RapidTRIP 2035

Rapid City Area Metropolitan Planning Organization

RapidTRIP 2035 -

The Long Range Transportation Plan for the Rapid City Area

September 2010

LSA

LSA ASSOCIATES, INC.

Catalyst, Inc.

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Introduction

The Rapid City area is a vibrant, bustling region situated on the eastern edge of the beautiful Black Hills in southwest South Dakota. The region has a rich history, strong community character, major tourist attractions, and a balanced economic base. As a result, the area has seen steady population and employment expansion for several decades and should continue this trend in the years to come.

To accommodate this future growth, transportation services and infrastructure are developed and implemented through the regional transportation planning process carried out by the Rapid City Area Metropolitan Planning Organization. This document is a product of that planning process.

The *RapidTRIP 2035* is the long-range transportation plan for the Rapid City area and covers the areas in and around Rapid City that are expected to become urbanized by the year 2035. This 413 square mile planning area includes the central portion of Pennington County and the southern portion of Meade County. Rapid City, Box Elder, Summerset, and Piedmont are included in the Metropolitan Planning Organization Planning Area along with Ellsworth Air Force Base.

RapidTRIP 2035 identifies future transportation investments for all modes of transportation. Although the region's mobility continues to be dominated by the automobile, other modes such as public transit, pedestrian, and bicycle transportation are becoming increasingly important means of travel and are addressed by *RapidTRIP 2035*. Aviation travel, railroads, trucks, and freight movement are also included in the planning process, but to a lesser extent.

As such, *RapidTRIP 2035* identifies specific services and projects for each mode of travel that will be necessary to meet the transportation needs of the region through 2035. Financial resources available to implement *RapidTRIP 2035* have also been estimated. Similar to virtually every community across the nation, anticipated revenues are not sufficient to fund all of the transportation needs. Therefore, projects have been prioritized for implementation so that *RapidTRIP 2035* represents a

Why do we need a plan?

For several obvious and some not-so-evident reasons, the Rapid City region needs a long-range transportation plan. As congestion increases on area roads due to growth, tourism, development, and more travel through the region, it is clear that the current roadway system will not be sufficient to accommodate future needs. In addition, citizens of the region remain interested in alternative mode options, consistent with ongoing federal legislation promoting their use. Finally, federal funds make up a significant portion of the region's transportation dollars, but they come with strings. The federal government requires a long-range transportation plan for regions such as Rapid City to ensure proper expenditure of revenues and consideration of the community's needs and desires.

Beyond any of these reasons, a long-range transportation plan makes sense. Good planning involves citizens, increases efficiency and effectiveness of the investment, and promotes transportation services and infrastructure that are consistent with the community's desires. The planning process enhances the community's character and quality of life by considering the interaction between land use and transportation and their cumulative effect on the built and natural environments.

financially-constrained implementation plan as required by law. As allowed by law, *RapidTRIP 2035* also contains an analysis of potential funding options that may increase revenues for transportation as well as a list of illustrative projects and services by mode that might be funded with additional revenues.

In this chapter, a discussion of the transportation planning process used to develop *RapidTRIP 2035* is presented along with specific requirements of federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation. Transportation Goals and Objectives are identified from the planning and public involvement efforts and a list of Key Messages is offered as a product of the public input process. Evaluation criteria used to analyze and prioritize projects were developed based on the Key Messages.

Planning Process and Context

Plan Development and Approval Process

RapidTRIP 2035 was developed through an open and collaborative planning process, complying with applicable government legislation and regulations. The Metropolitan Planning Organization's approved *Public Participation Plan* provided the direction through which local public outreach and involvement occurred.

RapidTRIP 2035 was developed through the oversight of the Metropolitan Planning Organization transportation planning committee structure, consisting of a Citizens Advisory Committee, Technical Coordinating Committee, and Executive Policy Committee. These committees review and adopt all Metropolitan Planning Organization products and plans. In addition, the Rapid City Planning Commission, Public Works Committee, and City Council formally review *RapidTRIP 2035*. Subsequently, the South Dakota Department of Transportation, Federal Highway Administration, and Federal Transit Administration review and comment on the *Plan*.

The development of the plan was conducted based on the schedule and process shown in Figure 1-1.

Chapter 1: Process, Context, Issues, and Key Messages

Sustainability

Sustainability is generally defined as actions that meet current needs in an efficient and financially viable manner without compromising the ability to meet those needs in the future. In the context of transportation, **sustainability** can be defined based on four areas of function and responsibility:

- Mobility and accessibility,
- Environmental stewardship,
- Social equity / quality of life, and
- Economic robustness.

Transportation improvements have historically been made to promote personal and freight **mobility**, access to work and other activities, and safety. In this manner, transportation is a major motivator of **economic development**.

In the past, many transportation improvements have also had requisite improvements in **air quality**, although some highway expansion projects could be thought of as counter to environmental objectives in the long term. Challenges remain and new challenges such as **global energy prices** and concerns with **greenhouse gas emissions** will likely need to be addressed to a greater degree in the future.

Social equity and quality of life can be enhanced by the transportation system through **access to jobs** and other activities via different travel modes. Bicycle and pedestrian projects can improve quality of life by provide **healthy recreational opportunities**. However, some transportation projects in the past have served to break up communities and others have morphed into congested corridors with poor access control where mobility, access, and safety are compromised.

Challenges remain, but it appears likely that **sustainability** will grow in importance as it is further integrated into the transportation planning process.

Livability

Livability is difficult to define because it means different things to different people. A home can be **livable**, as can a street, neighborhood, community, or region the country. But what does it mean for transportation to be livable?

In terms of long range planning, transportation affects the livability of our **neighborhoods and communities** in both positive and negative ways. For example, six-lane arterial streets are difficult to cross for pedestrians, so their application should be **context-sensitive**. Areas of recreation such as parks and open space could be enhanced with a network of trails and sidewalks. Transportation is a key factor in **safe routes to schools**. These examples and many more demonstrate the potential impact of transportation on our surroundings.

In 2009, the DOT, HUD, and EPA Interagency Partnership for Sustainable Communities established six **livability principles**:

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate policies and leverage investment
- Value communities and neighborhoods

Environmental justice has long been a part of the transportation planning process which requires agencies to identify and address **disproportionately high and adverse impacts** on minority and low-income populations. Livability focuses on the potential positive impacts of the transportation system and not just the adverse impacts. In this manner, livability initiatives will advance the objectives that make our neighborhoods and communities **better places**.

Safety and Security

Safety can be defined as the condition of being protected against the consequences of failure, damage, error, or accidents. This can take the form of being protected from something that causes health or economical loss. It can include protection of people or of possessions.

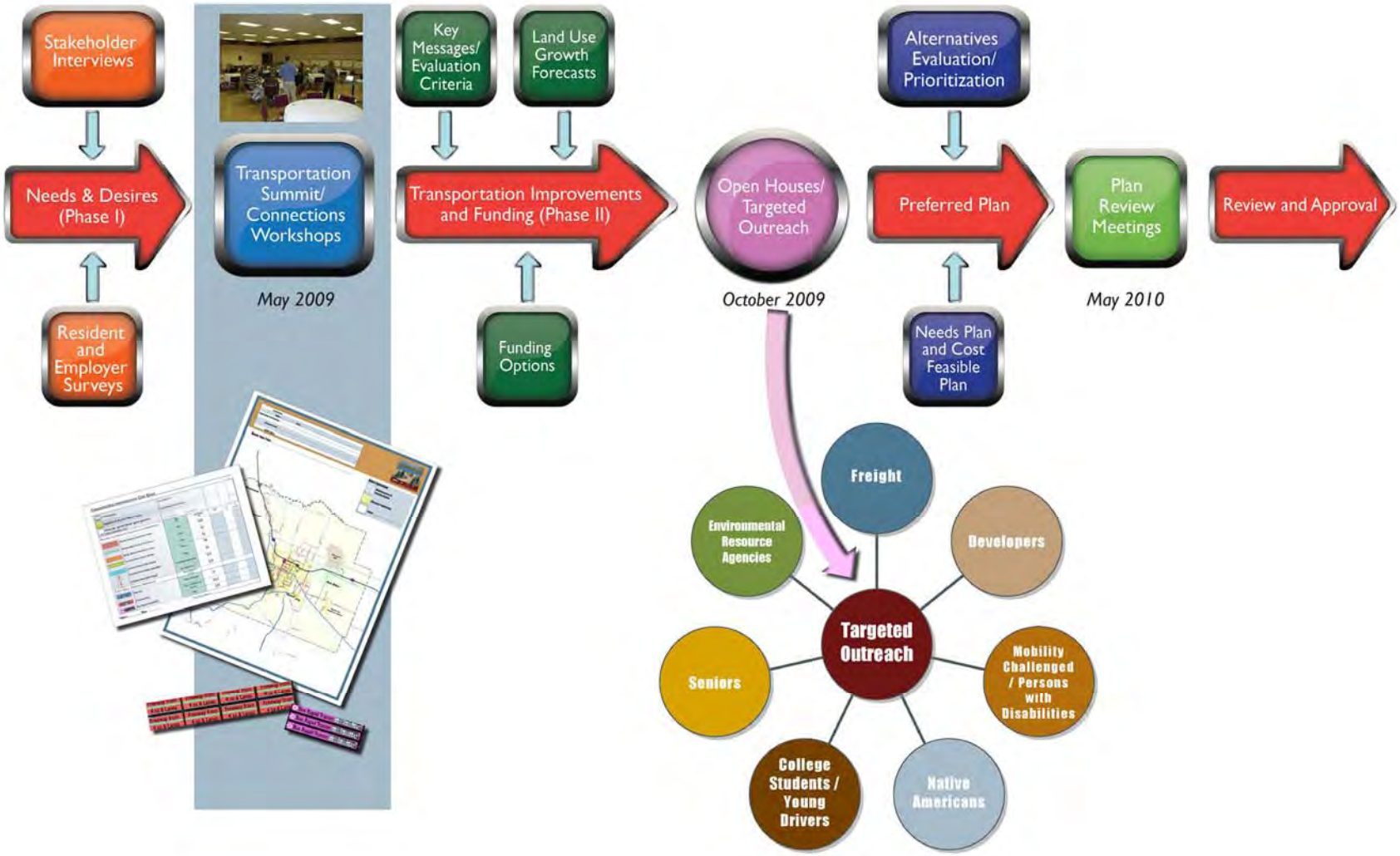
Security is closely related to **safety** but also includes consideration of people who are trying to cause harm, such as terrorists and muggers.

Safety and **security** involve all aspects of the transportation system. Transportation infrastructure such as roads, trails/paths, transit centers, and bus stops are designed with the highest degree of safety reasonably available, but each of these can be conduits for people intending harm regardless of their design.

From a transportation standpoint, security includes **incident detection, avoidance, and response**. Passenger and cargo screening at airports and monitoring of transportation access to dams, nuclear facilities, and other potential terrorist targets are good examples of security counter-measures. Unfortunately, local transportation systems must also be considerate of security issues in this day and age. Transportation and other activity centers as well as bridges could be considered potential targets and should be designed and operated with this in mind.

Inevitably, however, most transportation security issues in the Rapid City area are likely to be related to **personal safety**, so persons using the system should be aware of their surroundings and take responsibility for their personal safety while also being cognizant of potential infrastructure destruction.

Figure 1-1: Planning Process for *RapidTRIP 2035*



Planning Area

Metropolitan Planning Organizations are required to develop long range transportation plans for the urban area and unincorporated areas under their jurisdiction which are expected to become urbanized during the 20–25 year planning period. In the Rapid City region, this includes the 413 square mile Planning Area shown in Figure 1-2. This area was recently adjusted to include portions of southern Meade County based on the 2000 U.S. Census.

The Rapid City Area Metropolitan Planning Organization has responsibility for transportation planning efforts in the Planning Area. Long range transportation planning in the Rapid City region involves the following jurisdictions and agencies:

- City of Rapid City,
- City of Box Elder,
- City of Summerset,
- City of Piedmont,
- Pennington County,
- Meade County,
- Ellsworth Air Force Base, and
- South Dakota Department of Transportation.

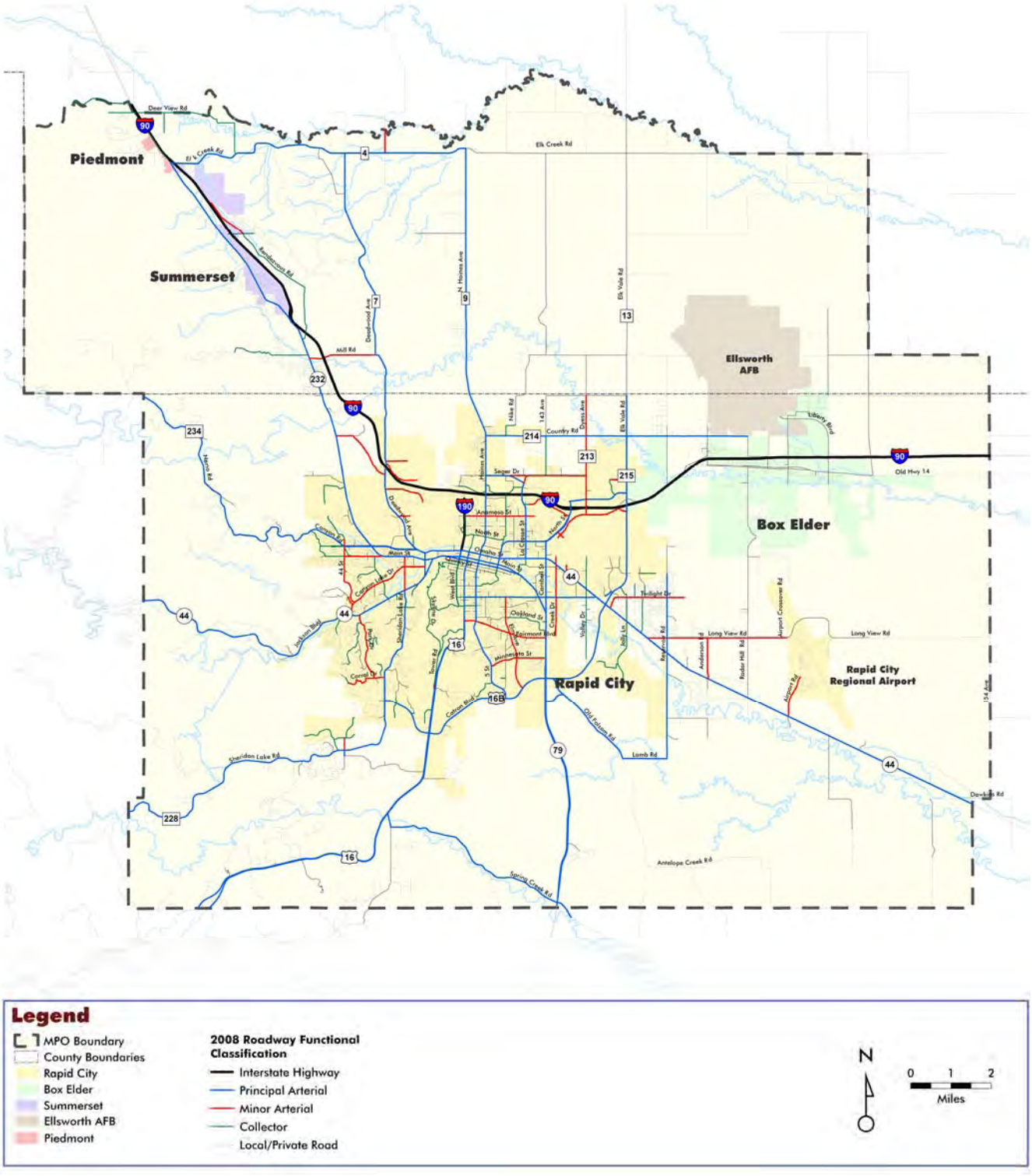
What is the Metropolitan Planning Organization?

Metropolitan planning organizations carry out the transportation planning process in communities across the country. They are required under federal law for urbanized areas with more than 50,000 in population in order for those areas to receive federal transportation dollars.

The Rapid City Area Metropolitan Planning Organization serves as the Metropolitan Planning Organization for the Rapid City urbanized area. Although transportation planning had been conducted for several decades previous, the Metropolitan Planning Organization was not designated as such until 1977. The Rapid City Transportation Planning Division in the Growth Management Department provides staff support for the Metropolitan Planning Organization.

RapidTRIP 2035 was developed through the planning process conducted by the Metropolitan Planning Organization. In addition to the long-range transportation plan, the Metropolitan Planning Organization is responsible for producing the region's five-year (2009 – 2013) transportation improvement program and annual work program.

Figure 1-2: Planning Area



Transportation Goals and Objectives

The Rapid City Area Metropolitan Planning Organization had developed the following four goals and corresponding objectives to guide the transportation planning process for the region. These goals and objectives were used in previous regional plans including the *2030 Long Range Transportation Plan* completed in September 2005.

GOAL I

To develop and maintain a transportation system that will be **coordinated with land use patterns** and will **incorporate all available modes of transportation** into a **safe, efficient, and effective system** of moving goods and people within and through the community.

OBJECTIVES

- Maintain and enhance the transportation planning process in accordance with recognized planning practices.
- Reduce accidents, injuries, and fatalities.
- Minimize travel times, travel costs, and congestion.
- Coordinate the development of the street system of the community with all state and local governments, both within and surrounding the planning area.
- Develop and adopt a capital improvements program governing transportation projects throughout the community.
- Maintain and upgrade existing facilities at the Rapid City Regional Airport.
- Establish a coordinated public transportation system at a level commensurate with community needs.
- Provide for an effective bicycle and pedestrian transportation system for the Rapid City area.
- Reduce congestion by improving traffic signal coordination.
- Coordinate transportation and land use planning efforts.
- Minimize motor vehicle, rail, bicycle, and pedestrian conflicts.
- Maintain mobility on key roadways through effective access and parking management.
- Identify and preserve rights-of-way for anticipated future transportation needs.
- Maintain the existing transportation system in a high quality and effective manner.

GOAL II

To enhance the **economic stability** of the community by improving the area's overall **accessibility**.

OBJECTIVES

- Maintain a strong urban core by providing adequate transportation facilities for economic activities of all kinds in the core area.
- Strengthen the Rapid City area's role as a regional retail, service, entertainment, tourism, and aviation center by providing adequate transportation facilities.
- Provide adequate and convenient close-in parking in the central business district area to encourage economic development.
- Promote the cohesiveness of the community by providing for equitable accessibility to employment, health, educational, and shopping faculties in the community.
- Minimize neighborhood disruption by transportation facilities.
- Provide improved mobility for the elderly/physically challenged.
- Provide for efficient movement of freight.

GOAL III

To identify and preserve the **environmental, social, and cultural resources** of the community.

OBJECTIVES

- Conserve natural resources.
- Encourage car pooling and other ridesharing programs.
- Work closely with state and local air quality agencies to insure an integrated transportation/air quality planning effort.
- Strengthen efforts to implement hard surfacing of unpaved streets, alleys, and parking lots.
- Incorporate environmental and aesthetic considerations in the design process.

- Minimize disruption of the natural environment.
- Preserve open space.
- Protect prime agricultural land.

GOAL IV

To actively seek **input from the community** and to utilize that input in the transportation planning process.

OBJECTIVES

- Encourage citizen participation in the planning and design of transportation facilities.
- Preserve integrity of neighborhoods.
- Provide for continuing development/refinement of goals.
- Encourage public meetings/hearings on transportation issues.
- Actively support a transportation citizens' advisory committee.

Related Plans and Studies

RapidTRIP 2035 is the current transportation plan for the Rapid City region. Like many planning documents, it incorporates and builds upon the concepts and recommendations from previous efforts, including the *2030 Long Range Transportation Plan of September 2005,* the 2025 *Long Range Transportation Plan* Update from August of 2000, and the 2015 *Long Range Transportation Plan* completed in 1994.

