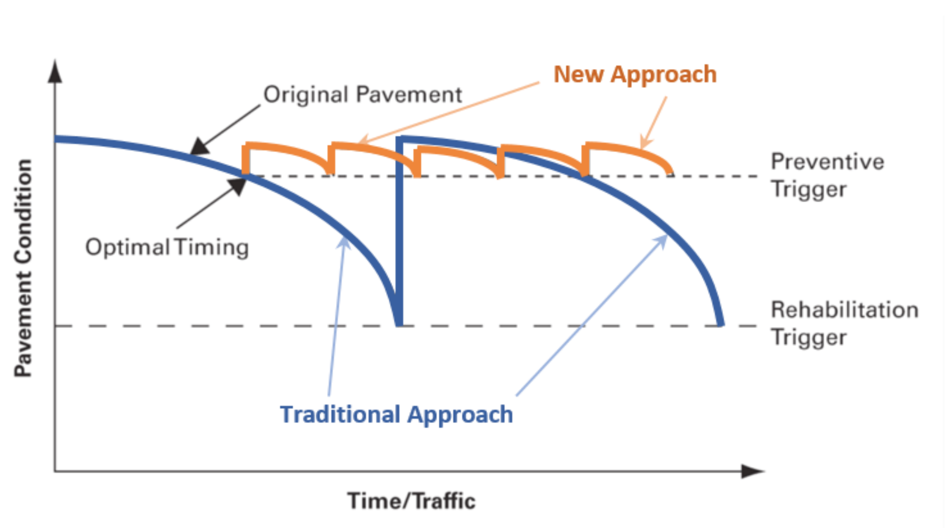
The purpose of roadway preservation is not to improve traffic flow or operations, it is designed to be the most cost-effective way to maintain the current working order of a healthy roadway. Roadway preservation is intended to address minor deficiencies in a roadway and implement low cost solutions that extend the service life of the roadway by preventing minor deficiencies from becoming major problems. **Figure 20** shows the concept behind roadway preservation and the emphasis of "Optimal Timing".

The example in **Figure 20** compares two paved roadways starting at the same condition. One scenario is managed under the traditional approach of rehabilitating the roadway and allowing it to deteriorate to a state of failure. Failure occurs when the road is in fair to poor condition shown by the rehabilitation trigger line. At this line, irreversible structural damage has occurred, resulting in the need for costly rehabilitation of the entire roadway.

The scenario implements regular roadway preservation techniques. These preservation techniques are low-cost preventative maintenance treatments that are implemented when the roadway reaches a predetermined level. The timing of treatment implementation is crucial for the success of the preservation plan. If the preservation techniques are implemented after the optimal time, the roadway will be deteriorating at a rate from which it cannot recover from and the investment in maintenance will be wasted. However, if the preventative maintenance is implemented at the optimal time, the roadway will be restored to near original condition, and if routine maintenance continues it will result in much greater intervals between roadway rehabilitations.

Roadway preservation is a long-term strategy for enhancing functional roadway performance by using integrated, cost-effective practices that extend roadway life, improve safety, and motorist satisfaction while achieving sustainable roadway conditions. See **Appendix H** for an in depth discussion on road preservation and for various strategies that can be used to successfully implement a preservation plan. Also discussed is how to develop a maintenance program which ensures bikeway and walkway facilities are usable to the public to the greatest extent possible.

Figure 20 PAVEMENT PRESERVATION CONCEPT



5.5. INTERSECTION CONTROL

Intersection control refers to the level of restriction to free flow travel through an intersection. Non-restrictive intersections are uncontrolled, meaning there is no form of regulatory sign or traffic signal on any of the approaches. Unsignalized intersections—stop controlled, yield controlled, or roundabouts—are moderately restrictive to traffic flow whereas signalized intersections provide the highest level of control. Each type of intersection control can be advantageous and can improve operations and safety at intersections. However, when used unnecessarily, each type of intersection control can also be prohibitive and potentially unsafe.

Stop and Yield Controlled Intersections

In general, when two vehicles approach an intersection from different streets or highways at approximately the same time, the right-of-way rule requires the driver of the vehicle on the left to yield the right-of way to the vehicle on the right. The right-of-way can be modified at through streets or highways by placing yield signs or stop signs on one or more approaches. Engineering judgment should guide the establishment of intersection control but should consider all modes of traffic and their volumes on all approaches, the intersection geometry, approach speeds, and crash trends. All regulatory traffic control signs and pavement markings should be placed in accordance with the MUTCD [Manual on Uniform Traffic Control Devices].

Traffic Signals

When determining whether a traffic signal is appropriate at an intersection, it is first necessary to conduct a traffic signal warrant analysis. The signal warrant analysis should be conducted using guidelines outlined in the MUTCD. According to the MUTCD, there are nine signal warrants that should be analyzed for the installation of a traffic signal. The warrants are related to vehicle traffic conditions, pedestrian traffic, and physical characteristics.