In addition to these long range transportation plans, other plans conducted by the local governments, Metropolitan Planning Organization, South Dakota Department of Transportation, and other jurisdictions and agencies contribute to the body of knowledge that supports the development of the *RapidTRIP 2035*. Plans and studies related to the development and implementation of the *Plan* include the following:

LAND USE AND TRANSPORTATION PLANS

- Rapid City Area Future Land Use Plans
- Rapid City Area 2030 Long Range Transportation Plan (September 2005)
- 2009-2014 Rapid City Area Transportation Improvement Program (August 2009)

MODAL PLANS AND CORRIDOR STUDIES

- 2009-2013 Transit Development Plan (October 2008)
- Rapid City Bikeway/Walkway Plan (June 2006)
- Sheridan Lake Road Extension Study (November 2008)
- Mt. Rushmore Road Corridor Study (July 2010)
- Hwy. 1416 Corridor Study (July 2010)
- Coordinated Public Transit – Human Service Transportation Plan (October 2007)
- Jackson Blvd. Extension Study (February 2004)
- US 16 Corridor Study (March 2004)

These plans are available from the Rapid City Area Metropolitan Planning Organization (MPO). Many are located on the MPO's website.

Plan Elements: Required and Desired

Several laws, regulations, statutes, codes and other documents at the local, state, and federal levels affect the development of *RapidTRIP 2035* by specifying requirements to be considered in the planning process or to be contained in the *Plan*. These include the SAFETEA-LU, which was signed into law in August 2005 and was recently extended through at least December 2010. This federal legislation generally follows the same framework established by Intermodal Surface Transportation Efficiency Act in 1991 and Transportation Efficiency Act-21 in 1998.

In addition to SAFETEA-LU, there are metropolitan planning regulations, management and monitoring system regulations, Executive Order 12898 on Environmental Justice, the Americans with Disabilities Act, and others that affect the development of *RapidTRIP 2035*.

Of these, SAFETEA-LU provides the primary authoritative direction on the development of *RapidTRIP 2035*. Among the many environmental, funding, infrastructure, modal, safety, and other transportation-related provisions of the legislation, SAFETEA-LU continues the priorities of intermodalism, intergovernmental and pubic/private partnerships, and system development and management that originated in previous legislation.

Some of the more significant planning elements are summarized below.

SAFETEA-LU Planning Factors

The eight SAFETEA-LU Planning Factors that must be addressed in the transportation plan include:

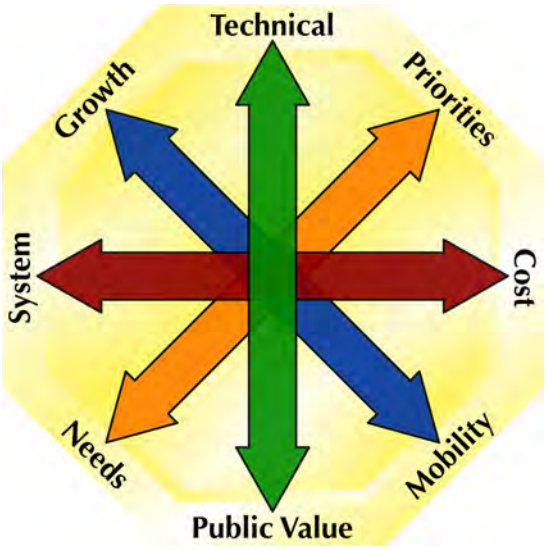
1. Support the **ECONOMIC VITALITY** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the **SAFETY** of the transportation system for motorized and non-motorized users.
3. Increase the **SECURITY** of the transportation system for motorized and non-motorized users.
4. Increase the **ACCESSIBILITY** and **MOBILITY** of people and for freight.
5. Protect and enhance the **ENVIRONMENT**, promote **ENERGY CONSERVATION**, improve the **QUALITY OF LIFE**, and promote consistency between transportation improvements and State and local planned **GROWTH** and **ECONOMIC DEVELOPMENT** patterns.
6. Enhance the **INTEGRATION** and **CONNECTIVITY** of the transportation system, across and between modes, for people and freight.
7. Promote efficient **SYSTEM MANAGEMENT** and operation.
8. Emphasize the **PRESERVATION** of the existing transportation system.

Project Listings

SAFETEA-LU identifies several categories of projects that are to be included for implementation over the life of a transportation plan. They are:

- Adopted congestion management strategies;
- Bicycle and pedestrian facilities;
- Transportation enhancement activities;
- Strategies for managing the transportation system; and
- Capital investments and other measures to preserve the existing transportation system.

A description of all proposed improvements in sufficient detail to develop cost estimates should accompany the project listings.



Financial Plan

SAFETEA-LU specifies that available revenues for implementation of transportation improvements over the life of the *Plan* must be developed through a cooperative effort between the Metropolitan Planning Organization, State, and transit operators. The cost estimates for the projects, strategies, and other transportation improvements contained in *RapidTRIP 2035* must be constrained to the forecasts of available revenues.

When this requirement was enacted several years ago, many communities around the country readily embraced the financial constraint philosophy. In this manner, transportation plans transformed from a wish list of projects that could not be implemented to meaningful plans with specific, identifiable transportation improvements.

Forecast Period

At a minimum, a transportation plan must be comprised of a 20-year planning horizon and be updated every five years. After its approval, the Metropolitan Planning Organization is allowed to make substantial changes to the *Plan* during the five-year window, but the 20-year forecast period must be maintained. Therefore, Rapid City incorporates an approximately 25-year planning horizon in order to retain the ability to modify the *Plan* as necessary, similar to other progressive communities.

Public Involvement Process

Public involvement is a high priority in the transportation planning process and in the development of *RapidTRIP 2035*. The Metropolitan Planning Organization's Public Participation Plan reflects the region's approach to public involvement. It outlines a process that provides complete information, timely public notice, and full public access.

Environmental Justice

Environmental Justice provisions require agencies to take steps to identify and address disproportionately high and adverse impacts on minority and low-income populations through the development and implementation of *RapidTRIP 2035*. These requirements are addressed in the Impacts of the Plan chapter.

Key Messages

The Key Messages establish the general direction of the development of *RapidTRIP 2035* based on extensive public involvement through the Stakeholder Interviews, Resident and Employer Transportation Surveys, and the Transportation Summit and Connections Workshops and technical analysis. The Key Messages emanate from these sources and were written with consideration of the planning factors from SAFETEA-LU and the Plan's goals and objectives.

- Gas Prices and Energy Costs – Fuel costs are expected to increase in the future and will have a significant effect on land use, transportation, quality of life, and other factors.
- Aging of the Population – People in the Rapid City area are growing older, with the fastest growing segment over age 65. This will increase the number of people with special transportation needs.
- How We Grow – The Rapid City area will continue to be a regional service center for retail, medical, education, technology, and other economic sectors. Historic growth patterns, especially in outlying areas, may not be sustainable due to rising fuel costs, demographic factors, housing issues, and other influences.
- Downtown Rapid City – Downtown Rapid City is the region's economic and cultural hub. The region should continue to invest in downtown Rapid City to ensure a strong and vibrant core. Walkability, parking, housing, and bicycle accessibility issues should be considered.
- Modal Balance – In order to provide choice and transportation mobility for youth, seniors, persons with disabilities, and others, future investments in the transportation system should shift towards maintenance and alternative modes while funding for roadway capacity might be reduced.
- Funding – Transportation revenues are shrinking in relation to needs. Roadway maintenance typically consumes 60 percent of our transportation funds and needs to be further increased to keep up, leaving very little monies for capacity infrastructure and alternative mode funding. Additional local funding options should be considered.
- Regional Connections – Growth in unincorporated areas of Meade and Pennington Counties will need to be connected to the urban area. The rural communities are growing quickly and will face unique transportation challenges, such as a rural road transportation system with maintenance and improvement needs that are outweighed by the local community's ability to fund them.
- Ellsworth Air Force Base – The base represents a unique and important jobs and cultural resource for the community that should be connected to the larger community and supported to maintain its status as a vibrant employment and activity center.

Evaluation Criteria

The Plan's goals and key messages tend to be somewhat lofty and open to interpretation. However, these important statements along with SAFETEA-LU's eight planning factors establish the direction of the Plan's development. As such, they must be considered in the Plan's development and included in the analysis to the extent possible. One of the most basic ways to do this is to develop evaluation criteria that effectively implement the policy statements. Table 1-1 shows the relationships between the evaluation criteria, goals, plannign factors, and key messages.

Table 1-1: Evaluation Criteria

		Roadway				Transit				Bicycle / Pedestrian			
		Efficiency	Effectiveness	Cost Effectiveness	Multi-Modal	Population and Employment Served	Served per Route Mile	Cost per Served	Connectivity	Continuity	Potential Use	Joint Construction	Safety
	SAFETEA-LU Planning Factors												
1	Support the ECONOMIC **VITALITY** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.	●	●	●		●	●	●	●	●			
2	Increase the **SAFETY** of the transportation system for motorized and non-motorized users.				●	●	●					●	●
3	Increase the **SECURITY** of the transportation system for motorized and non-motorized users.												●
4	Increase the **ACCESSIBILITY** and **MOBILITY** of people and for freight.	●	●	●	●	●	●	●	●	●	●	●	
5	Protect and enhance the **ENVIRONMENT**, promote **ENERGY CONSERVATION**, improve the **QUALITY OF LIFE**, and promote consistency between transportation improvements and State and local planned **GROWTH** and **ECONOMIC DEVELOPMENT** patterns.	●	●	●	●	●	●	●	●	●	●	●	●
6	Enhance the **INTEGRATION** and **CONNECTIVITY** of the transportation system, across and between modes, for people and freight.	●	●	●	●	●	●		●	●	●	●	
7	Promote efficient **SYSTEM MANAGEMENT** and operation.	●	●	●					●	●			
8	Emphasize the **PRESERVATION** of the existing transportation system.		●	●							●		
	Goals and Objectives												
1	To develop and maintain a transportation system that will be coordinated with land use patterns and will incorporate all available modes of transportation into a safe, efficient, and effective system of moving goods and people within and through the community.	●	●	●	●	●	●	●	●	●	●	●	●

		Roadway				Transit				Bicycle / Pedestrian			
		Efficiency	Effectiveness	Cost Effectiveness	Multi-Modal	Population and Employment Served	Served per Route Mile	Cost per Served	Connectivity	Continuity	Potential Use	Joint Construction	Safety
2	To enhance the **economic stability** of the community by improving the area's overall **accessibility**.	●	●	●	●	●	●	●	●	●	●	●	
3	To identify and preserve the **environmental, social, and cultural resources** of the community.				●	●	●	●	●	●	●	●	●
4	To actively seek **input from the community** and to utilize that input in the transportation planning process.	●	●	●	●	●	●	●	●	●	●	●	●
	Key Messages												
1	**Gas Prices and Energy Costs** – Fuel costs are expected to increase in the future and will have a significant effect on land use, transportation, quality of life, and other factors.	●	●	●	●	●	●	●	●	●	●	●	
2	**Aging of the Population** – People in the Rapid City area are growing older, with the fastest growing segment over age 65. This will increase the number of people with special transportation needs.				●	●	●				●	●	●
3	**How We Grow** – The Rapid City area will continue to be a regional service center for retail, medical, education, technology, and other economic sectors. Historic growth patterns, especially in outlying areas, may not be sustainable due to rising fuel costs, demographic factors, housing issues, and other influences.	●			●	●	●	●	●	●	●	●	
4	**Downtown Rapid City** – Downtown Rapid City is the region's economic and cultural hub. The region should continue to invest in downtown Rapid City to ensure a strong and vibrant core. Walkability, parking, housing, and bicycle accessibility issues should be considered.	●			●	●	●	●	●	●	●	●	
5	**Modal Balance** – In order to provide choice and transportation mobility for youth, seniors, persons with disabilities, and others, future investments in the transportation system should shift towards maintenance and alternative modes while funding for roadway capacity might be reduced.				●	●	●	●	●	●	●	●	

		Roadway				Transit				Bicycle / Pedestrian			
		Efficiency	Effectiveness	Cost Effectiveness	Multi-Modal	Population and Employment Served	Served per Route Mile	Cost per Served	Connectivity	Continuity	Potential Use	Joint Construction	Safety
6	**Funding** – Transportation revenues are shrinking in relation to needs. Roadway maintenance typically consumes 60 percent of our transportation funds and needs to be further increased to keep up, leaving very little monies for capacity infrastructure and alternative mode funding. Additional local funding options should be considered.			●							●		
7	**Regional Connections** – Growth in unincorporated areas of Meade and Pennington Counties will need to be connected to the urban area. The rural communities are growing quickly and will face unique transportation problems, such as a rural road transportation system with maintenance and improvement needs that are outweighed by the local community's ability to fund them.	●	●	●	●	●	●	●	●	●	●	●	
8	**Ellsworth Air Force Base** – The base represents a unique and important jobs and cultural resource for the community that should be connected to the larger community and supported to maintain its status as a vibrant employment and activity center.				●	●	●		●	●	●	●	

2. COMMUNITY INVOLVEMENT

The transportation system is a formative element of the built environment, meaning that it greatly influences how our community looks, feels, and operates. Around the Rapid City region, there are streets, sidewalks, buses, recreational trails, signs, bridges, and other reminders that our transportation infrastructure and services are a foundational component of our surroundings. Transportation impacts all of our lives on a daily basis. *RapidTRIP 2035* provides the long-range regional vision for transportation in the community. In this manner it should reflect the needs and desires of the people in the community.

In order to generate interest and involvement by the public, the *RapidTRIP 2035* development process incorporated several different methods to make participating as convenient as possible. Community involvement outreach efforts that occurred throughout the development of *RapidTRIP 2035* include:

- Stakeholder Interviews
- Public Meetings and Open Houses
- Transportation Summit / Connection Workshop
- Online Resident and Business Surveys
- Project Website
- Resource Agency Meetings
- Targeted Outreach to Specific Groups with Common Transportation Interests

The success of a public involvement process cannot necessarily be measured by one open house or public meeting. It is difficult to ask people to take an evening out of their busy lives to spend talking about transportation. That's why the *RapidTRIP 2035* process included so many different ways to participate.

Stakeholder Interviews

March 5th & 6th, 2009

Although many of the requirements for developing a long range transportation plan are the same throughout the nation, each community is different and the transportation planning process is flexible enough to recognize and foster the uniqueness of different regions. Stakeholder Interviews help identify what makes a community special and the core principles that need to be preserved.

The Stakeholders included vested community leaders and residents such as elected officials, business owners and managers, transportation and planning staff from the local communities, transit service providers and patrons, the Chamber of Commerce, developers, school districts, home owner and neighborhood associations, seniors, and social services providers.

Chapter 2: Community Involvement

Approximately 30 interviews with business and community leaders were conducted on Thursday, March 5th and Friday, March 6th. Each interview was approximately 30 minutes in length. The following is a list of Stakeholders that were interviewed:

Sam Brannan	Mining Industry, Chamber of Commerce
John Brewer	Destination Rapid City
Bob Drew	Coldwell Banker
Helen Usera	Principal, Meade School District
Julie Jones	Rapid City Convention and Visitors Bureau
Michelle Thomson	Rapid City Convention and Visitors Bureau
Hani Shafai	Dream Design International
Roger Gallimore	YMCA of Rapid City
Alan Hanks	Mayor, City of Rapid City
Jim McCoy	Neighborhood Watch, North Rapid Civic Association
Cindy Wilczynski	South Dakota Department of Labor
Twila Ferguson	South Dakota Department of Labor
Mike McMahon	City of Box Elder
Dan Staton	South Dakota Department of Transportation
James Johns	Rapid City Police Department
Nancy Trautman	Pennington County Commissioner
Debra Jensen	Black Hills Bagels
Char Crisp	Western Resources for Disabled Independence
Brad Saathoff	Black Hills Workshop
Colleen Ronning	Black Hills Workshop
Chuck Henrie	Black Hills Workshop
Pat McElgunn	Rapid City Chamber of Commerce
Verne Osterloo	Rapid City Regional Hospital
Timothy Henderson	South Dakota School of Mines
Al Dial	Mayor, City of Box Elder
Tom Collings	Rapid City Mayors Committee for People with Disabilities
Jerry Shoener	South Dakota Transportation Commission
Craig Bailey	Western Dakota Technical Institute

RapidTRIP 2035

YOU ARE INVITED TO PARTICIPATE!

WHO: Community and Business Leaders
WHAT: Stakeholder Interviews
WHEN: Various Appointments, March 5-6, 2009
WHERE: City School Administration Center, 300 South Sixth Street, Rapid City

The Plan – *RapidTRIP 2035*

The Rapid City Area Metropolitan Planning Organization is embarking on the development of an updated transportation plan for the region called *RapidTRIP 2035 (TRIP = TRansportation Integrated Plan)*. This Plan will become the blueprint for planning, constructing, and maintaining our roadway, transit, bicycle, and pedestrian transportation systems. It is the long-range transportation vision for the region and directs the spending of transportation funding in the Rapid City region. Your input into this process is important to the community and to the success of this project.

About the Stakeholder Interviews

To kick off this work effort, the consultants working on this project will be in the Rapid City area on Thursday, March 5th, and Friday, March 6th, to conduct interviews with key stakeholders. If you or someone else from your organization is available on either of those dates for a short, 30-minute interview in downtown Rapid City, we would like to meet with you.

Schedule Your 30-Minute Interview!

We will follow-up this invitation with a phone call in the next few days. However, if you would like to be one of the first to schedule your interview, please call Elissa Palmer at 970-494-1568, email her at elissa.palmer@lsa-assoc.com, or fax this form to 970-494-1579 with your first and second choices indicated in the table below.

Select Interview Date & Time	8:00 - 8:30	8:30 - 9:00	9:00 - 9:30	9:30 - 10:00	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - noon	noon - 12:30	12:30 - 1:00	1:00 - 1:30	1:30 - 2:00	2:00 - 2:30	2:30 - 3:00	3:00 - 3:30
Thursday, March 5															
Friday, March 6															

The Rapid City region is moving forward and needs your help! Thank you in advance for your assistance in supporting *RapidTRIP 2035*.

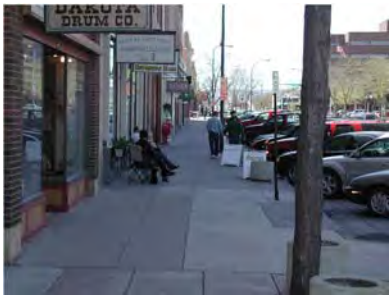
LSA

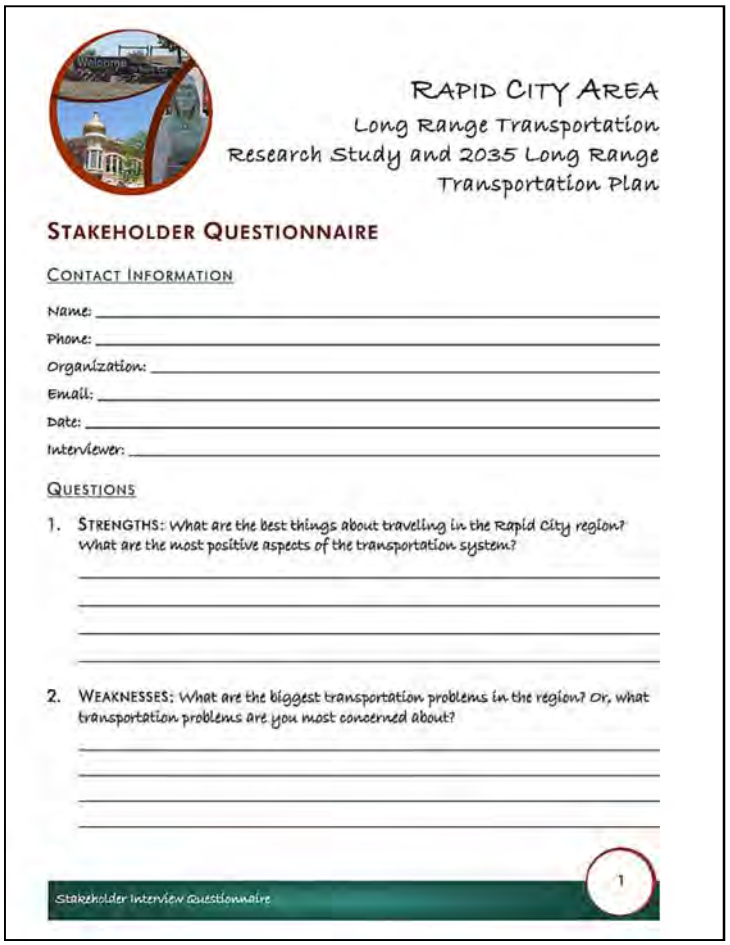
Catalyst Consulting

What We Heard from the Stakeholders

What was learned from the Stakeholder interviews shaped the Transportation Summit public meetings held in May of 2009. The Stakeholders also provided many multi-modal ideas at both the project and strategic levels.