The MUTCD states that a traffic signal should not be installed unless one or more warrants are satisfied, however, meeting one or more warrants does not in itself require the installation of a traffic signal. Note that it may not be appropriate in every case to install a traffic signal at every location that meets warrants. Alternatives to traffic signals, such as roundabouts, reduced access, revised intersection geometrics, etc. may be analyzed as other potential traffic control measures.

Roundabouts

Roundabouts have become an increasingly popular in recent decades as studies confirm their effectiveness. At intersections where safety is concerned, especially with head-on and angle collisions, roundabouts are a positive solution because of the reduced number of conflict points. Additionally, when used properly, roundabouts can improve traffic operations because they promote a continuous flow of traffic through the intersection. Roundabouts can be categorized into three categories--mini-roundabouts, single-lane roundabouts, and multilane roundabouts--according to size, number of lanes, and environment.

5.6. TRAFFIC CALMING MEASURES

Traffic calming refers to a number of methods which are used to reduce vehicle speeds, improve safety, and enhance the quality of life. In the simplest definition, it is changing the physical environment to reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for pedestrians and other non-motorized street users. Traffic calming techniques are typically aimed at lowering vehicle speeds, decreasing truck volumes, and/or reducing the amount of cut-through traffic in a given area. When applied properly, these techniques result in a more pleasant environment for pedestrians and bicyclists while increasing the overall safety of a roadway or road network.

Traffic calming techniques cannot be used with the same degree of success on all roadway facilities. To best serve the needs of all users, including bicyclists and pedestrians, care needs to be taken when implementing any traffic calming technique. The following guidelines should be considered in traffic calming installations:

- Traffic calming planning should include adequate public involvement.
- Involve experts familiar with the latest traffic calming resources and design standards.
- Planners should consider a variety of traffic calming devices, rather than relying on a single type, such as speed humps or rumble strips.
- Traffic calming projects should support multiple objectives, including enhanced street aesthetics or improved walking and cycling conditions, as well as controlling traffic speeds.
- Stop signs should not be used as traffic calming devices.
- Maintenance of new traffic calming devices should be included in planning and design phases.
- Devices that are new to an area should be implemented on a trial basis with adequate signing. For example, the first traffic circles in an area should have signs showing the path vehicles should follow. After a few years, such signs become unnecessary.
- Delays to emergency vehicles should be minimized by the appropriate placement and design of traffic calming devices. In some cases, certain traffic calming devices may not be appropriate.
- Traffic calming installations should not divert traffic to other local residential streets. Traffic calming installations should support the street classifications established in community plans. Traffic may be diverted from residential streets to higher classified through streets. The potential impacts of traffic diversion should be evaluated for all traffic calming installations.
- Traffic calming should not impair the mobility of non-motorized users of the street.
- Traffic calming installations must address drainage, sight distance, and location of utilities.

Traffic calming measures generally fit into one of the following major categories: passive measures; education and enforcement; signing and pavement marking; deflection or narrowing; and diversions or restrictions.

5.7. DEVELOPMENT REVIEW POLICIES

The impact that new development has on the existing transportation system has been documented within this Transportation Plan from a larger, regional context. However, as individual development proposals are contemplated and submitted to the City of Belgrade for review, development related specifics for transportation system mitigation is warranted.

Presently, new developments are required to submit detailed traffic impact studies (TISs) for developments within the city expected to generate more than 100 vehicle trips per day. This process is in place such that the developer will know what mitigation may be required as a result of their development, and also for City staff and elected officials to contemplate traffic impacts on the system. The result of preparation and review of the detailed TISs can result in a list of “conditions for approval” that an individual developer will be required to meet before the development can proceed.

This process is currently in place in Belgrade and can be found in the *City of Belgrade Design Standards and Specifications Policy*[16]. However, the standards lack detail and the degree to which this system is enforced is unknown. **Appendix H** provides guidelines which detail the elements required (at a minimum) for preparing a TIS and provide for the consistent preparation of these studies throughout the community. A detailed summary of potential traffic performance measure policies which could be implemented in Belgrade is also provided.

5.8. FREIGHT AND GOODS MOVEMENT

Moving goods efficiently and safely in the region is critical to the economy and quality of life in the Belgrade area. Belgrade is home to many trucking activity centers, freight terminals, and local businesses engaged in industrial, agricultural, office and retail activities which rely on timely deliveries to supply finished goods and services to their customers. These businesses contribute primary jobs that grow the region's economy and maintain long-term economic competitiveness. Goods movement is important to local distributors and consumers, as increasing numbers of people shop online and expect goods delivered quickly to their homes. The Belgrade area is part of long-distance goods movement corridors supporting interstate and international commerce.