There were many ideas and varied opinions expressed by the stakeholders. An attempt was made to boil them down to common themes, but the summary below can only begin to characterize the wealth of knowledge provided by these community leaders who donated their ideas and valuable time to the future of the Rapid City area. While the focus of *RapidTRIP 2035* is transportation by auto, bus, bicycle, and walking, the relationship between transportation and land use, environment, quality of life, and economy cannot be denied. The summaries include comments that embody all of these related factors that affect the lives of those who live, work, and play in the Rapid City area.





RAPID CITY AREA
Long Range Transportation Research Study and 2035 Long Range Transportation Plan

STAKEHOLDER QUESTIONNAIRE

CONTACT INFORMATION

Name: _____
Phone: _____
Organization: _____
Email: _____
Date: _____
Interviewer: _____

QUESTIONS

1. STRENGTHS: What are the best things about traveling in the Rapid City region? What are the most positive aspects of the transportation system?

2. WEAKNESSES: What are the biggest transportation problems in the region? Or, what transportation problems are you most concerned about?

Stakeholder Interview Questionnaire 1

1. Future Needs and Challenges

- There is both fear of and hope for the future.
- While challenges are recognized, they can be met through careful planning and community involvement.
- Gas prices and energy costs will become much larger problems in the future and will have a profound effect on land use, transportation, quality of life, and many other factors.
- Right-of-way should be preserved for future transportation needs.
- The population is growing older, which will require unique transportation solutions.
- Topography will always present challenges.

2. Land Use Planning

- The Western culture and heritage of the region should be maintained.
- Traditional growth patterns will continue to make suburban jobs difficult to access without a personal automobile.
- Low density developments in rural areas are expensive to serve from a transportation perspective.
- Rural character and property rights should be preserved.
- Energy costs could have a significant effect on future land development as increased travel costs negate the lower costs of land on the urban fringe and rural areas.
- Rapid City will continue to be a regional service center for retail, medical, education, technology, and other economic sectors.
- Growth corridors should be planned and developed carefully.
- Investment in north Rapid should continue.
- Ellsworth Air Force Base should be strengthened by investing in infrastructure, services, and planning.

3. Downtown Rapid City

- Main Street and St. Joseph Street – Several concerns were voiced related to Design issues on Main Street and St. Joseph Street should be reviewed. While these roads do a good job of moving traffic through downtown, the designs may not be conducive to promoting walking, biking, and other activities downtown like sidewalk cafes.
- Omaha Street prompted several comments both positive and negative in relation to the existing mid-block pedestrian crosswalk on Omaha. While the current configuration is safe and functional, there may be opportunities to better connect downtown Rapid City with the Civic Center / Central High School area.
- A parking authority should be formed to manage parking issues downtown and elsewhere.
- Downtown Rapid City should have more housing and multi-use developments.

4. Rural Communities

- The rural communities are growing quickly and will face unique transportation and other problems, including a primitive roadway system with significant maintenance and improvement needs that are outweighed by the local community's ability to fund them.
- Rural community character and rural property development rights should be preserved.

5. Neighborhoods

- Neighborhood street maintenance is a growing problem. There is no dedicated funding source to reconstruct local streets.
- Neighborhoods should be more self-sustaining with more commercial and other uses close by.

6. Regional Connections

- The Heartland Express should be completed to I-80 in Nebraska.
- Regional connections to Box Elder, Summerset, Black Hawk, and other urbanizing rural areas will be a challenge to accommodate.

- Military personnel at Ellsworth Air Force Base need better access to the community.

7. ROADWAY SYSTEM

- There is a need for more east/west arterial street capacity within Rapid City due to disconnected and limited existing facilities.
- Getting through the congested Gap, including going north to go west, is one of the region's biggest problems with regard to roadway capacity.
- Generally, congestion is not a major concern but it will get worse over time.
- Street names in the region are disconnected and confusing.

- Right-of-way should be preserved for future traffic needs before growth consumes the available land.
- Topography will continue to increase maintenance and construction costs for bridge and culvert crossings.

8. TRANSIT

- More bus routes and service in the evenings and weekends are necessary to provide job accessibility to local residents. Social services representatives (e.g., workforce development, rehab facilities, disabled persons, etc.) were particularly vocal about the need for enhanced bus service to serve their clients.
- More destinations should be served within the community, including corridors with affordable housing.

- The bus system will be even more of a fundamental component of the region's transportation system in the future due to changing population needs and increased energy costs.
- The ability of transit to pay for itself relative to other modes should be identified.
- Non-profit transportation fleets contribute significantly to the mobility needs for disabled persons. These services should be coordinated and consolidated into the public system to the extent possible.

9. Bicycle Network

- The existing bike path is an important component of the transportation system due to the east/west connectivity it provides. A similar north/south facility should be implemented.
- The bicycle network should be expanded to serve commuter cyclists and not just recreational trips. This includes additional off-street multi-use trails and on-street bicycle lanes; although some comments indicated that bike lanes were not wanted on new roads.
- The transportation system should support healthy lifestyles.

10. Pedestrians

- Pedestrian mobility should be elevated in importance in the community. Many roads do not have sidewalks on one or both sides of the street.
- Pedestrian access and mobility in downtown Rapid City is deficient and unfriendly to some stakeholders.
- The transportation system should support healthy lifestyles.

11. Funding

- Funding shortfalls are a major concern and the need to increase transportation revenues should be considered.
- Investment in North Rapid should increase.
- The amount that Rapid City residents currently pay for transportation and how much additional funding will be necessary to keep pace with future transportation improvement and maintenance needs should be reported.

12. Freight / Intermodal

- The TransLoad facility and its associated truck traffic will cause significant impacts to the local and regional street system. There was general agreement that something needed to be done to manage the impacts, but what should be done and how it should be paid for remain important questions.

Public Meetings

Throughout the development of *RapidTRIP 2035*, public meetings were the one of the primary means of involving the community in the process. Public meetings were conducted in the locations and dates shown in Table 2-1.

Table 2-1: *RapidTRIP 2035* Public Meetings

Meeting Date	Location
Monday, October 26, 2009	*Box Elder / Ellsworth AFB Area Open House* *Box Elder City Council Chambers,* *520 N. Ellsworth Road, Suite 9C, Box Elder*
Tuesday, October 27, 2009	*Rapid City Area Open House* *City/School Administration Building,* *300 Sixth Street, 3rd Floor West, Rapid City*
Wednesday, October 28, 2009	*Meade County/ Piedmont /Summerset Area Open House* *Sommerset City Council Chambers,* *7055 Leisure Lane, Suite A, Sommerset*
Monday, April 5, 2010	*Box Elder / Ellsworth AFB Area* *Box Elder City Council Chambers* *520 N. Ellsworth Road, Suite 9C, Box Elder*
Tuesday, April 6, 2010	*Rapid City Area* *City/School Administration Building* *(First Floor Community Room)* *300 Sixth Street, Rapid City*
Tuesday, April 6, 2010	*Meade County/ Piedmont /* *Summerset Area* *Summerset City Council Chambers* *7055 Leisure Lane, Suite A, Summerset*

The Rapid City Metropolitan Planning Organization hosted public open houses at three locations during Phase II of the planning process - Rapid City, Box Elder, and Summerset/Meade County. In Box Elder and Summerset/Meade County, the open events were combined with the focus groups and results are summarized below under *Targeted Outreach Focus Groups*.

Information presented at each event included updates on the *RapidTRIP 2035* process, maps for each transportation mode, and results from the Phase I public outreach efforts including suggested transportation improvements, modal funding levels, local needs and desires from the customer satisfaction surveys and Transportation Summit/Connections event. The following information was presented at each open house:

- Process, Schedule, and Definitions
- Land Use and Socioeconomic Forecasts
- Roadway Congestion and Level of Service
- Feedback from Phase I

- Alternative Modes
- Roadway Alternatives
- Truck and Delivery Routes
- Funding Options

Two participants attended the Rapid City Open House. Input from these individuals included priorities on potential funding mechanisms as follows:

- Funding Option #6 – Vehicle Miles of Travel (Odometer Fees) - This option makes sense if based on manual odometer reading and not a microchip.

- Funding Option #10 – Vehicle Registration Fees – This is a good option because of the number of cars owned by local households and the relatively low vehicle registration fees in South Dakota compared to other states.

In Phase III, additional open houses were held to obtain input from the public on specific modal and funding choices. The following questions and issues were discussed with participants:

1. What is the single biggest challenge to traveling in the Rapid City Area?

2. What is your first choice for a specific transportation service or improvement in the Rapid City area?

3. How can we use our roadways most efficiently?

4. Should roadways support other travel modes (bicycle, transit, and pedestrian) and, if so, how?

5. What are the highest priority roadway improvements in the Rapid City area and why?

6. If additional funding were available for roadways, how would you choose to spend it? Check your top priority.

_____ Maintain existing roads
_____ Improve operations of roadways (e.g., traffic signal timing/progression)
_____ Widen existing roads
_____ Construct new roads/expand the system
_____ Other

7. How can the on and off-street bicycle facilities be better connected with each other and the rest of the transportation system?

8. How do you view on-street bike lanes versus off-street bike paths and why?

9. Where is the greatest opportunity to improve safety for bicyclists in the area? For example, where should we install enhanced bicycle and pedestrian crossings of roadways?

10. In your opinion, what are the most important improvements to the bicycle network in Rapid City Area?

11. What can be done to improve safety and access for pedestrians in the Rapid City area? What locations have safety concerns that should be addressed?

12. In your opinion, what are the most important areas for pedestrian improvements in the City? What types of improvements are needed and where?

13. How can access to and from the bus best be improved?

14. If additional funding for Transit were available, how would you spend it? Check your top priority.

15. What improvements to the local bus system are most needed?

16. Based on your knowledge of the transportation system and future growth pressures, do you feel that that funding for transportation in the Rapid City area:

- ☐ Is about right
- ☐ Needs to be increased
- ☐ Should be decreased
- ☐ Don't know/Need more information

17. In the previous question, if you responded that transportation funding is about right or needs to be increased, what additional funding sources should be pursued and why?

18. What questions do you have about travel in the Rapid City Area that you would like answered through this plan?

At each of the public meetings, a series of presentation boards were prepared in an open house format to provide information on the planning process, schedule, goals, modal plan alternatives and analysis, and the draft plan. Information brochures were printed and distributed to those that attended. Comment forms were available for the public to complete, and staff was available to present and discuss topics of interest with participants.

In addition to the public meetings, community involvement was pursued through information postings on the City's website and through the Metropolitan Planning Organization's committee process that includes a Citizens Advisory Committee, Technical Coordinating Committee, and an Executive Policy Committee.

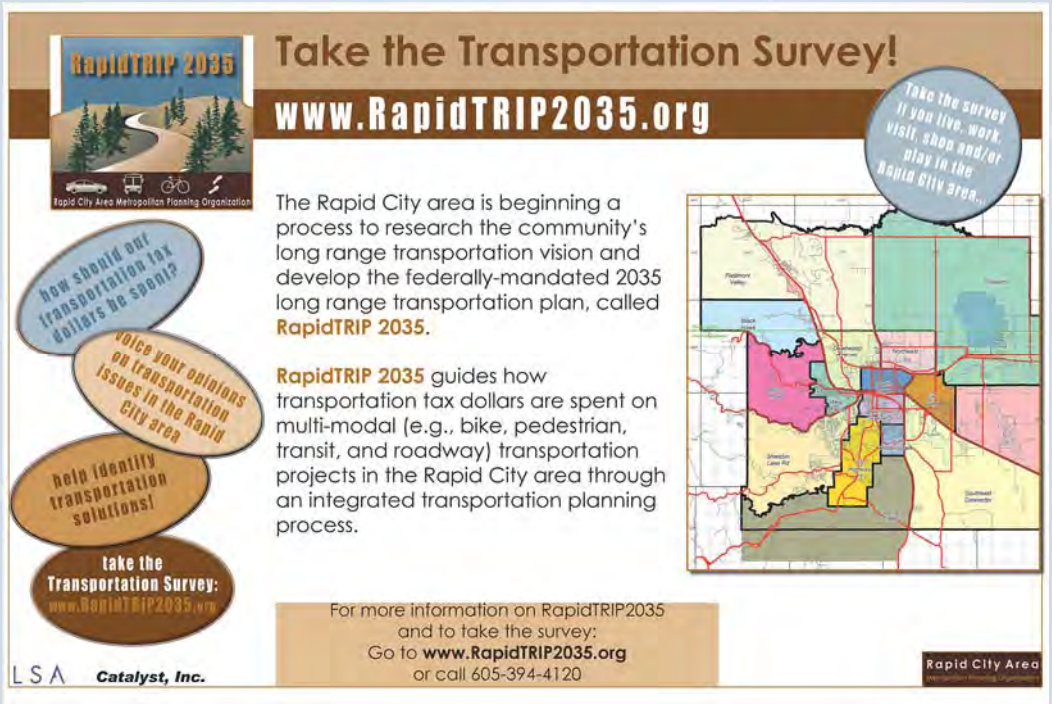
Comments and suggestions from the public were taken seriously and incorporated into the planning process and plan document to the extent possible and practical. Many of the transit, pedestrian/bicycle, and roadway alternatives were ideas received from the public.

Resident Online Transportation Survey – March / April 2009

One of the first activities undertaken in the development of *RapidTRIP 2035* was a transportation survey of those who live, work, visit, shop, and/or play in the Rapid City area. The survey provided valuable information about the opinions and desires of the region's transportation system users.

The Resident Transportation Survey was widely distributed via contacts from staff, committee members, stakeholders, consultants, and others. The survey was active for about five weeks from the middle of March until the end of April 2009. Over 250 people participated in the survey. This represents extensive participation by the general public, although it is recognized that some biases may be present in a semi-random, self-selected survey. To those who participated in the Resident Transportation Survey – *Thank You!*

Results from the survey responses are discussed in the following sections. Since the survey contained an extensive set of questions, only selected results are published in this report. A full report of the survey questions and responses is available in the Technical Appendix.

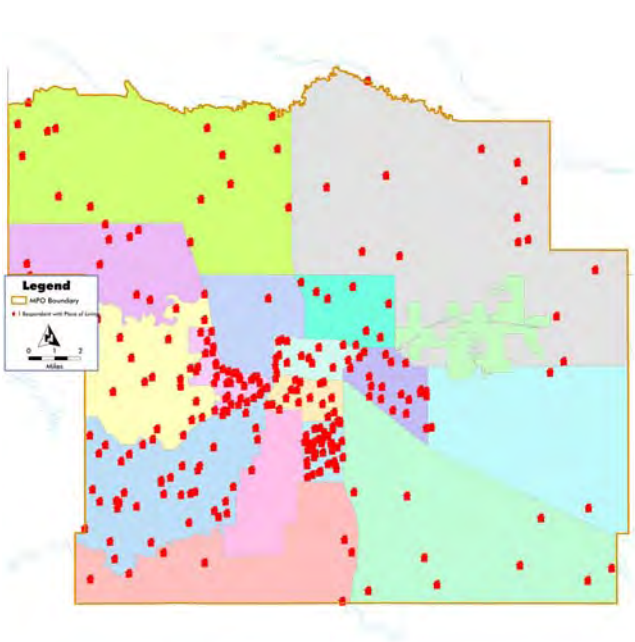


Selected Results from the Resident Transportation Survey

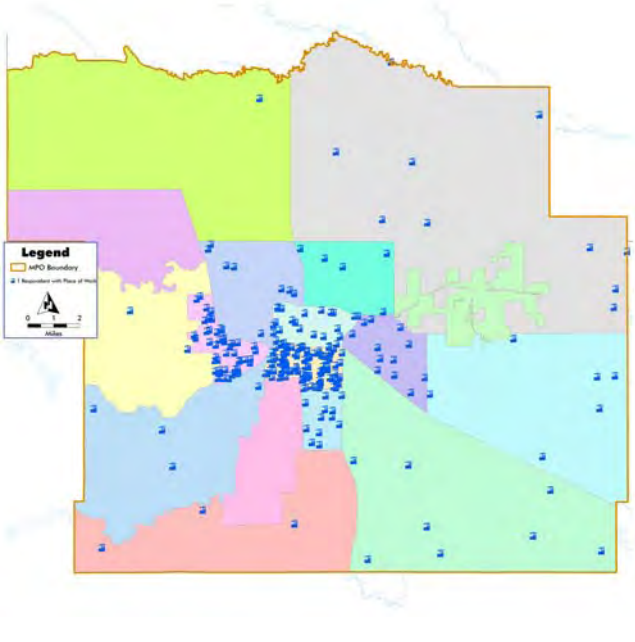
The following survey results are a snap-shot of the data that is available. The information from the Resident Transportation Survey is a significant input into the formation of the Key Messages.

1. WHERE DO YOU LIVE AND WORK?

I Live in:



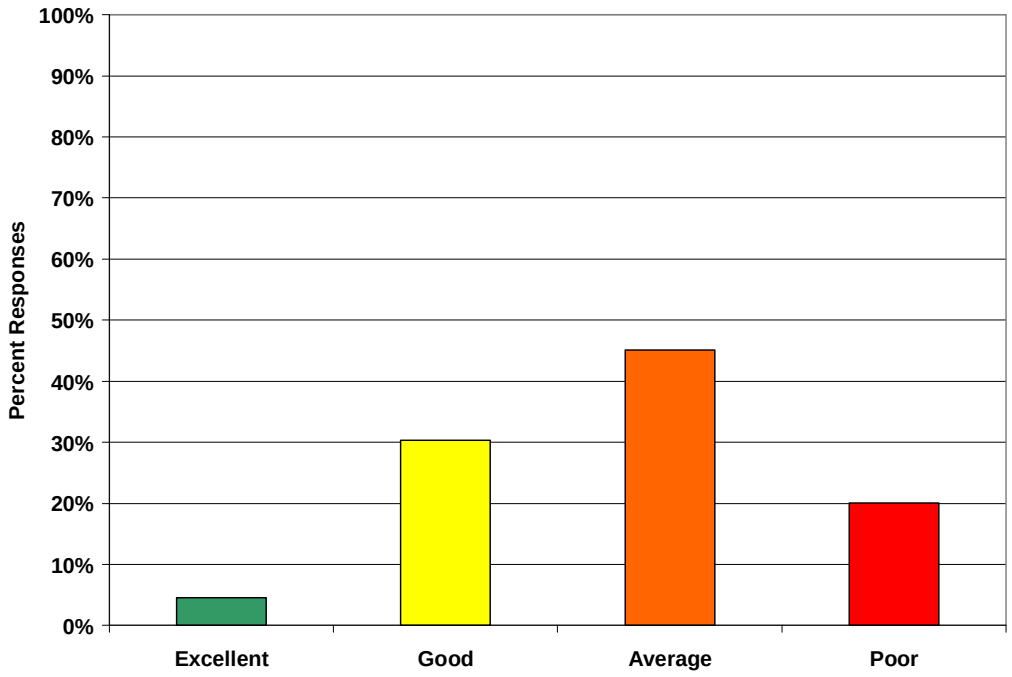
I Work in:



Responses to the online survey came from over 250 residents across the planning area.