Goods movement affects all modes of transportation and a broad mix of land uses in the Belgrade area. Goods move through the region alongside drivers, pedestrians, cyclists, and passengers traveling by bus, rail, and air. The transportation network connects and passes through commercial districts, residential neighborhoods, and parks. Demand for goods movement is increasing as the region's economy and population grows. Integrating goods movement into the transportation system and local land uses is critical to protecting safety and quality of life.

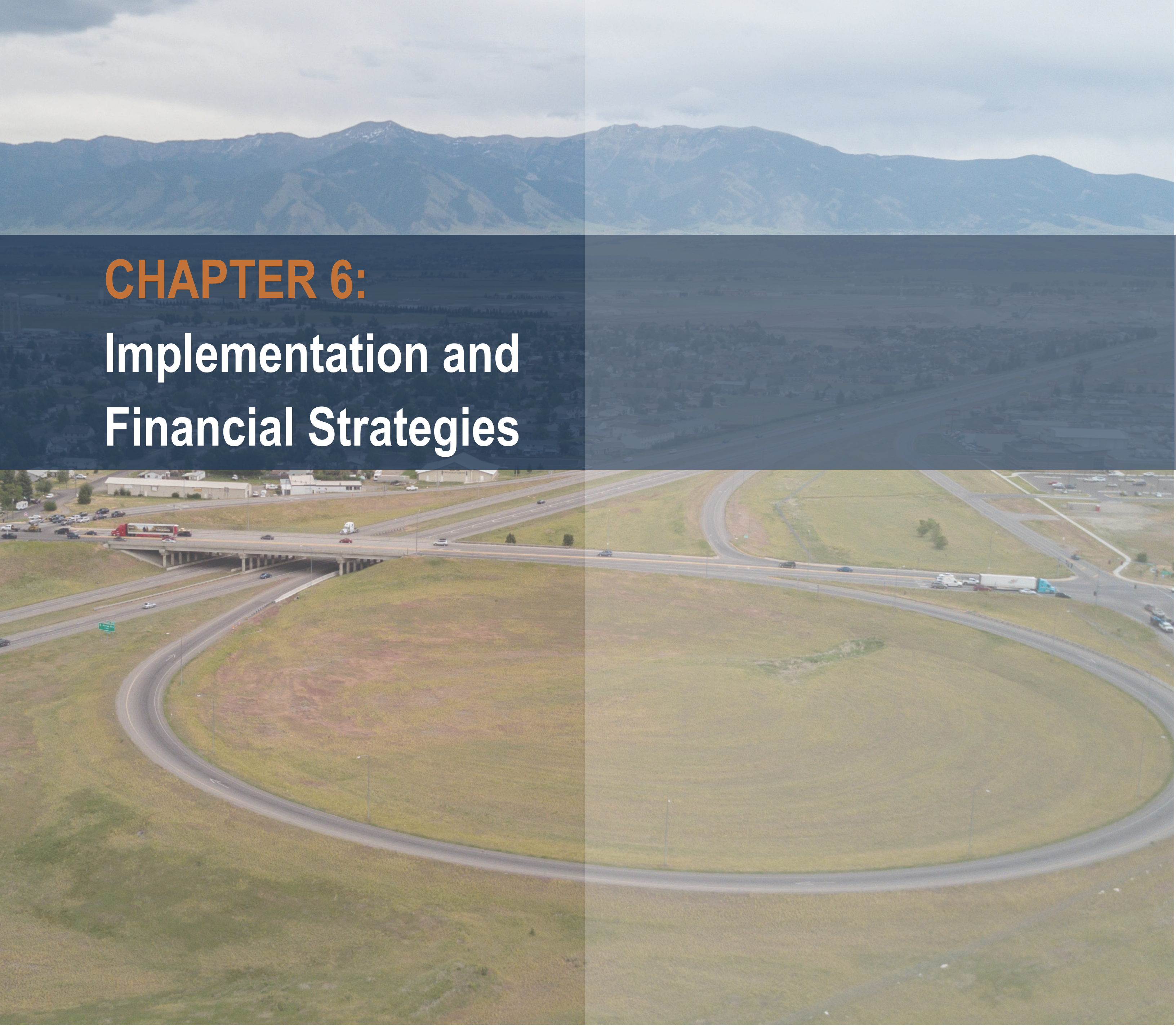
5.9. METROPOLITAN PLANNING ORGANIZATIONS

A Metropolitan Planning Organization (MPO) is a federally mandated and federally funded transportation policy-making organization that is made up of representatives from local government and governmental transportation authorities. MPOs were introduced by the Federal-Aid Highway Act of 1962, which required the formation of an MPO for any urbanized area with a population greater than 50,000. Federal funding for transportation projects and programs are channeled through this planning process. Congress created MPOs in order to ensure that existing and future expenditures of governmental funds for transportation projects and programs are based on a Continuing, Cooperative, and Comprehensive planning process. Statewide and metropolitan transportation planning processes are governed by federal law (23 U.S.C. §§ 134–135). Transparency through public access to participation in the planning process and electronic publication of plans now is required by federal law.