Safety

2. HOW WOULD YOU RATE *TRAFFIC SAFETY* IN THE RAPID CITY AREA?



3. HOW WOULD YOU RATE THE FOLLOWING AREAS FOR BICYCLE SAFETY IN THE RAPID CITY AREA? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

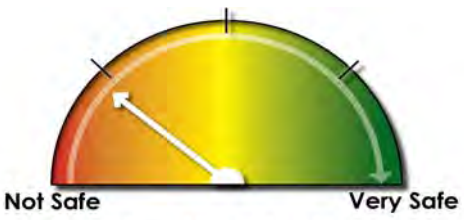
On Roadways

On Roadways with Bike Lanes or Wide Shoulders

To the Parks and Open Spaces in Your Neighborhood

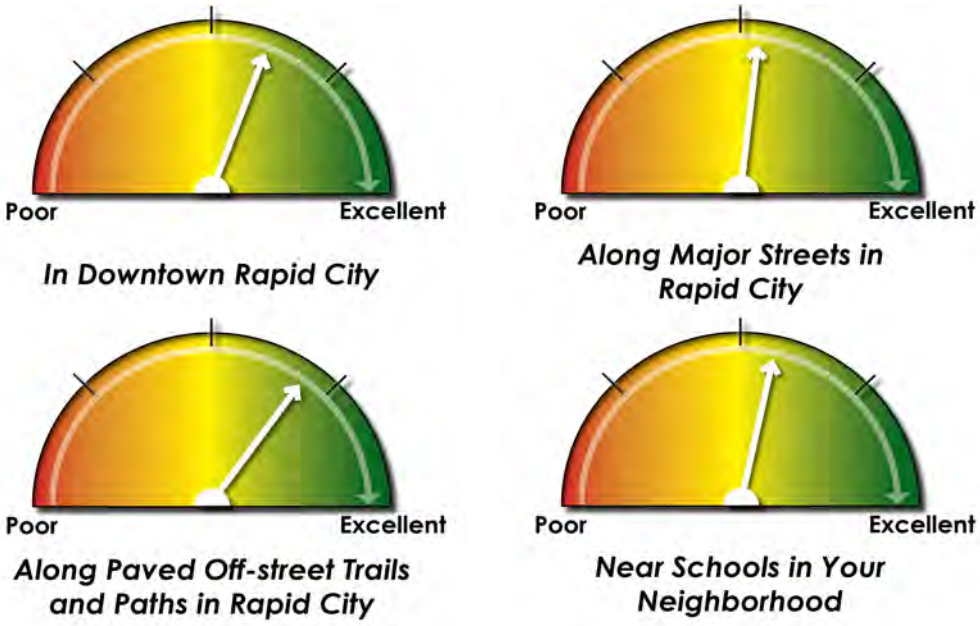
On Paved Recreational Trails

To the Schools in Your Neighborhood



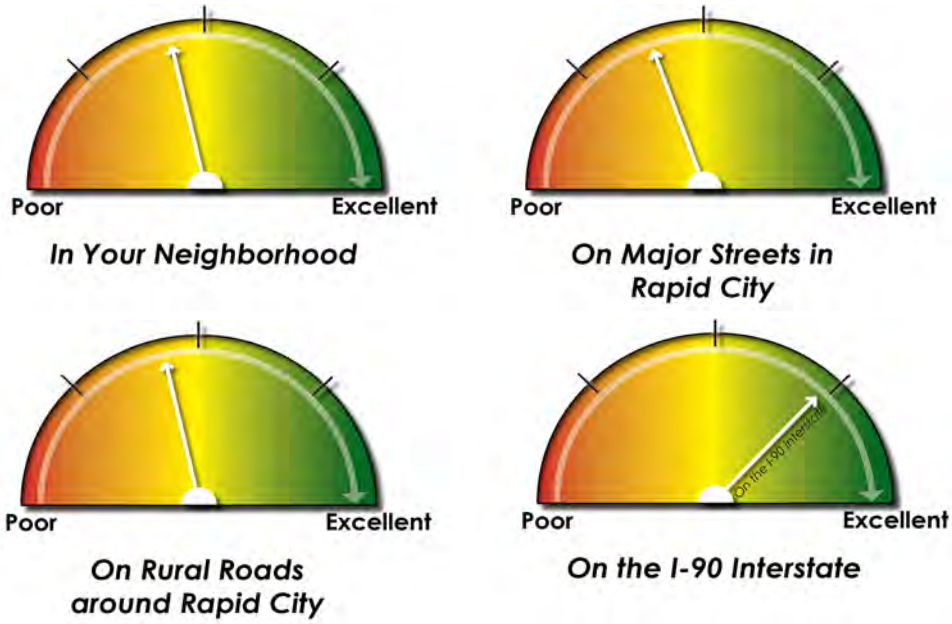
From Your Neighborhood to Local Shopping

4. HOW WOULD YOU RATE THE FOLLOWING AREAS FOR PEDESTRIAN SAFETY AND OTHER FACTORS THAT PROMOTE WALKING? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)



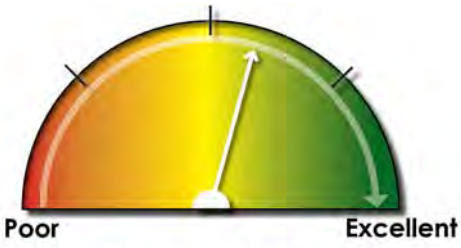
Conditions and Maintenance of Streets

1. HOW WOULD YOU RATE THE *CONDITION AND MAINTENANCE OF STREETS* IN THE RAPID CITY AREA? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)



Traffic Congestion

1. HOW WOULD YOU RATE THE *EASE OF TRAVEL BY CAR?* (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)



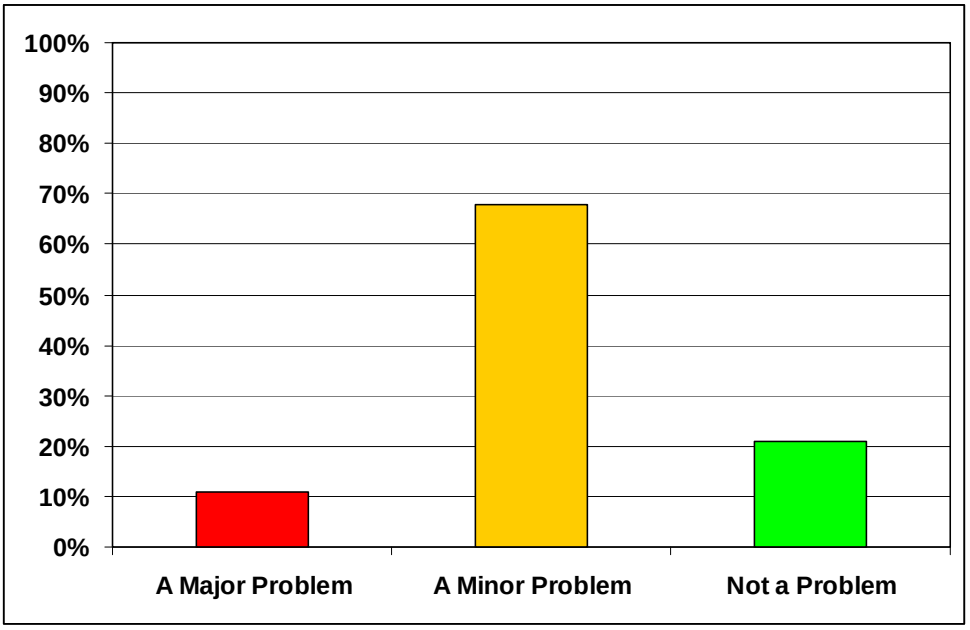
On major streets that run north/south in Rapid City

On major streets that run east/ west in Rapid City

2. PLEASE INDICATE WHETHER YOU WOULD CONSIDER THE FOLLOWING SITUATIONS TO BE EXAMPLES OF *TRAFFIC CONGESTION.*

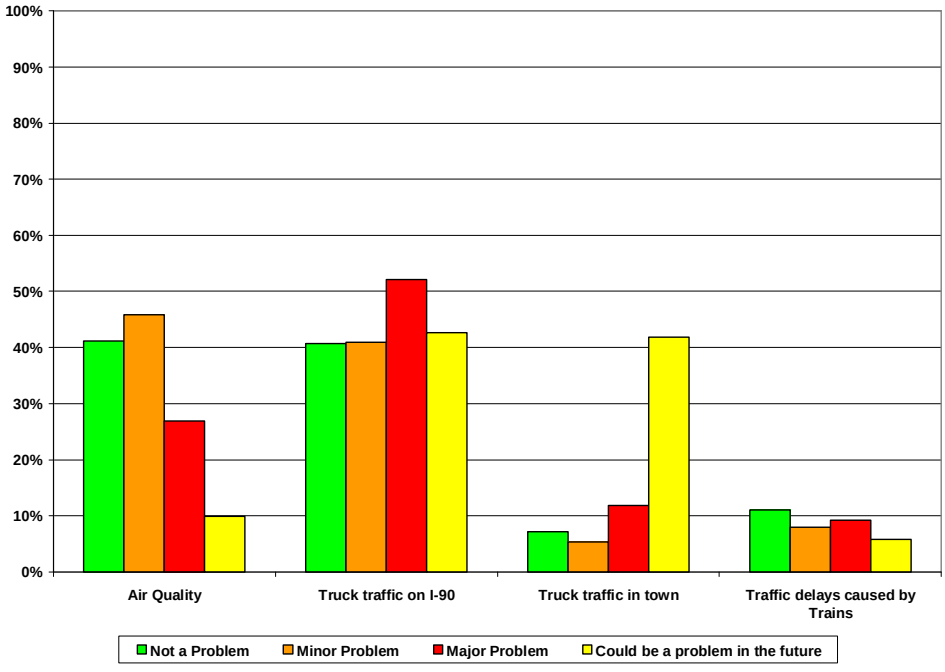
- Very few respondents (6%) thought driving at the posted speed limit was congestion.
- A higher amount (36%) indicated that driving 5 miles per hour lower than the speed limit was congestion.
- About 66% of respondents said that being stopped at half of the signalized intersections encountered was congestion.
- Approximately 90% of respondents indicated that the following situations were examples of congestion:
    - Driving at least 10 mph slower than the posted speed limit,
    - Being stopped by more than 2 red light cycles at the same intersection, and
    - Driving In traffic that is barely moving or stopped.

3. OVERALL, DO YOU THINK THE *CURRENT LEVEL OF TRAFFIC CONGESTION* IN THE RAPID CITY AREA IS:



Issues and Concerns

1. HOW DO YOU RATE THE FOLLOWING ISSUES IN THE RAPID CITY AREA?



2. PLEASE INDICATE YOUR *LEVEL OF SUPPORT* FOR THE FOLLOWING STATEMENTS (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION)

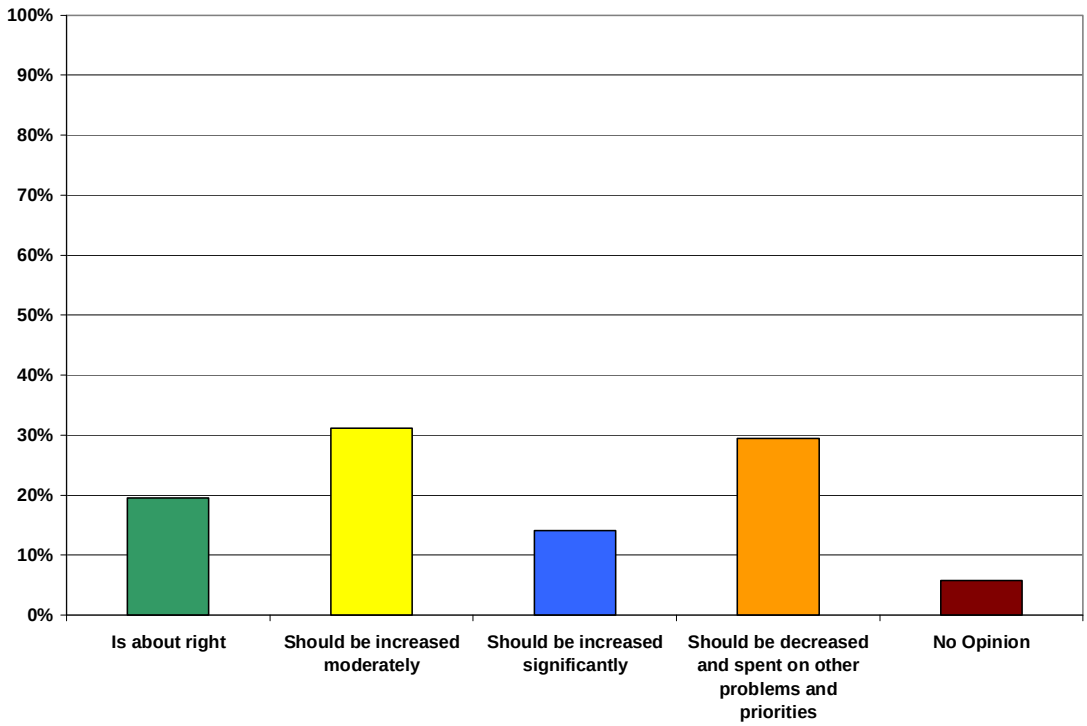
Driveway access should be consolidated in commercial corridors to increase traffic flow and traffic safety.

Streets should be improved to accommodate all modes of travel – auto, truck, bus, pedestrian, and bicycle.

Sidewalks and trails to increase connectivity for pedestrians and bicyclists in neighborhoods should be provided in all new developments.

Taxes and Transportation

1. IN YOUR OPINION, DOES IT APPEAR THAT THE AMOUNT OF *TAX FUNDING* SPENT ON TRANSPORTATION IN THE RAPID CITY AREA:



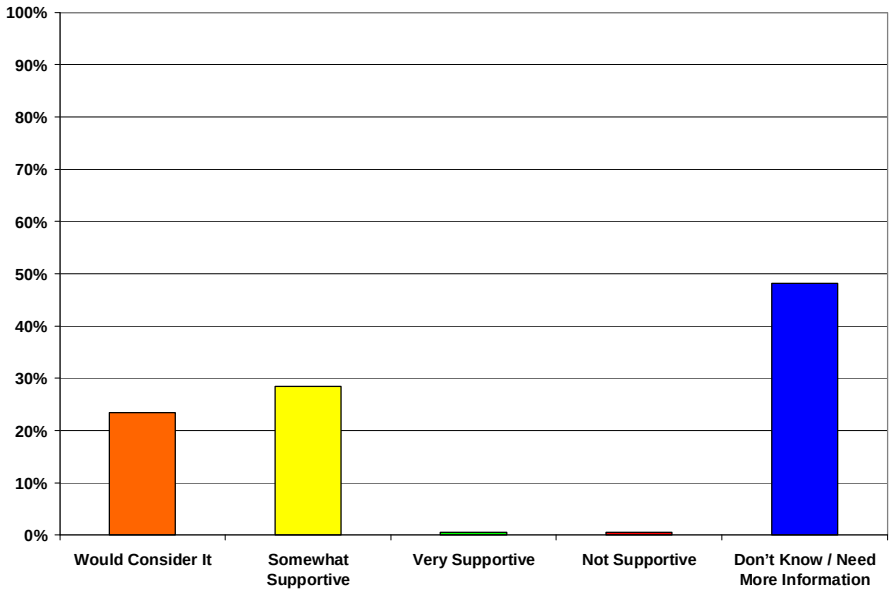
2. HOW WILLING ARE YOU TO HAVE YOUR *TAX DOLLARS* USED TO SUPPORT THE FOLLOWING IMPROVEMENTS? (AVERAGE RATING SHOWN WHERE 1 = NOT WILLING AND 5 = VERY WILLING)

More Willing

Less Willing

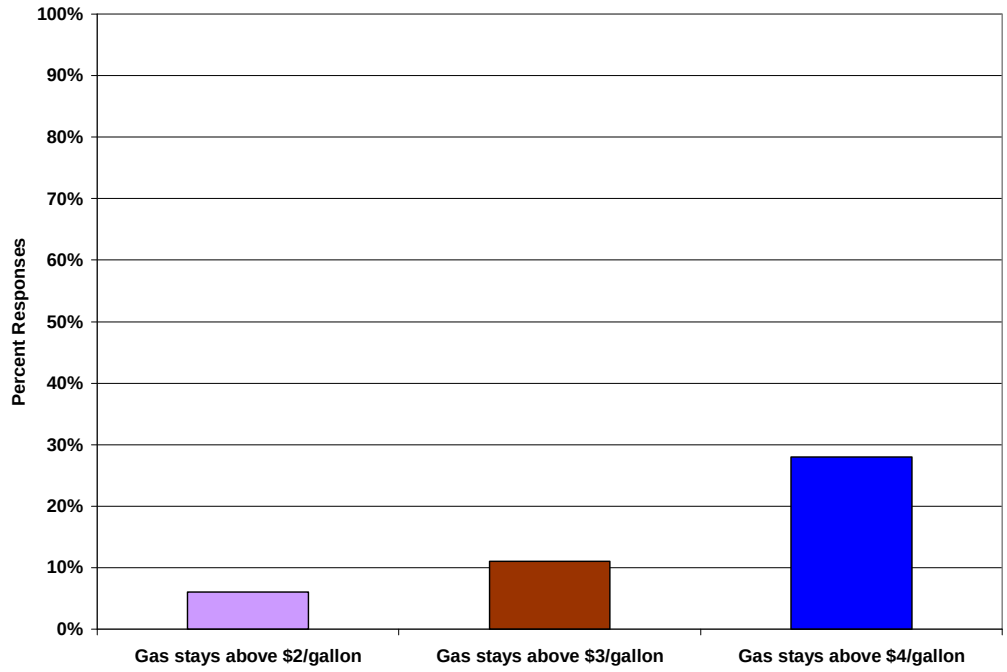
Improvements	Average Rating
Improving major streets in the Rapid City area	3.7
Adding pedestrian facilities such as sidewalks, crosswalks, bridges, etc.	3.7
Adding trails for walking and bicycling	3.5
Improving the timing of traffic signals	3.4
Improving transportation for seniors and persons with disabilities	3.4
Attracting more airlines and flights to the airport	3.3
Reducing delays caused by trains	3.2
Adding on-street bike lanes	3.0
Adding more bus routes to serve more of the community	3.0
Improving rural roads around Rapid City area	2.7
Adding bus service in the evenings	2.7
Adding bus service on weekends	2.7
Improving the airport	2.5
Improving I-90 interchanges	2.2
New interchanges on I-90	2.0
Adding lanes to I-90	1.9
Improving roads in Box Elder and Summerset	1.9

3. HOW SUPPORTIVE WOULD YOU BE OF PAYING A *SMALL INCREASE IN TAXES* TO INCREASE FUNDING FOR TRANSPORTATION IN THE RAPID CITY AREA?



RapidRide Bus System

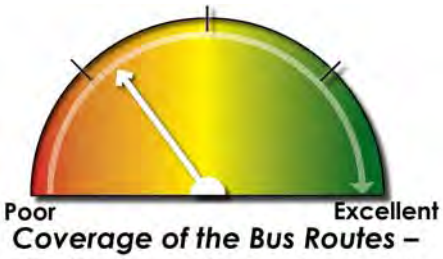
1. HOW LIKELY WOULD YOU BE TO *USE THE BUS* MORE OFTEN IF:



2. WHAT IS YOUR IMPRESSION OF THE BUS SYSTEM? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

Frequency of the Buses

On-Time Reliability of the Bus



Coverage of the Bus Routes – Do they go where you need them to go?

Bus Stop Locations

Condition of Bus Shelters

Employer Online Transportation Survey – May/June 2009

The Employer Transportation Survey was geared towards transportation issues for businesses/agencies and their customers, clients, and employees. It was administered through invitation only to business owners or managers and managers/directors in public agencies.