The federal government wishes to see federal transportation funds spent in a manner that has a basis in metropolitan region-wide plans developed through intergovernmental collaboration, rational analysis, and consensus-based decision making. Accordingly, MPOs are essential to ensure that:

- scarce federal and other transportation funding resources are allocated appropriately;
- planning reflects the region's shared vision for its future;
- a comprehensive examination of the region's future and investment alternatives has occurred; and
- facilitation of governments, interested parties, and residents occur in a collaborative manner in the planning process.

In future years it is likely that the Bozeman/Belgrade area could become a MPO, as such it is important to know the requirements and responsibilities associated with a MPO designation.



CHAPTER 6: Implementation and Financial Strategies

6.1. OVERVIEW

This part of the LRTP details the long-term vision for the Belgrade transportation system as well as strategies for achieving the vision. Implementation of the envisioned transportation system requires extensive coordination with various agencies, many years of execution, and substantial funds. This section also discusses financial strategies for funding the implementation of the visionary transportation network.

6.2. VISIONARY TRANSPORTATION NETWORK

An established plan for Belgrade's future transportation system is an essential component to community planning and future land development. It ensures that planners, landowners, and developers know the intent and location of the future road network and facilitates a long-term planning strategy. It enables the community to enhance the transportation network with, or ahead of, development rather than being caught behind development with no financial means to accommodate the associated travel demands.

All of the recommended projects discussed previously have been compiled to make up the "visionary transportation network". The visionary network is meant to serve as guidance for future transportation projects and may be changed or adapted to fit Belgrade's changing needs. **Figure 21** presents the visionary major street network which consists of all interstate principal arterial, non-interstate principal arterial, minor arterial, and collector routes. Local streets are not included on the visionary major street network. **Figure 22** presents the visionary non-motorized network including the recommendations for sidewalks, shared-use paths, bike lanes, and bike boulevards.

All future alignments shown in **Figure 21** and **Figure 22** are conceptual in nature and may vary based on factors such as topography, wetlands, land ownership, and other unforeseen factors. The purpose of these figures is to illustrate the visionary transportation network at full build-out. It is likely that many of the corridors shown will not be developed into roads or paths for many decades to come. On the other hand, if development is proposed in a particular area, the visionary transportation network will ensure that the various facilities will be established in a fashion that produces an efficient and logical future transportation system. Presenting the visionary transportation network herein is an effort to help plan for the future development of the transportation system in the community.