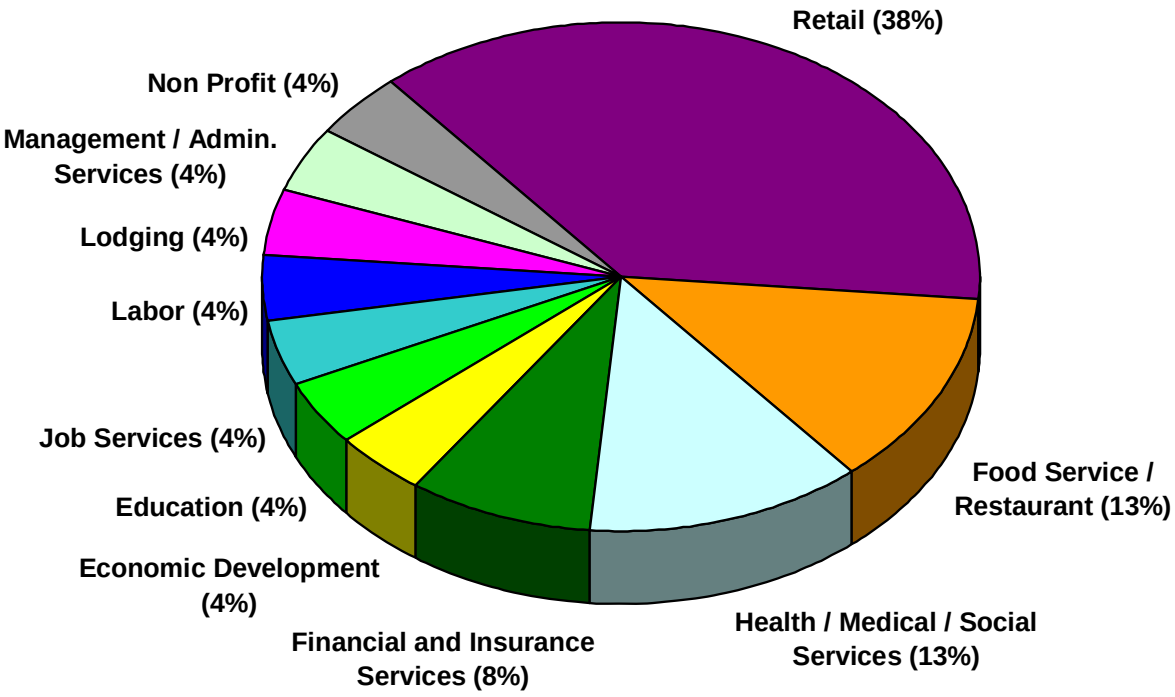
Results from the survey responses are discussed in the following sections. Since the survey contained an extensive set of questions, only selected results are published in this report. A full report of the survey questions and responses is available in the Technical Appendix.

Selected Results from the Employer Transportation Survey

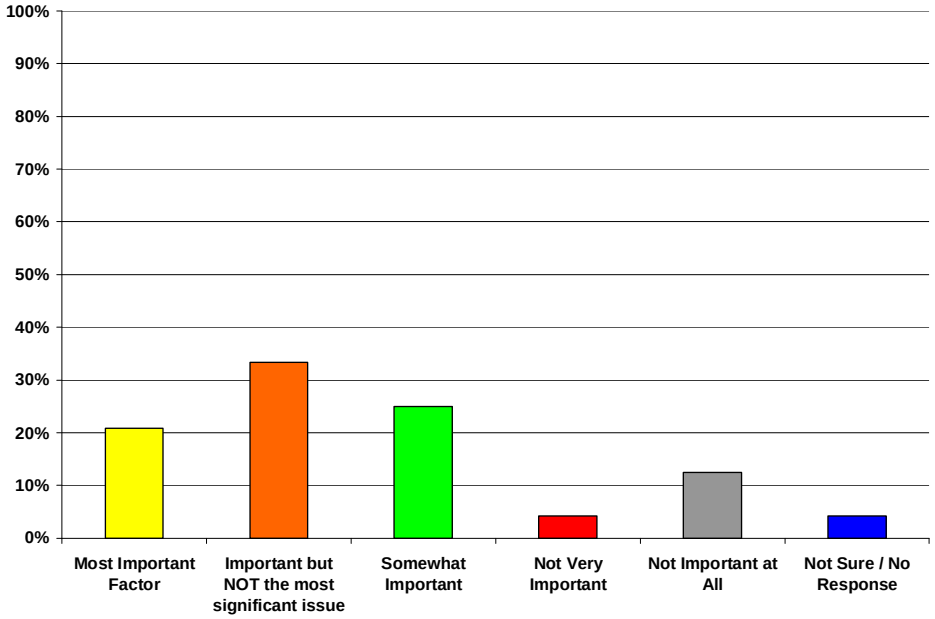
The following survey results are a snap-shot of the data that is available. The information from the Resident Transportation Survey is a significant input into the formation of the Key Messages from Phase I.

Characteristics of Respondents and Businesses

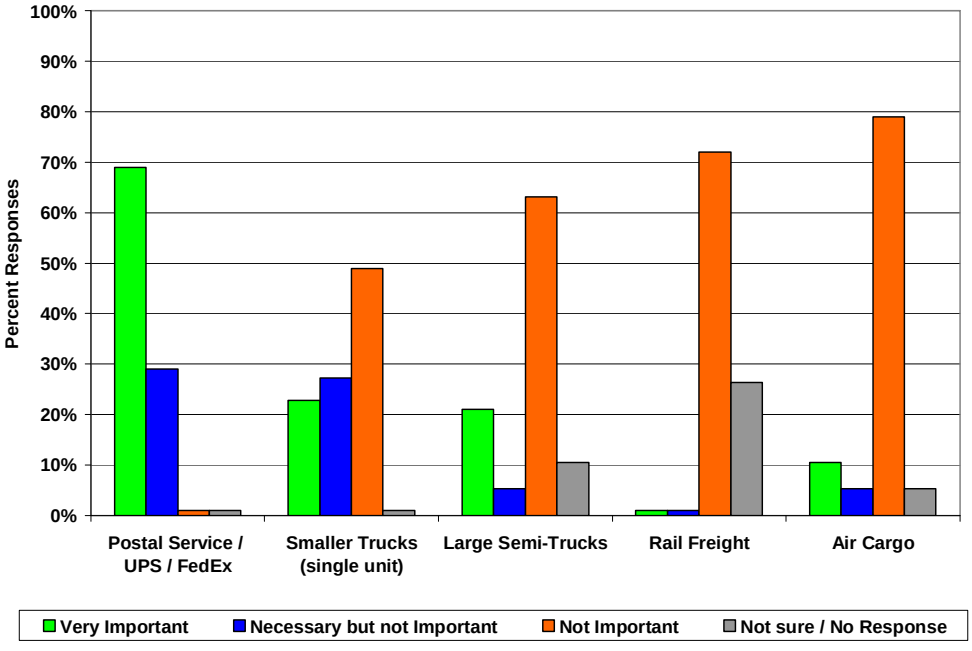
1. WHICH OF THE FOLLOWING BEST *DESCRIBES YOUR BUSINESS?*



2. HOW IMPORTANT WAS *TRANSPORTATION INFRASTRUCTURE* IN SELECTING WHERE YOUR BUSINESS IS LOCATED?

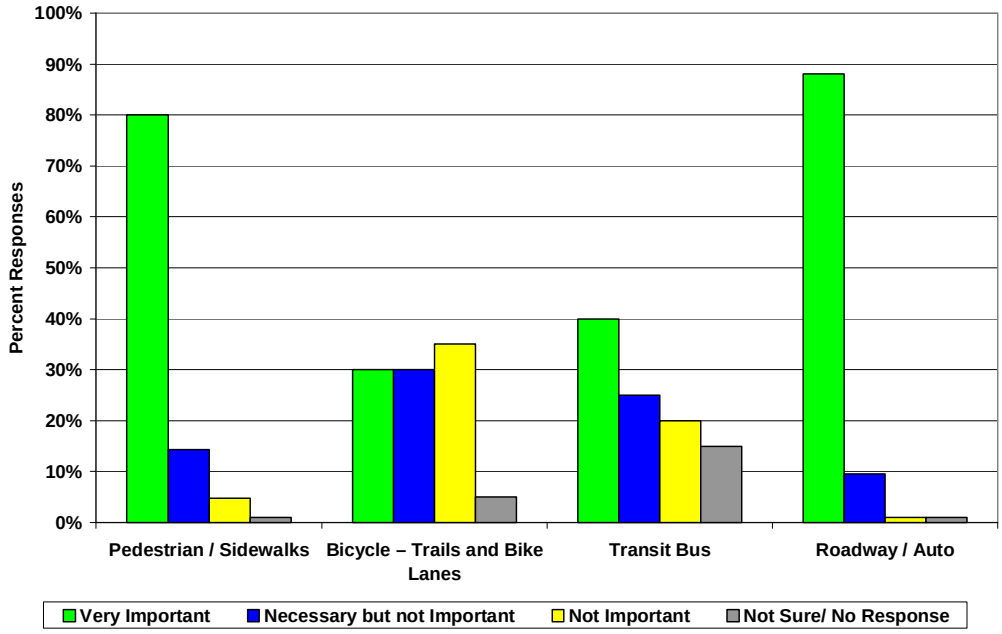


3. WHICH OF THE FOLLOWING *FREIGHT TRANSPORT OPTIONS* ARE IMPORTANT TO YOUR BUSINESS?

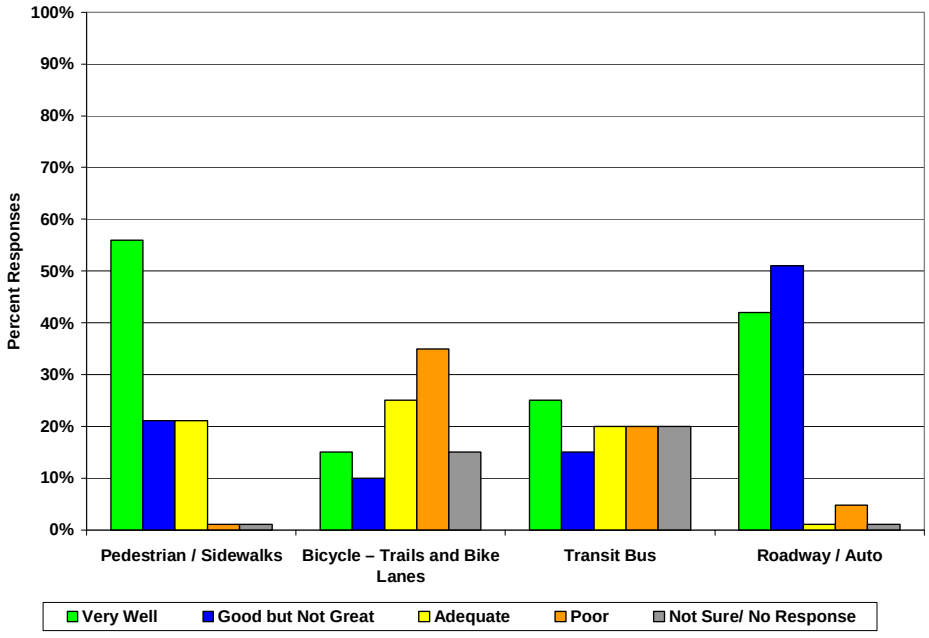


Customers and Clients

1. HOW IMPORTANT IS IT FOR YOUR *CUSTOMERS TO HAVE GOOD ACCESS TO YOUR PLACE OF BUSINESS* FOR THE FOLLOWING TRAVEL MODES?

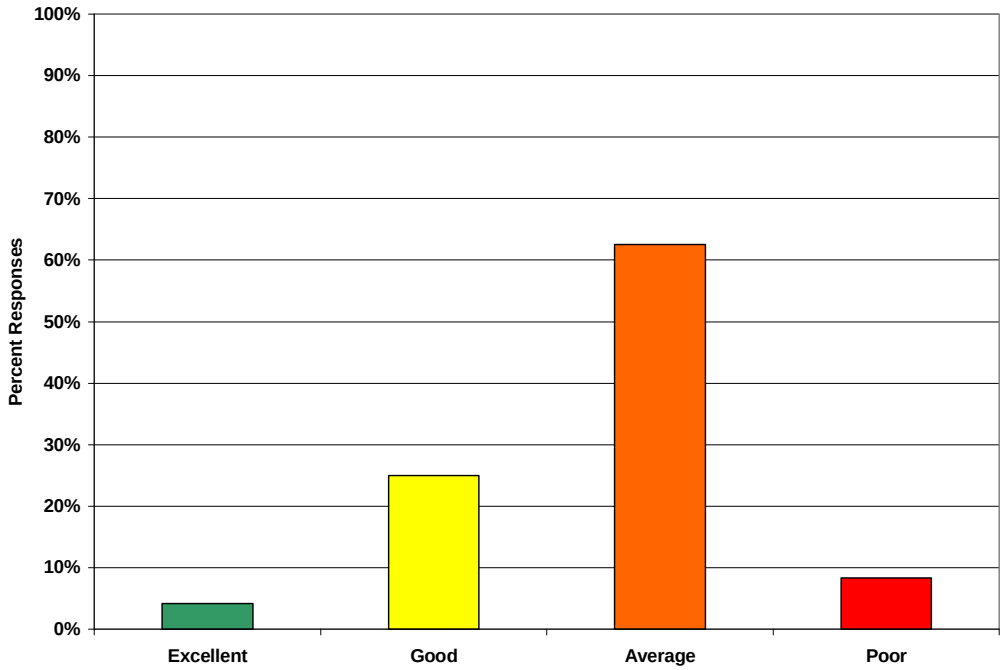


2. HOW WELL DO THE FOLLOWING *TRAVEL MODES* SERVE YOUR PLACE OF BUSINESS *FOR YOUR CUSTOMERS AND CLIENTS?*

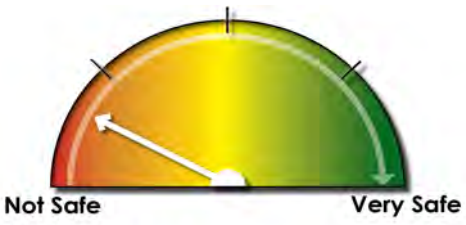


Safety

1. HOW WOULD YOU RATE *TRAFFIC SAFETY* IN THE RAPID CITY AREA?



2. HOW WOULD YOU RATE THE FOLLOWING AREAS FOR *BICYCLE SAFETY* IN THE RAPID CITY AREA? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)



On Roadways

On Roadways with Bike Lanes or Wide Shoulders

On Paved Recreational Trails

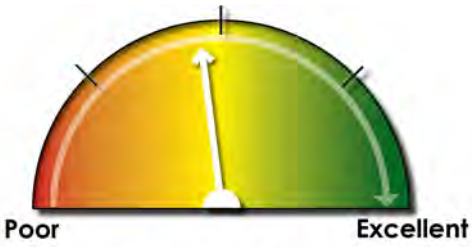
In the Vicinity of Your Business

3. HOW WOULD YOU RATE THE FOLLOWING AREAS FOR *PEDESTRIAN SAFETY* AND OTHER FACTORS THAT PROMOTE WALKING? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

In Downtown Rapid City

Along Major Streets in Rapid City

Along Paved Off-street Trails and Paths in Rapid City



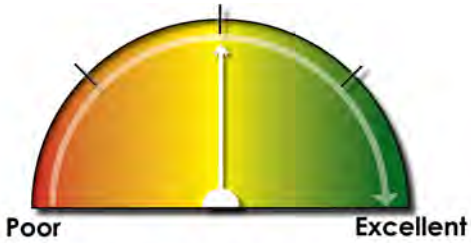
In the Vicinity of Your Business

Condition and Maintenance of Street

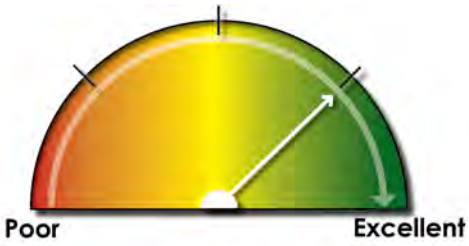
1. HOW WOULD YOU RATE THE *CONDITION AND MAINTENANCE OF STREETS* IN THE RAPID CITY AREA? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

On Major Streets in Rapid City

On Rural Roads in Rapid City



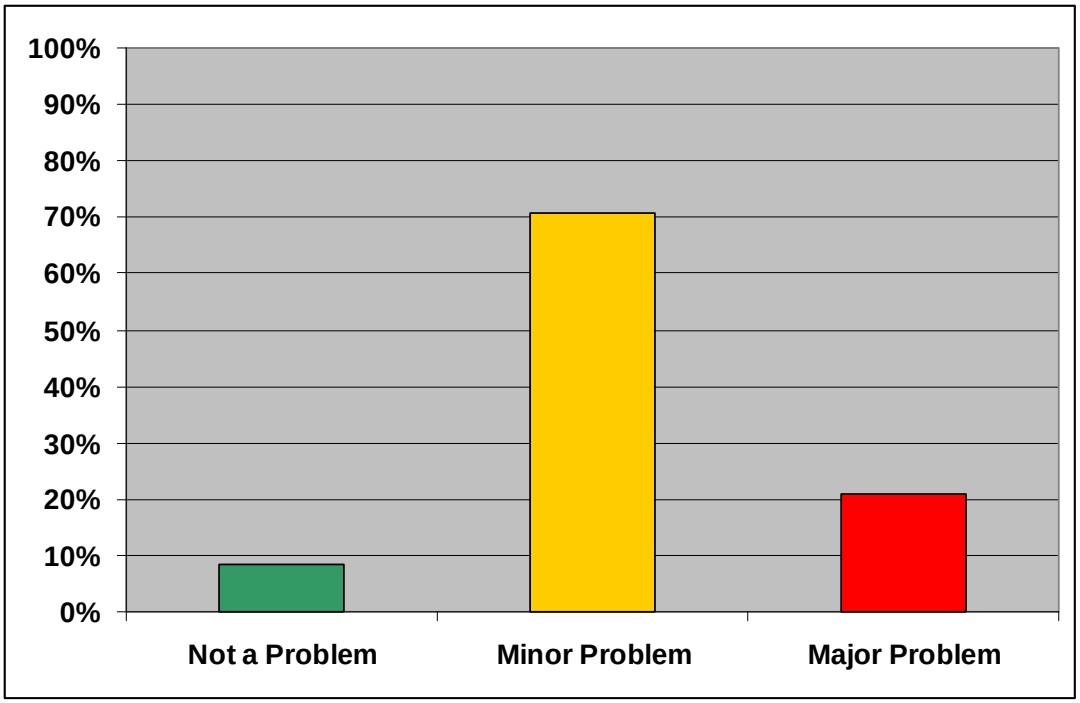
In the Vicinity of Your Business



On the I-90 Interchange

Traffic Congestion

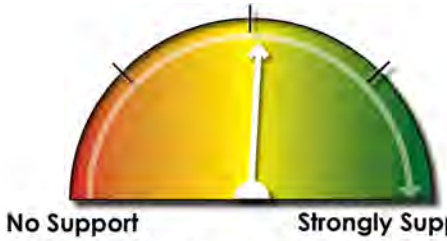
1. OVERALL, DO YOU THINK THE *CURRENT LEVEL OF TRAFFIC CONGESTION* IN THE RAPID CITY AREA IS:



Issues and Concerns

1. PLEASE INDICATE YOUR *LEVEL OF SUPPORT* FOR THE FOLLOWING STATEMENTS (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION)

Streets should be improved to accommodate all modes of travel – auto, truck, bus, pedestrian, and bicycle.

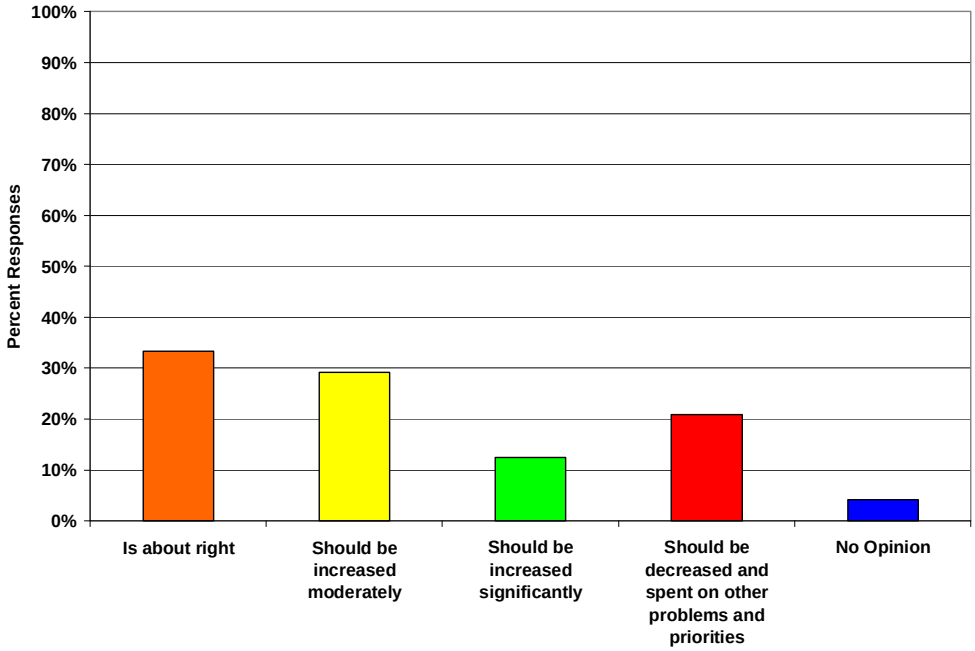


Driveway access should be consolidated in commercial corridors to increase traffic flow and traffic safety.

Sidewalks and trails to increase connectivity for pedestrians and bicyclists in neighborhoods should be provided in all new developments.

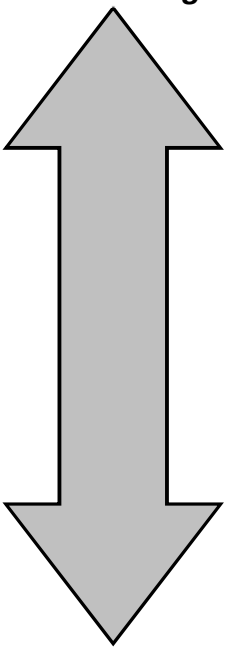
Taxes and Transportation

1. IN YOUR OPINION DOES IT APPEAR THAT THE AMOUNT OF *TAX FUNDING* SPENT ON TRANSPORTATION IN THE RAPID CITY AREA:



2. HOW WILLING ARE YOU TO HAVE YOUR *TAX DOLLARS* USED TO SUPPORT THE FOLLOWING IMPROVEMENTS? (AVERAGE RATING SHOWN WHERE 1 = NOT WILLING AND 5 = VERY WILLING)

More Willing



Less Willing

Improvements	Average Rating
Adding pedestrian facilities such as sidewalks, crosswalks, bridges, etc.	4.0
Improving major streets in the Rapid City area	3.9
Adding trails for walking and bicycling	3.8
Adding bus service on weekends	3.7
Improving transportation for seniors and persons with disabilities	3.6
Improving the timing of traffic signals	3.5
Adding on-street bike lanes	3.5
Adding bus service in the evenings	3.5
Adding more bus routes to serve more of the community	3.5
Attracting more airlines and flights to the airport	3.5
Reducing delays caused by trains	3.0
Improving rural roads around Rapid City area	2.5
Improving the airport	2.5
Improving I-90 interchanges	1.8
Improving roads in Box Elder and Summerset	1.7
Adding lanes to I-90	1.6
New interchanges on I-90	1.6

Transportation Summit / Connections Workshop - May 12, 2009

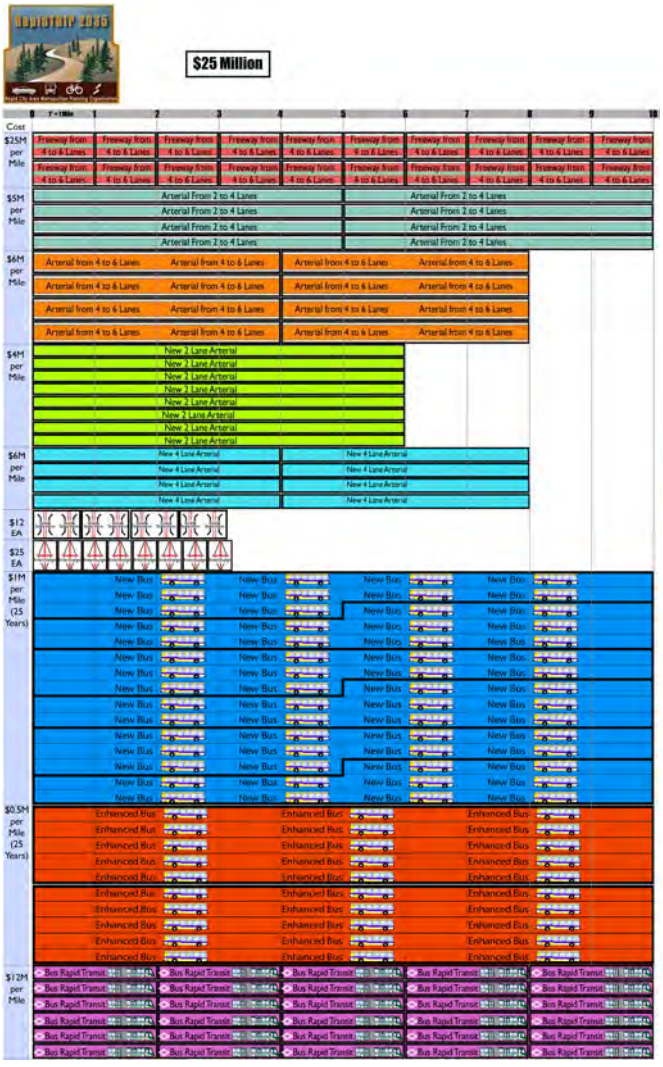
One of the main public events during the development of *RapidTRIP 2035* was the Transportation Summit which consisted of public meetings and the Connections Workshops. Two public meetings were held on May 12, 2009 in Room Rushmore H at the Rushmore Plaza Civic Center. Several residents, business people, and government officials participated.

The Summit featured both a presentation about transportation in the area now and in the future and an interactive workshop for participants to identify resources for maintenance, build roadways, add/upgrade interchanges, enhance transit services, and plan bike and pedestrian travel – within a given budget. The exercise, called Connections, mimics the challenges and opportunities that elected officials and public agencies face in planning for the future transportation needs of the region.

Results from the Transportation Summit and Connections Workshop were used to inform future alternatives to be studied in developing *RapidTRIP 2035*.

The Connections Workshop

The participants in the public meetings discussed trade-offs among possible transportation investments. Each table of 6 to 10 persons was provided with a game board of the region, game pieces of various cost for different types of improvements, and a tally sheet for keeping track of investments and costs. A preliminary budget of $600 million was used to represent roughly the amount of funds that may be available for transportation in the Rapid City area through 2035. (Note: The 25-year budget was updated and refined as presented in Chapter 4, *Financial Analysis and Funding Resources*.)



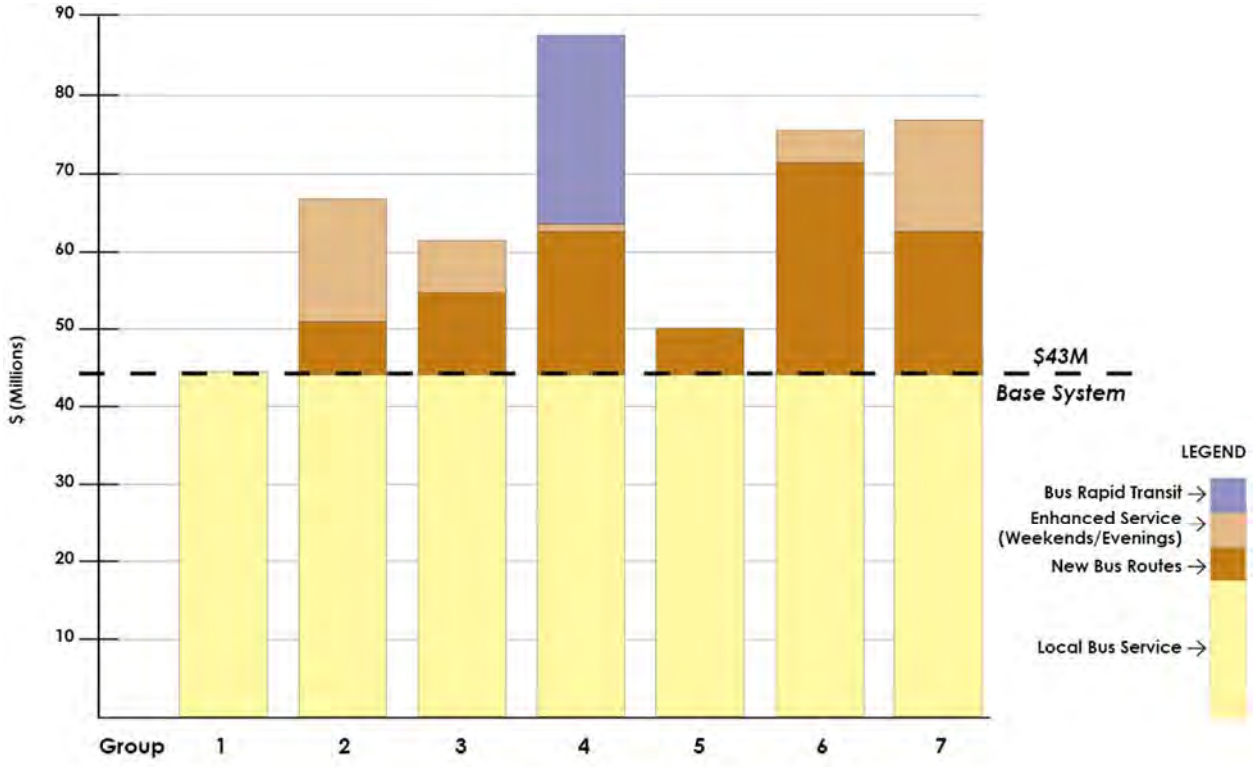
Transportation Improvements Cost Sheet

Maintenance	Current Trend: $?				
Pedestrian & Bicycle Improvements	Current Trend: $10M (25 Years)				
Other (i.e., special transit, signal operation improvements, etc.)					
Roadway Improvements (Construction and Maintenance)	Units (A)	Cost (Million) (B)	Tally	# (C)	$ (B x C)
Widen Freeway From 4 to 6 Lanes	1 Mile	$25			
Widen Arterial From 2 to 4 Lanes	1 Mile	$5			
Widen Arterial From 4 to 6 Lanes	1 Mile	$6			
Construct New 2 Lane Arterial	1 Mile	$4			
Construct New 4 Lane Arterial	1 Mile	$6			
Construct New Grade Separation	Per Grade Separation	$12			
Construct New Interchange	Per Intersection	$25			
Transit (Buses, Operations, Maintenance)	Miles of Service for 25 Years				
New Bus	1 Mile of Service	$1			
Enhanced Bus	1 Mile of Enhanced Service	$0.5			
Bus Rapid Transit (BRT)	1 Mile	$12			
Table #: Time:		Total Expenditures			

Results from Roundtable Connections Workshops

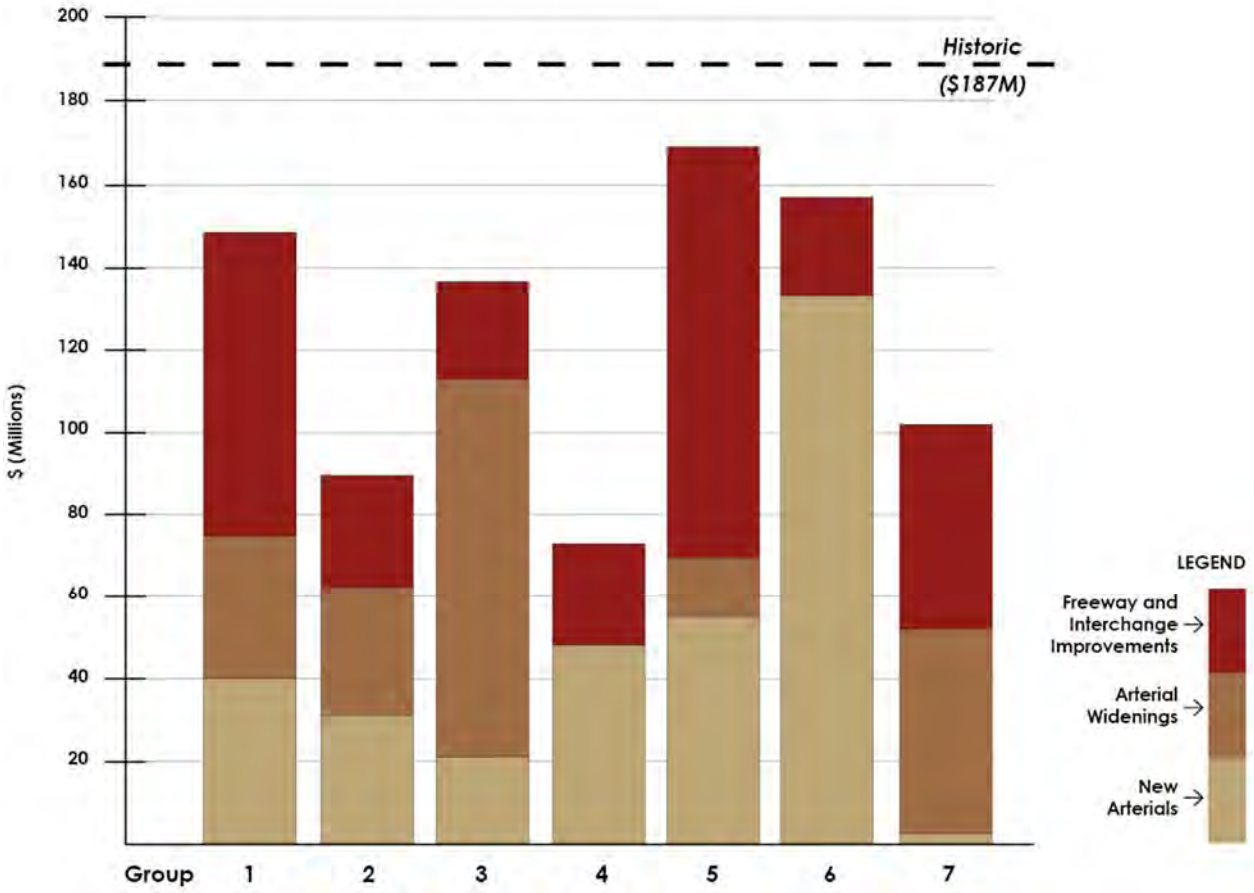
The following results were summarized from the improvement cost tally sheets and the game boards with transportation improvements identified by each table in the Connections Workshop.

TRANSIT IMPROVEMENTS



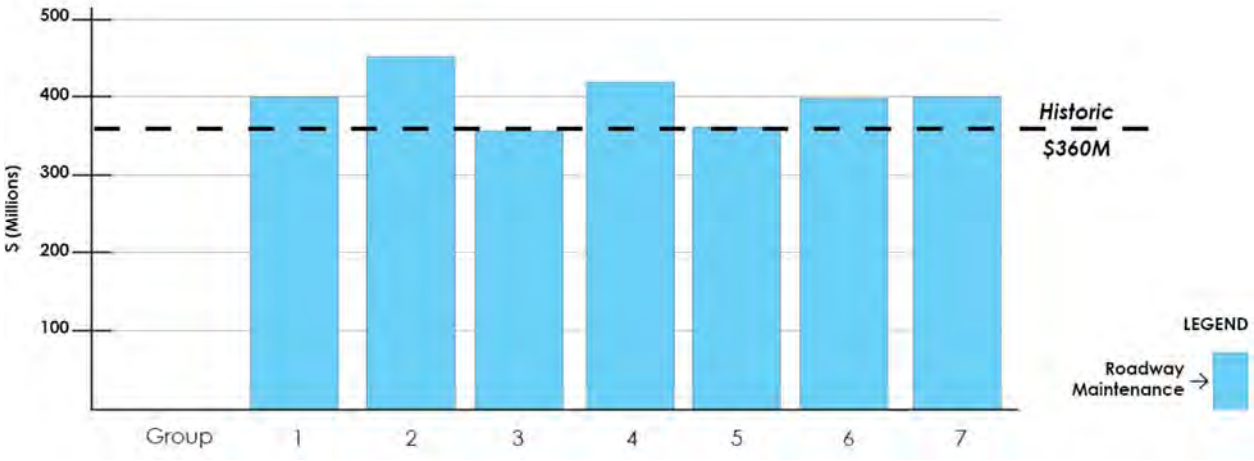
As the graphic shows, every table included funding for at least the base level of transit service, which would equate local bus service similar to today's Rapid Ride service. Six of the seven tables suggested new bus routes, while five desired enhanced evening and weekend service. One table allocated funds for bus rapid transit service in north and west Rapid City.

ROADWAY CAPACITY



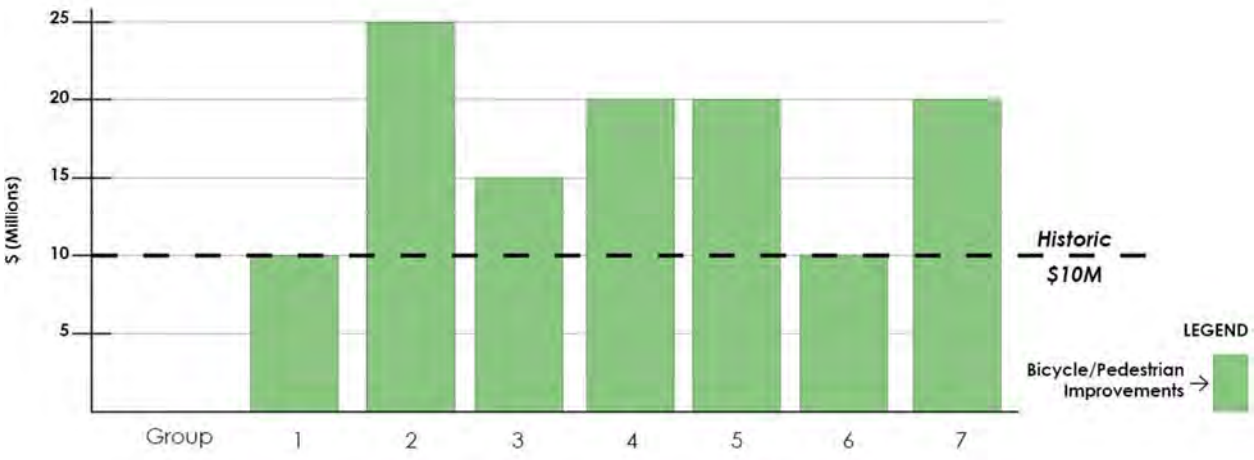
It is noteworthy that all of the group tables at the Connections Workshop advocated increased investments in alternative modes and roadway maintenance at the expense of roadway capacity improvements. Four of the seven groups had roadway capacity allocations that approach historical levels, while the other three groups significantly de-emphasized roadway capacity investment.