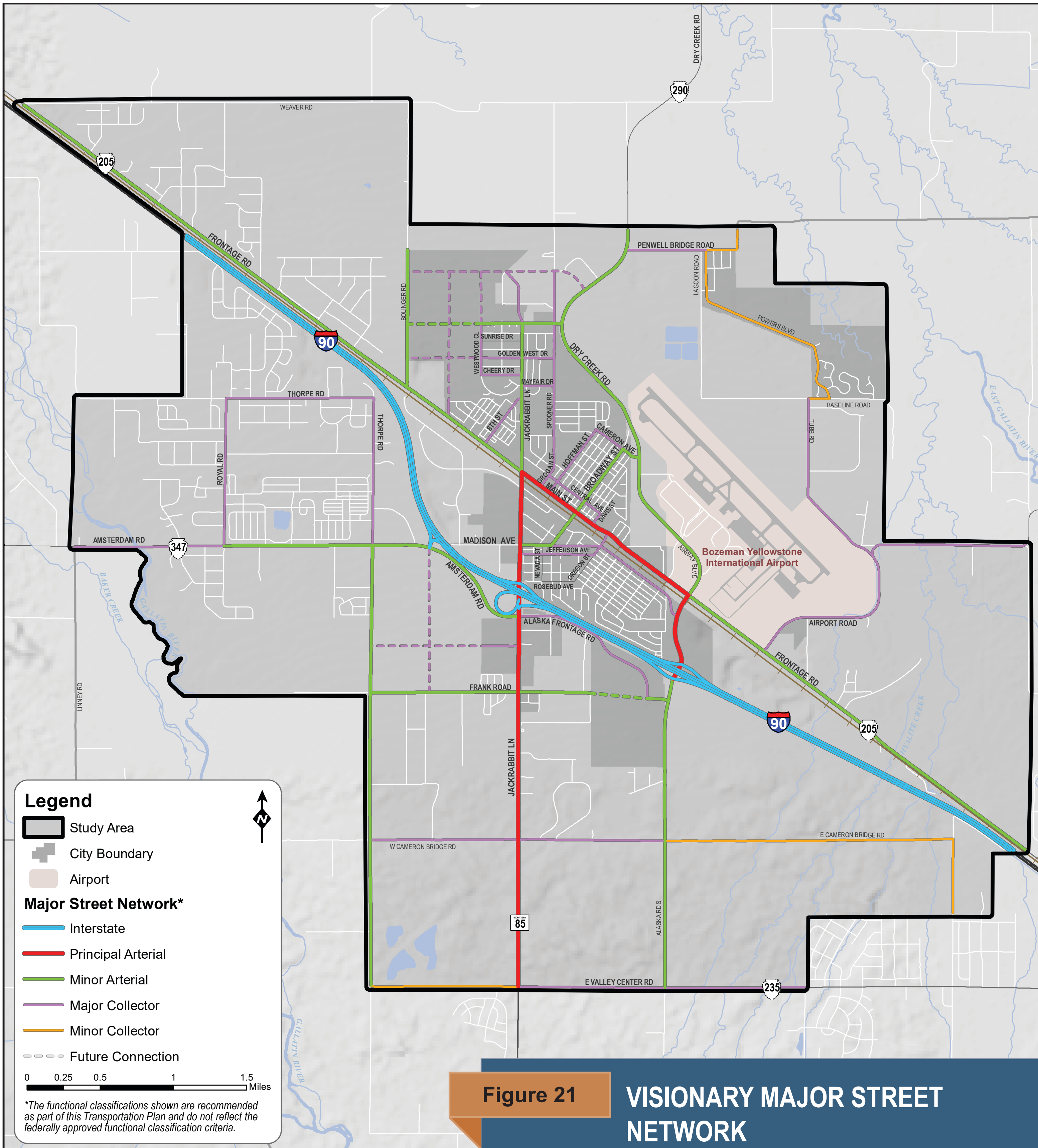


Figure 21 VISIONARY MAJOR STREET NETWORK

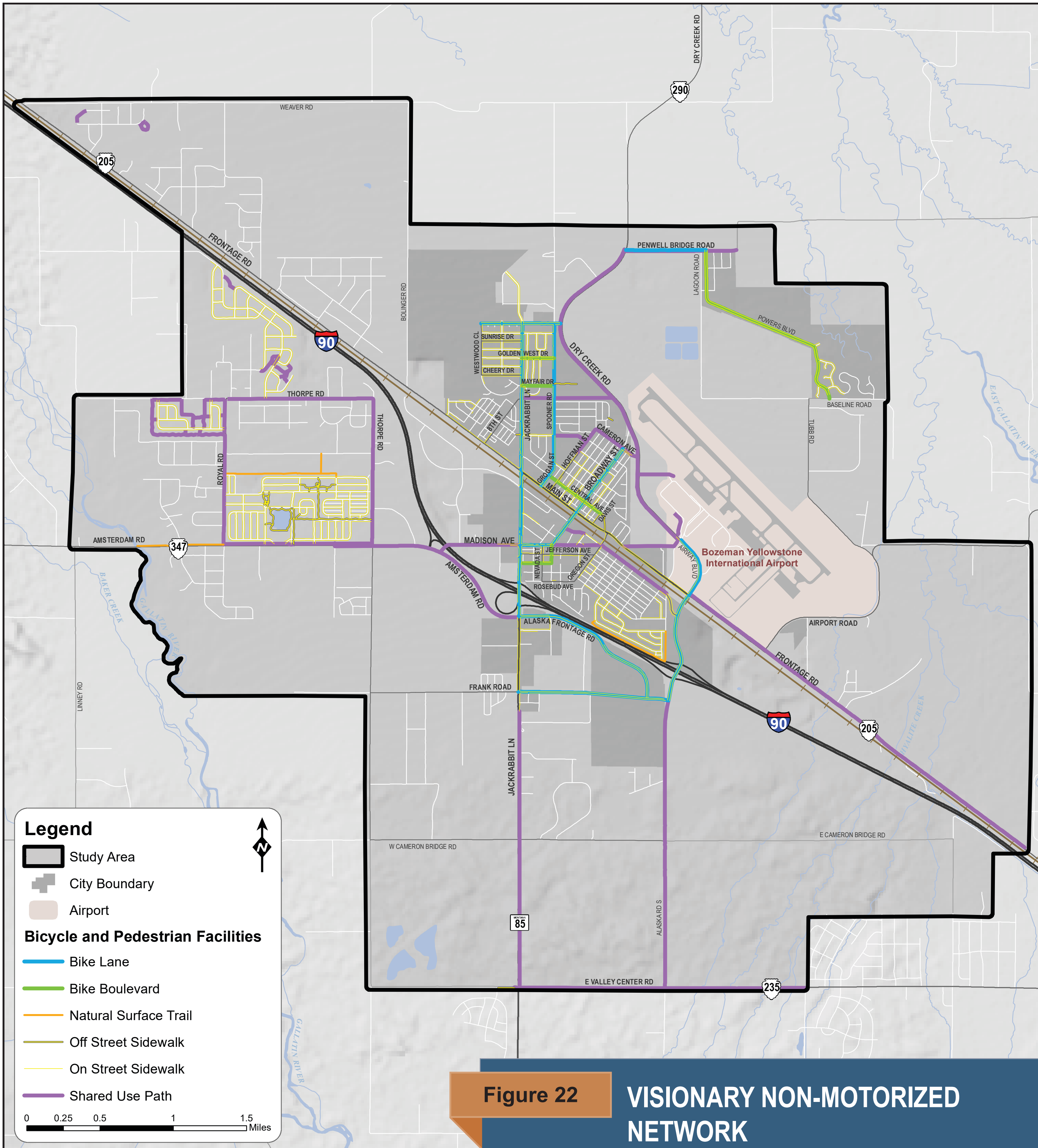


Figure 22 VISIONARY NON-MOTORIZED NETWORK

6.3. FUNDING

Transportation improvements can be implemented using Federal, State, local and private funding sources. Historically, Federal and State funding programs have been used almost exclusively to construct and upgrade the major roads in the Belgrade area. Considering the current funding limits of these traditional programs, and the extensive list of recommended road projects, more funding will be required from local and private sources if all transportation network needs are to be met over the planning horizon.

Much of the following information concerning the Federal and State funding programs was assembled with the assistance of the Statewide and Urban Planning Section of MDT. The intent was to identify traditional Federal, State and local sources of funds for transportation related projects and programs in the Belgrade area. A summary of each potential funding source is provided in **Table 21**, including: the source of revenue; purpose for which funds are intended; means by which the funds are distributed; and the agency or jurisdiction responsible for establishing priorities for use of the funds. A complete description of each funding category as well as eligibility and matching requirements can be found in **Appendix I**.

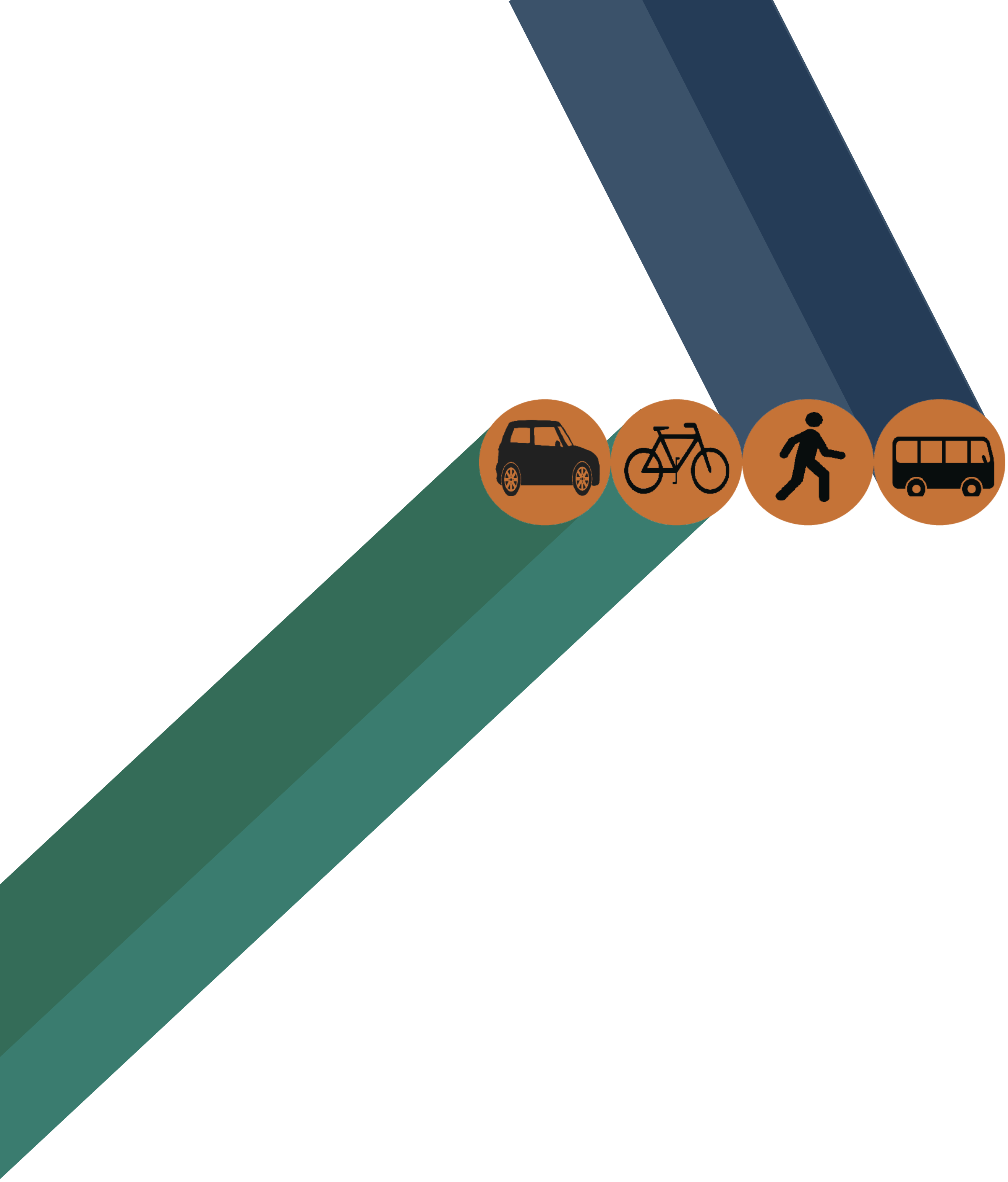
Depending on their intended purpose, some of the funding sources may not be entirely available for construction of capital improvements. Several of the sources listed allocate money for routine and/or deferred maintenance activities. Many of the funding sources are constrained to use for improving specific route systems; National, Primary, Secondary, or Urban Highway Systems, and Off-system routes.