ROADWAY MAINTENANCE



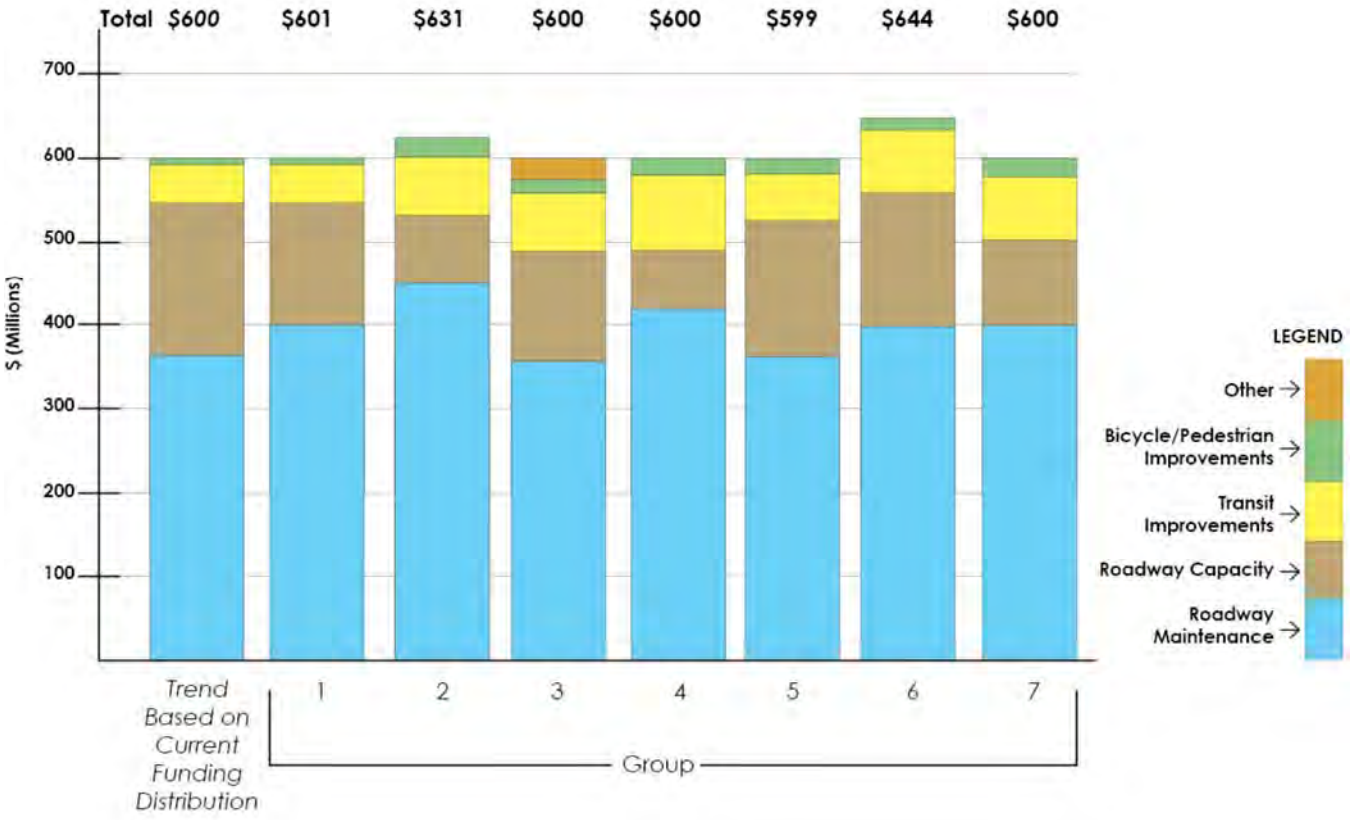
All group tables established roadway maintenance funding at historic or higher levels, with an average of $400 million compared to the estimated historic amount of $360. One group allocated $450 million to maintenance, which is 75% of the total preliminary budget.

BIKE/PEDESTRIAN IMPROVEMENTS



Bicycle and pedestrian improvements were likewise popular with the groups that participated in the Connections Workshop. As the graphic indicates, every table allocated at least the historic funding amount for these modes. The average of the responses, $17 million, is 70% higher than the historic baseline.

FUNDING SUMMARY FROM CONNECTIONS WORKSHOP



Note: The $600 million budget used in the Connections Workshop was a preliminary estimate. Chapter 4, Financial Analysis and Funding Resources, contains the refined funding amounts anticipated for the 25-year life of *RapidTRIP 2035*.

Targeted Outreach Focus Groups

Focus groups were scheduled with several representatives of different interest groups as shown in the chart below:

Interest Group	Date and Time	Location	Focus
Disabled Community	Monday, October 26, 2009 11:00 a.m.	Black Hills Workshop	• Transportation access • Improvements to dial-a-ride and fixed route services • Funding and affordability
Box Elder *	Monday, October 26 5:00 p.m.	Box Elder Town Hall	• Future transportation needs • Regional priorities • Funding issues
Young Adults	Tuesday, October 27, 2009 8:30 a.m.	School of Mines Highway Engineering Class (juniors and seniors)	• Future transportation needs and priorities • Effect of trends on transportation preferences • Funding issues
	Tuesday, October 27, 2009 12:00 p.m.	School of Mines Surveying Class (freshmen and sophomores)	• Future transportation needs and priorities • Effect of trends on transportation preferences • Funding issues
Freight	Tuesday, October 26, 2009 2:00 – 3:30 pm	Rapid City Hall	• Truck and delivery routes • Safety concerns • Funding issues
Developers and Large Property Owners	Tuesday, October 27, 2009 4:30 to 6:00 pm	Rapid City Hall	• Trends in population, employment and housing • Future transportation needs • Funding issues
Single Parents	Wednesday, October 28, 2009	State Department of Labor	• Transportation needs and desires • Funding issues
Seniors	Wednesday, October 28, 2009 1:30 p.m.	Rapid City Hall	• Future transportation needs and priorities • Funding Issues
Summerset/Meade County*	Wednesday, October 28, 2009 4:30 p.m.	Summerset Council	• Future transportation needs • Regional priorities • Funding issues

** Focus group was combined with public open house for this meeting.*

Each focus group began with a brief overview of the work completed on *RapidTRIP 2035* to date. In most cases, the focus groups involved an informal discussion of issues. For two groups, however, the participants completed the Connections exercise as a way to elicit their input (seniors and youth).

The following summarizes what we learned from each focus group.

Disabled Community: Black Hills Workshop (9 participants)

Most participants were transit riders, using either fixed-route or Dial-A-Ride transit.

Comments on Dial-A-Ride

- Too expensive (legally, can charge double the fixed route cost).
- Because service covers the same area as fixed-route, the service area affects peoples' choices for where they live and work. Lack of accessibility affects their income potential.
- Many prefer Dial-A-Ride because it is door-to-door service – access to transit stops is a big issue. People might prefer to use the fixed-route service, but there are access constraints such as access to transit stops blocked by snow in winter and parking lots that are difficult to navigate from door to stop.
- No service on Sundays so many can't get to church and other activities.
- Monthly passes are too expensive.

Comments on Taxis

- Cost prohibitive for most people.

Need for Service Improvements

- Transportation to and from Ellsworth – Ellsworth is an employer of people with disabilities so access is important to their ability to make a living.
- Expand hours to improve access to work and church.

Box Elder Targeted Outreach and Open House (10 participants)

Transit

- Need bus from Box Elder to Rapid City for medical appointments (at least 3 days a week).
- Need medical facilities in Box Elder.

Interchanges

- Need to change access to 1416 to redirect traffic to Liberty Boulevard. Current configuration is unsafe. Half interchange should be a full interchange and speeds and access on 1416 need to be controlled. May be constraints in available land for full interchange configuration.

- New interchange at TransLoad is needed for truck traffic. Otherwise, excessive truck traffic will be on City streets. Funding is a concern.
- North-south connector road from Exit 67 to the airport access road. Parallel route to Radar Hill Road improvement.
- See Box Elder plans for truck routes and pedestrian movement.

Young Adults: Highway Design Class – Juniors and Seniors (8 students)

Key Observations from Connections Exercise

- Interest in rural lifestyle with automobile access. In Connections, group kept transit funding the same.
- Interest by some in traveling by bicycle but feel that off street paths are safer. Traveling in the lane of vehicular traffic is a concern because of safety concerns and lack of concern for the cyclist.
- Road improvement orientation – Most of the transportation improvements were roads in the new growth areas along the suburban fringe.
- Funding for transit, bicycle and pedestrian improvements remained the same. The students agreed upon a small increase in maintenance funding.

Young Adults: Survey Class –Mostly Freshmen (25 students)

- Majority favored increased automobile travel.
- General lack of interest in the topic.
- When asked at what price gas would need to be in order for them to make use alternates to driving, the average price was $4.65. Some indicated they would carpool or drive a more fuel efficient car.
- One student from Norway would like to see increase density in the area to make transit viable.

Freight (3 participants)

- Jackson and Canyon Lake Drive is not suitable for trucks. Can't park on Canyon Lake Drive.
- Access to strip malls is a challenge especially as freight operators consolidate shipments on larger trucks. Turning radii don't accommodate large trucks and no rear access. No place to park and store vehicle while unloading.
- Need to make new developments truck access friendly.

- Sheridan Lake Road is a delivery road but not a truck route. Causes circuitous movements and results in increased fuel costs and wear and tear on trucks. Could Sheridan be a time sensitive truck route just for middle of the day truck travel?

- Would like Highway 79 as a truck route instead of a delivery route because there are already trucking companies along it and it is used as a trucking route due to railroad access.

- Deadwood Avenue and North Plaza Drive presents a safety issue because turning radius is not sufficient. Need longer yellow in light timing because of sight distance issues.

- Other places where longer yellow lights are needed: Elkvale and Homestead; North and Animosa and Elkvale and I-90.

- 150th needs to continue through to Liberty. 50 to 100 trucks per day need access to rubble sites.

- Another exit at Highway 69 to address TransLoad. Big trucks carrying 80 foot pipes would otherwise have to go out of their way and on City streets to reach the facility.

- Another truck stop is needed in the area to address capacity since one of the previous truck stops was closed down. A suggestion is to put it on east edge of town beyond Highway 67.

- Highway 1416 at Liberty – turning radius designed inefficiently for trucks.

- Exit 63 – interchange improvements to address design and access deficiencies.

- Need more funding for interchanges.

- Truck routes should have minimal traffic signals.

- Need a truck route from the Liberty interchange down to Highway 44 to access the airport.

- Best improvements are the Heartland Express and the extension of Theodore Roosevelt.

- Suggestions for others to involve in discussions of delivery and freight movement: Magnum Delivery, Yellow Freight, Simons Construction, and Hills.

- Possibly convene a Freight Advisory Committee or annual/bi-annual summit of freight and delivery interests.

Developers (2 participants)

How will housing change in the future?

- **Rural:** Desire for 1 to 5 acre lots and rural lifestyle. Commute time to urban center is short. Younger generation is returning to rural roots.
- **Urban Area:** Looking for affordable housing in range of $125,000 to $230,000; older people are looking to downsize.

Aging of the Population

- Growing demand for downtown living.
- Desire to be close to medical facilities and walkable activities.
- Interested in downtown amenities - More diverse interests and more money to spend than previous generation.
- 30% of local retirees are snowbirds.
- Younger group in their 20's do not want to own a car and want to live and work downtown.

Energy Costs

- Won't impact land use and personal mobility as much as some people think they might.
- Increasing efficiency of automobiles and smaller cars.
- As long as people can commute within 20 minutes, won't see people moving into downtown.
- Cost of drilling wells will affect rural development; people want to be on City hookups.

Transit

- Need more public transportation.
- Developers should pay for transit.
- Should preserve corridors for long-range transit needs – what is a bike lane now could become Bus Rapid Transit or light rail later.

Roads

- Connect Lacrosse to Hawthorne - Robbinsdale is where growth will be; highest density in City.
- Connect Elkvale road at Interchange with I-90 east to Radar Road with a new arterial.

- Connect Liberty at I-90 with interchange down to Highway 44 near the airport.
- Extend Lamb Road to east and west to make a major facility.
- Meade County – lots of development but limitations due to load limits make it difficult to access with heavy equipment.

Funding Options

- Trucks cause most damage to the roads and should pay for it. Much of this is for construction products delivery. Charge a fee on development to be paid by the homeowner.

Roadway

- Extend Sheridan Lake Road to Deadwood Avenue.
- Extend Jackson to Omaha.
- Extend Animosa to Deadwood.

Single Parents: Department of Labor (6 clients and 4 staff)

Most of the participants were young mothers from different parts of the region.

Pedestrians

- Access to stores in Blackhawk – no sidewalks and not many lights; no bus.
- Angled parking is dangerous.
- Need another parking garage at 6th and St. Joseph.
- Concerned about having safe locations for parking.

Roads

- Fix the potholes in the roads; concerned about cost of repairing car.

Transit

- Need better information on all routes not just the main streets.
- Need more frequent service.
- Blackhawk to Rapid City (check on timing and service).
- Access to Blackhawk, Box Elder and the outlying areas in the Valley.
- Need directional signs for bus stops on nearby streets like the ones for hospitals or libraries.

Bicycle Paths

- Encourage bikes off the road for safety.
- Jackson Boulevard is getting bike lanes.
- Need bike lanes on 5th street near hospital and on Main.

Seniors (7 participants)

Observation from Connections Exercise

Most of the participants travel by car. When asked at what gas price they would change their travel behavior, their responses ranged between $3.00 and $11.00/gallon with an average of $6.36. In response, most said they would move to smaller cars and less driving.

Roads

- Minnesota at South Elm needs stop signs.
- Extend I-190 south – consider elevated facility or expressway. Needs a bridge to hookup with Mount Rushmore Road/US Highway 12.
- Canyon Lake Road entrance to Senior Center is busy and dangerous – needs light or left turn lane.
- Anamosa improvements – 4 lanes.
- Anamosa extended west to Deadwood Avenue.

Maintenance

- Railroad crossings, especially one by Post Office.
- Reconstruction of East North Street.
- Index maintenance with actual construction costs.
- Spend more on maintenance (increase to $390 million).

Bus Routes

- Needs to pull in at stores and centers for ease of access.
- Better bus service to West Hills Village, Rapid Valley, and Blackhawk area.
- Most people at Seniors Center use Dial-A-Ride because of front door service; access to fixed-route is a big issue.
- Hard to get access to Dial-A-Ride because have to pass a mobility test.

- Suggest City subsidized taxi service with rules that better serve the seniors.
- Buy more and smaller vehicles.
- Increase in transit from 7% to 10%.

Bike/Pedestrian

- Increase bike/pedestrian funding by 50%.
- Walking is a big issue.

Target Outreach Focus Groups - Summary

The open houses and focus groups provided insights on different improvements for roadways, transit services, and bicycle/pedestrian facilities. Highlighted topics include:

- Expanded Truck and Delivery Routes: Truck access to new growth areas is an issue that needs to be addressed in design standards and future truck route planning.
- Rural Low Density Development and Urban Multi-Modal Development: A strong theme is the desire for continued low density development around the region. At the same time, some people see the opportunity for multi-modal development with limited dependence on automobile travel in the urban center.
- Mobility for the Transit Dependent: Mobility needs for persons with disabilities and seniors are not currently met by fixed route and the existing configuration of Dial-A-Ride. The scenarios should explore ways to address the effect of transportation choices on where people who are transit dependent can work, live and recreate, especially on Sundays and evenings. There may also be other opportunities like contracting with taxis to provide this additional access.
- Future Growth and Funding: A recurring theme in transportation planning is securing adequate funding to get out ahead of growth with smart planning and development. Since funds are rarely available before growth and congestion occurs, the Plan should explore opportunities for corridor preservation to reserve right-of-way in advance of development.

Resource Agencies

On October 28, 2009, a meeting with state and local resource agencies was held via teleconference to discuss the process and schedule for developing *RapidTRIP 2035*, specific coordination needs of the agencies, and potential impacts. The following agency personnel participated:

- Steve Graham, South Dakota Department of Transportation
- Amy Rubingh, South Dakota Historical Society
- Jackie Hine, Corps of Engineers
- John Miller, Department of Environmental and Natural Resources

In addition to these participants, the *RapidTRIP 2035* study team regularly coordinated with state and local representatives of the Federal Highway Administration and the South Dakota Department of Transportation. Federal Highway Administration and the South Dakota Department of Transportation representatives participated in many of the public outreach events and in the monthly study team meetings.

The resource agency representatives provided a background discussion of the specific environmental issues related to the development of *RapidTRIP 2035*. Generally, these included potential impacts from roadway construction related to historical structures, archeological sites, and surface and ground water. When roadways are constructed or maintained, often air quality issues in the form of dust and surface water issues related to construction site runoff are of interest, but these are typically addressed through the permitting process associated with each specific project.

In summary, the resources agencies did not register any specific concerns, but was interested in reviewing the draft plan document so that specific project recommendations could be review for potential impacts.

3. GROWTH IN THE REGION

Population, household, and employment growth are invariably expected to continue to grow both inside and outside of the Rapid City Metropolitan Planning Area in the future. Since land uses and demographic activity form the basis for travel demand, new growth will cause additional travel that will spur the need for additional transportation facilities and services. In effect, these internal and external demands for travel within the Rapid City area establish the need for updating the region's long-range transportation plan to keep it current with the most recent socioeconomic forecasts and planning data.

Residential

Existing Conditions - Residential

The Rapid City Metropolitan Planning Area includes 269 square miles within Pennington County and 144 square miles in the southern portion of Meade County. Only a portion of each county is within the Metropolitan Planning Organization planning area.

Historical population growth trends for Rapid City and Pennington and Meade Counties are shown in Table 3-1. These figures are based on U.S. Census data. As the table indicates, the areas in and around the Rapid City planning area have experienced steady growth for decades, although the percentage growth rate has slowed in recent years.

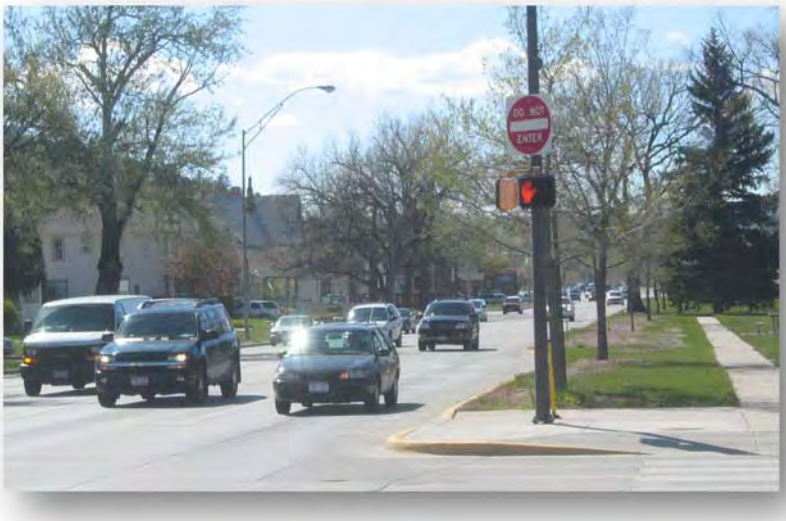


Table 3-1: Historic Population Growth

Year	Rapid City	Pennington County	Meade County
1940	13,844	23,799	9,735
1950	25,310	34,053	11,516
1960	42,399	58,195	12,044
1970	43,836	59,349	16,618
1980	46,492	70,361	20,717
1990	54,523	81,343	21,878
2000	59,607	88,565	24,253
Annual Growth Rate (1940 to 2000)	2.5%/year	2.2%/year	1.5%/year
Annual Growth Rate (1990 to 2000)	0.9%/year	0.9%/year	1.0%/year

The figures in Table 3-1 do not correspond to the Metropolitan Planning Organization planning area boundary but are reported to indicate growth rates. Furthermore, the regional travel demand model is based on household data, not population. Since the year 2000 is the latest detailed data reported by the Census, it was necessary to advance the data from 2000 to 2008 (the base year of the regional traffic model) and to convert it to dwelling units and ultimately households for modeling purposes.

The *Rapid City Area Future Land Use Plan* (approved September 2008) provides growth in dwelling units for the neighborhood areas that comprise the Metropolitan Planning Organization planning area. Figure 3-1 shows the neighborhood areas; and Table 3-2 contains the Census 2000 estimates of dwelling units along with the 2000 to 2008 growth figures and the resulting 2008 dwelling units. Technical Appendix B contains a memorandum that describes the socioeconomic data and forecasting process in detail, including how growth was allocated within each neighborhood area. Figure 3-2 shows the dwelling units from Census 2000 and the residential growth between 2000 and 2008.