Table 21: Funding Programs Summary

Funding Program	Subprograms (State)	Description
	FEDERAL	
National Highway Performance Program	• Interstate Maintenance (IM) • National Highway (NH) • NHPP Bridge (NHPB)	Provides funding for the National Highway System, including the Interstate System and NHS roads and bridges.
Surface Transportation Block Grant Program (STBG)	• Primary Highway System (STPP) • Secondary Highway System (STPS) • Urban Highway System (STPU) • Bridge Program (STP) • Urban Pavement Preservation Program (UPP) • Set-aside Program	Funds available for projects on state-designated Primary, Secondary, and Urban Highway Systems. Bridge Program funds are primarily used for bridge rehabilitation or reconstruction activities on primary, secondary, urban, or off-system routes.
National Highway Freight Program (NHFP)	N/A	This program was created by the FAST Act to invest in freight projects on the National Highway Freight Network. This program provides funding for construction, operational improvements, freight planning, and performance measures.
Highway Safety Improvement Program (HSIP)	N/A	Funds are apportioned for safety improvement projects included in the State Strategic Highway Safety Plan. Projects must correct or improve a hazardous road location or feature, or address a highway safety problem.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	• CMAQ (formula) • Montana Air & Congestion Initiative (MACI)- Guaranteed Program • Montana Air & Congestion Initiative (MACI)- Discretionary Program	Federal funds available under this program are used to finance transportation projects and programs to help improve air quality and meet the requirements of the Clean Air Act. At the project level, the use of CMAQ funds is not constrained to a particular system (i.e. Primary, Urban, and NHS).

Funding Program	Subprograms (State)	Description
Congressionally Directed Funds	• Nationally Significant Freight and Highway Projects	Congressionally directed funds may be received through either highway program authorization or annual appropriations processes. This is a discretionary freight-focused grant program for projects that improve safety and improve critical freight movements.
Transit Capital and Operating Assistance Funding	• Bus and Bus Facilities (Section 5339) • Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310) • Formula Grants for Rural Areas (Section 5311) • Urbanized Area Formula Grants (Section 5307)	The MDT Transit Section provides federal and state funding to eligible recipients through Federal and state programs. All funded projects must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").
STATE		
Rail/Loan Funds	• Montana Rail Freight Loan Program (MRFL)	Revolving loan fund administered by MDT to encourage projects for construction, reconstruction, or rehabilitation of railroads and related facilities in the State.
TransADE	N/A	The TransADE grant program offers operating assistance to eligible organizations providing transportation to the elderly and persons with disabilities.
State Funds for Transit Subsidies	N/A	Provides funds to offset expenditures of a municipality or urban transportation district for public transportation. The allocation to operators of transit systems is based on the ratio of its local support for public transportation to the total financial support for all general-purpose transportation systems in the State.
State Fuel Tax	• Bridge and Road Safety and Accountability Act (BaRSAA)	The State of Montana assesses a tax on each gallon of gasoline and clear diesel fuel sold in the state and used for transportation purposes. State law also establishes that each city and county be allocated a percentage of the total tax fund. Funds may be used for National, Primary, Secondary or Urban Highway Systems as well as local roads.
LOCAL		
Capital Improvements Fund	N/A	This fund is used to finance major capital improvements to county infrastructure. Revenues are generated by loans from other county funds and must be repaid within ten years.
Special Improvement District (SID) Revolving Fund	N/A	A SID fund provides financing to satisfy bond payments for SIDs in need of additional funds.
Rural Improvement District (RID)	N/A	A Rural Improvement District is a legal taxing authority through which a subdivision can raise funds for on-going road maintenance and improvements.
Gas Tax Apportionment	N/A	Revenues are generated through State gasoline taxes apportioned from the State of Montana.
Street Maintenance Assessment	N/A	Street maintenance includes, but is not limited to, the following: sprinkling, graveling, oiling, chip sealing, seal coating, overlaying, treating, general cleaning, sweeping, flushing, snow and ice removal, and leaf and debris removal.

Funding Program	Subprograms (State)	Description
Street Impact Fees	N/A	Impact fees are collected from new developments based on the demand that the development will place on the existing system.
Private Funding Sources	• Cost Sharing • Transportation Corporations • Road Districts • Private Donations • Private Ownership • Privatization • Tax Increment Financing (TIF) • General Obligation Funds • Multi-Jurisdictional Service District • Local Improvement District	Private financing of roadway improvements, in the form of right-of-way donations and cash contributions, has been successful for many years. In recent years, the private sector has recognized that better access and improved facilities can be profitable due to increase in land values and commercial development possibilities.
Future Potential Funding Sources	▪ Local Sales Tax ▪ Wheel Tax ▪ Local Options Motor Fuel Tax ▪ Excise Taxes ▪ Value Capture Taxes	Various other sources of funding may be available in the future, pending legislation and other political decisions made by governing entities.



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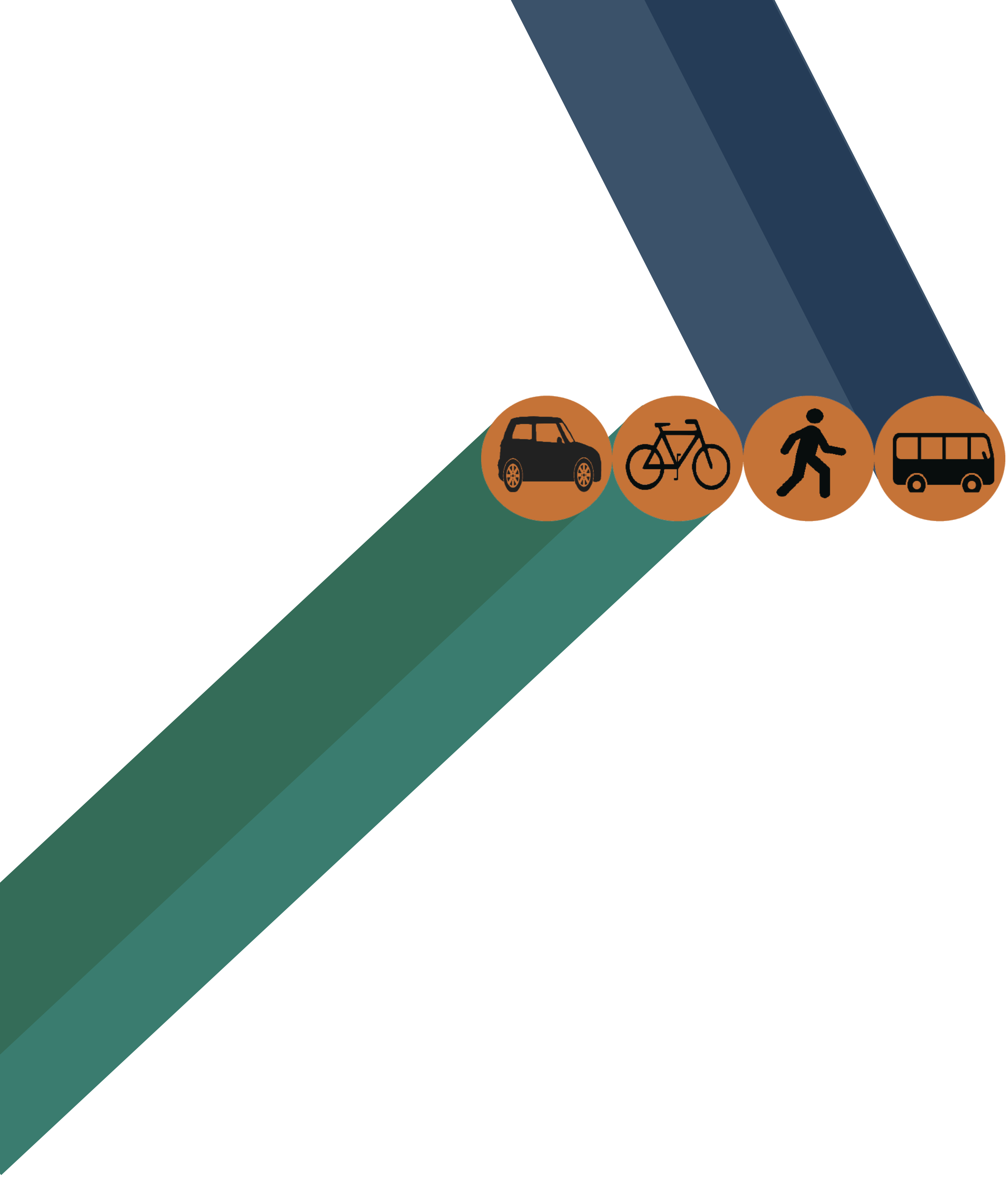

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