Figure 3-1: Neighborhood Areas

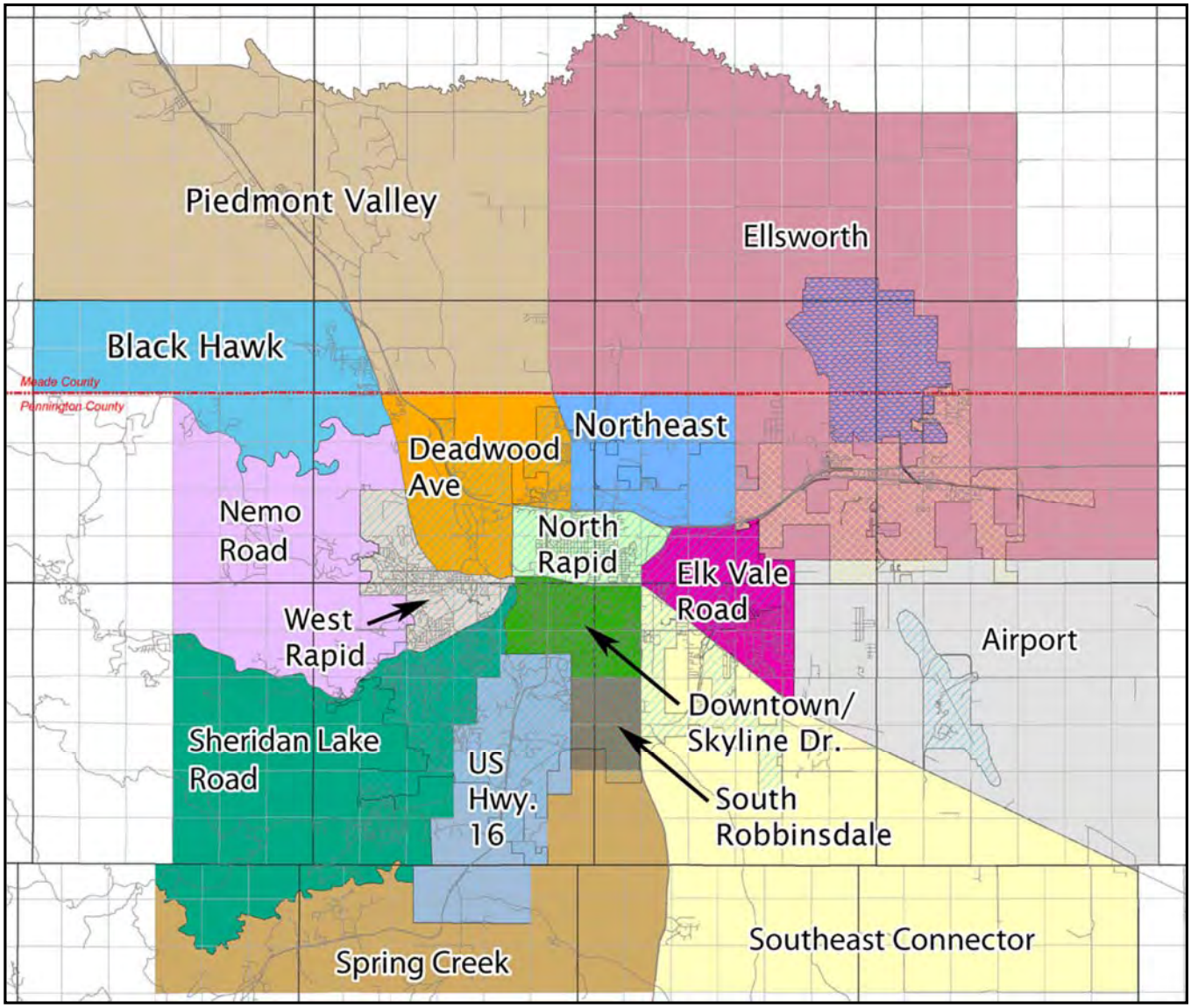
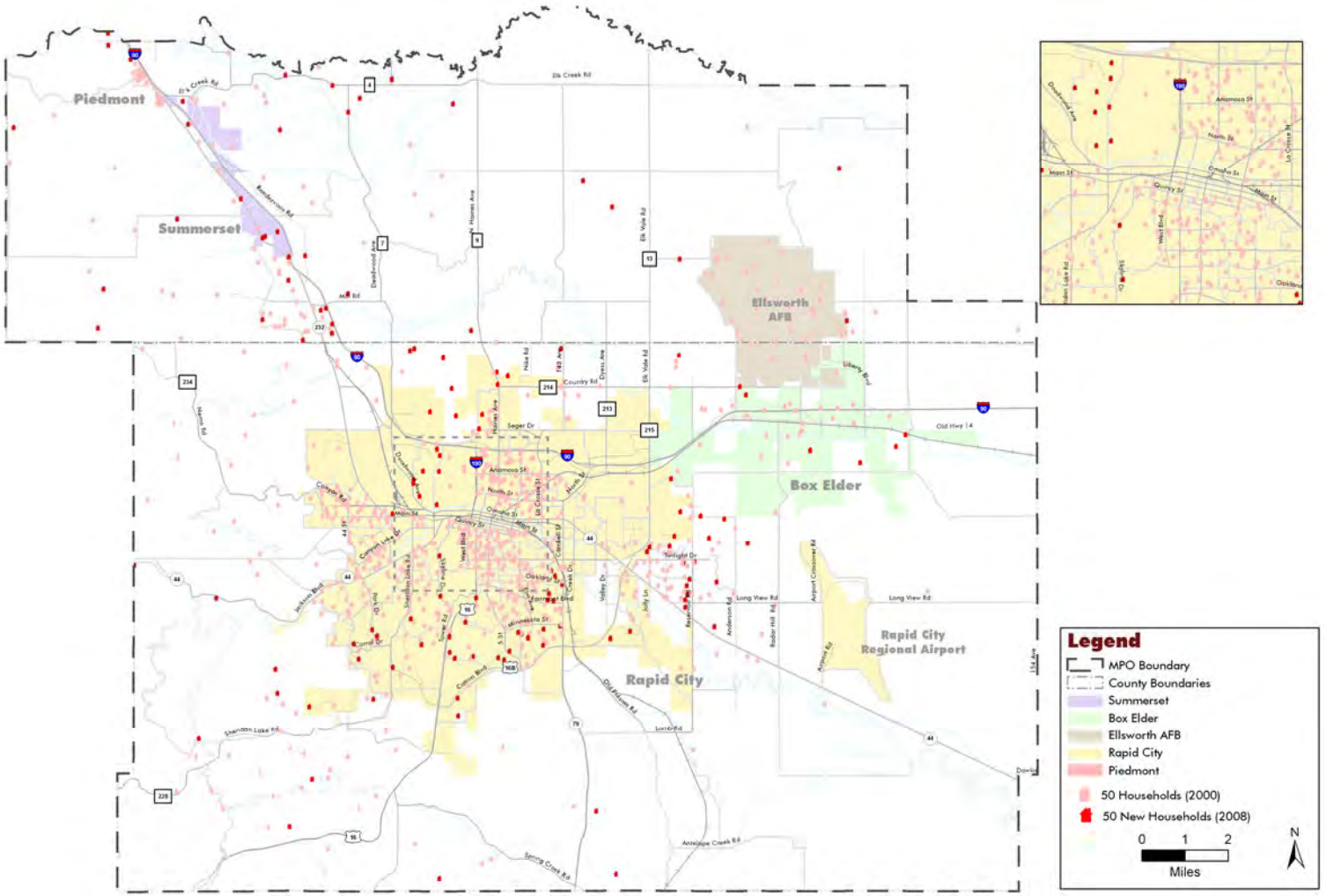


Table 3-2: 2000 and 2008 Dwelling Units by Neighborhood Area

Neighborhood Area	2000 Census			Growth (2000 to 2007)			2008			Annual % Change
	Single Family	Multi Family	Total	Single Family	Multi Family	Total	Single Family	Multi Family	Total	
Airport	294	4	298	180	0	180	474	4	478	6.1%
Black Hawk	1,082	2	1,084	36	0	36	1,118	2	1,120	0.4%
Deadwood Avenue	880	97	977	401	376	777	1,281	473	1,754	7.6%
Downtown/Skyline Dr	4,319	2,093	6,412	243	130	373	4,562	2,223	6,785	0.7%
Elk Vale	2,563	47	2,610	726	168	894	3,289	215	3,504	3.8%
Ellsworth	2,993	682	3,675	633	0	633	3,626	682	4,308	2.0%
Nemo Rd	624	0	624	59	0	59	683	0	683	1.1%
North Rapid	3,144	2,370	5,514	51	82	133	3,195	2,452	5,647	0.3%
Northeast Area	600	0	600	159	0	159	759	0	759	3.0%
Piedmont Valley	2,044	50	2,094	1,520	8	1,528	3,564	58	3,622	7.1%
Sheridan Lake Rd	3,919	706	4,625	592	78	670	4,511	784	5,295	1.7%
South Robbinsdale	1,476	624	2,100	284	108	392	1,760	732	2,492	2.2%
Southeast Connector	1,120	7	1,127	274	0	274	1,394	7	1,401	2.8%
Spring Creek	279	0	279	122	0	122	401	0	401	4.6%
US Highway 16	877	318	1,195	479	96	575	1,356	414	1,770	5.0%
West Rapid	3,227	1,422	4,649	68	66	134	3,295	1,488	4,783	0.4%
Total	**29,441**	**8,422**	**37,863**	**5,827**	**1,112**	**6,939**	**35,268**	**9,534**	**44,802**	**2.1%**

Source: Census 2000 for 2000 dwelling units; Future Land Use Plan for growth

Figure 3-2: Residential Growth (2000 to 2008)



Please refer to the Map Appendix to see a larger version of this map.

Future Conditions - Residential

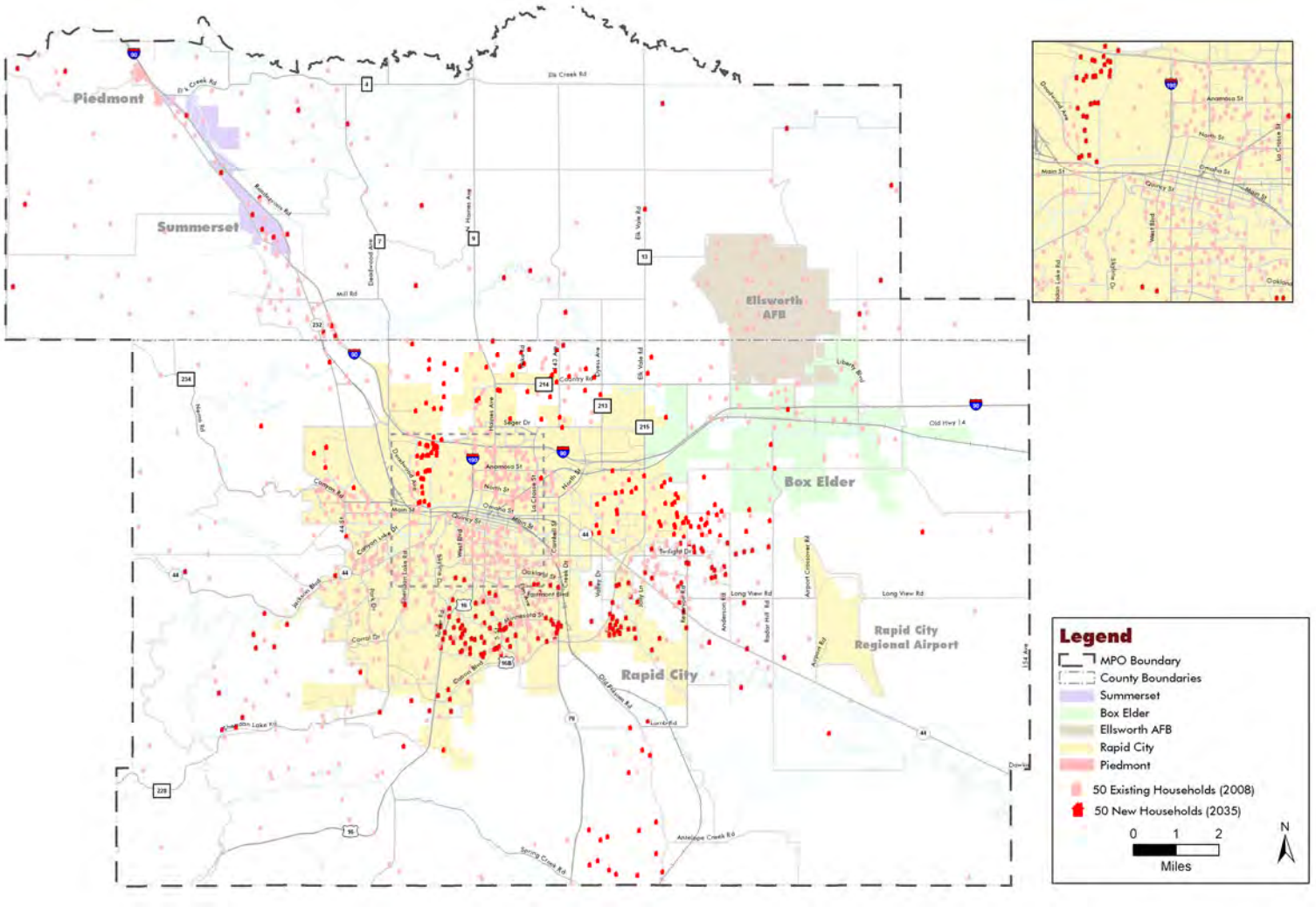
The *Rapid City Area Future Land Use Plan* provides the growth in residential dwelling units by neighborhood study area for the period from 2008 to 2035. Table 3-3 shows this information and the 2008 and 2035 summaries. Figure 3-3 shows graphically where the new growth from 2008 through 2035 is anticipated. Details on how this data was developed and allocated within neighborhood areas can be found in the Technical Appendix.

Table 3-3: 2008 and 2035 Dwelling Units by Neighborhood Area

Neighborhood Area Name	2008			Growth (2008 to 2035)			2035			Annual % Change
	Single Family	Multi Family	Total	Single Family	Multi Family	Total	Single Family	Multi Family	Total	
Airport	474	4	478	683	0	683	1,157	4	1,161	3.3%
Black Hawk	1,118	2	1,120	43	0	43	1,161	2	1,163	0.1%
Deadwood Avenue	1,281	473	1,754	1,166	1,055	2,221	2,447	1,528	3,975	3.1%
Downtown/Skyline Dr	4,562	2,223	6,785	139	203	342	4,701	2,426	7,127	0.2%
Elk Vale	3,289	215	3,504	2,723	694	3,417	6,012	909	6,921	2.6%
Ellsworth	3,626	682	4,308	854	0	854	4,480	682	5,162	0.7%
Nemo Rd	683	0	683	85	0	85	768	0	768	0.4%
North Rapid	3,195	2,452	5,647	16	69	85	3,211	2,521	5,732	0.1%
Northeast Area	759	0	759	1,281	0	1,281	2,040	0	2,040	3.7%
Piedmont Valley	3,564	58	3,622	854	0	854	4,418	58	4,476	0.8%
Sheridan Lake Rd	4,511	784	5,295	778	76	854	5,289	860	6,149	0.6%
South Robbinsdale	1,760	732	2,492	442	412	854	2,202	1,144	3,346	1.1%
Southeast Connector	1,394	7	1,401	2,507	56	2,563	3,901	63	3,964	3.9%
Spring Creek	401	0	401	119	9	128	520	9	529	1.0%
US Highway 16	1,356	414	1,770	1,398	1,165	2,563	2,754	1,579	4,333	3.4%
West Rapid	3,295	1,488	4,783	46	210	256	3,341	1,698	5,039	0.2%
Total	**35,268**	**9,534**	**44,802**	**13,134**	**3,949**	**17,083**	**48,402**	**13,483**	**61,885**	**1.2%**

Source: Future Land Use Plan for growth data

Figure 3-3: Residential Growth (2008 to 2035)



Please refer to the Map Appendix to see a larger version of this map.

Conversion of Dwelling Units to Households

As stated previously, the model is based on households, not dwelling units. A household is defined in the *Future Land Use Plan* as an individual, family, or group of unrelated individuals who occupy a single dwelling unit. The difference between the dwelling units and households are vacant dwelling units, and from this the occupancy and vacancy rates can be calculated. The *Future Land Use Plan* identifies the vacancy rate in Rapid City as 0.045, or 4.5%, in 2000.

Occupancy and vacancy rates are reported in the Census 2000 data at the census block level. The occupancy rates from Census 2000 were multiplied by the dwelling units by traffic analysis zone within each census block to estimate households within each traffic analysis zone for 2008 and 2035. Dwelling units and households by neighborhood area are shown for 2000, 2008, and 2035 in Table 3-4.

Table 3-4: Dwelling Units and Households by Neighborhood (2000, 2008, 2035)

Neighborhood Area Name	Dwelling Units			Households			Occupancy Rate
	2000	2008	2035	2000	2008	2035	
Airport	298	478	1,161	283	454	1,103	95%
Black Hawk	1,084	1,120	1,163	1,041	1,075	1,116	96%
Deadwood Avenue	977	1,754	3,975	957	1,719	3,896	98%
Downtown/Skyline Dr	6,412	6,785	7,127	6,027	6,378	6,699	94%
Elk Vale	2,610	3,504	6,921	2,558	3,434	6,783	98%
Ellsworth	3,675	4,308	5,162	2,977	3,489	4,181	81%
Nemo Rd	624	683	768	599	656	737	96%
North Rapid	5,514	5,647	5,732	5,238	5,365	5,445	95%
Northeast Area	600	759	2,040	582	736	1,979	97%
Piedmont Valley	2,094	3,622	4,476	2,031	3,513	4,342	97%
Sheridan Lake Rd	4,625	5,295	6,149	4,440	5,083	5,903	96%
South Robbinsdale	2,100	2,492	3,346	2,058	2,442	3,279	98%
Southeast Connector	1,127	1,401	3,964	1,059	1,317	3,726	94%
Spring Creek	279	401	529	254	365	481	91%
US Highway 16	1,195	1,770	4,333	1,052	1,558	3,813	88%
West Rapid	4,649	4,783	5,039	4,510	4,640	4,888	97%
Total	**37,863**	**44,802**	**61,885**	**35,666**	**42,224**	**58,371**	**94%**

Non-Residential (Employment) Data

In the travel model used to identify long-term transportation needs for *RapidTRIP 2035*, non-residential land uses are represented as various categories of employment – retail, office/service, industrial, and public. Employment estimates for the Rapid City area are more difficult to come by than residential because this information is not collected as part of the U.S. Census.

In the Pennington County portion of the planning area, the development of non-residential data is based on the employment sectors and neighborhood study areas used in the *Rapid City Area Future Land Use Plan*. The four employment categories – retail, office/service, industrial, and public uses – are defined in the *Future Land Use Plan*, which uses square footage of building space to define activity levels. Conveniently, the travel forecasting model uses the same four employment categories, except that employees are used instead of square feet.

Table 3-5 shows the conversion factors used to derive the employment figures and the results for 2000. The *Future Land Use Plan* reports a total non-farm employment figure of 44,384 employees in 2000. The 45,068 estimated from the conversion factors and square feet compares very well with this figure, so no adjustments were made. The 2000, 2008, and 2035 employment figures for Pennington County are shown in Table 3-6 based on the forecasts from the *Future Land Use Plan* and the conversion factors in Table 3-5.

Table 3-5: Employee Conversion Factors and 2000 Control Totals for Pennington County

Employment Category	Employees per 1000 square feet	Square Feet of Building Space	Employees (2000)
Retail	1.65	6,737,342	11,117
Office/Service	2.13	5,335,988	11,366
Industrial	1.56	6,975,267	10,881
Public	1.84	6,360,922	11,704
Total	**n/a**	**25,409,519**	**45,068**

Note: The figures in the table do not include data for the Meade County portion of the Metropolitan Planning Organization planning area.

Table 3-6: Employment (2000, 2008, 2035) by Category for Pennington County Portion of Planning Area

Employment Category	2000	2008	2035	2000 to 2008 Growth Rate (%/yr.)	2008 to 2035 Growth Rate (%/yr.)
Retail	11,117	13,788	29,700	2.7%	2.9%
Office/Service	11,366	13,995	34,080	2.6%	3.4%
Industrial	10,881	13,638	18,720	2.9%	1.2%
Public	11,704	13,824	15,640	2.1%	0.5%
Total	**45,068**	**55,245**	**98,140**	**2.6%**	**2.2%**

Note: The figures in the table do not include data for the Meade County portion of the Metropolitan Planning Organization planning area.

For Meade County, non-residential data was generated based on employment information from the Bureau of Labor Statistics since local data was not available. The 2008 Bureau of Labor Statistics employment data for Meade County was multiplied by 50% based on the proportion of Meade County households in the Metropolitan Planning Organization portion of the county to estimate 2008 employment. Growth rates between 2000 and 2008 were estimated from the countywide Bureau of Labor Statistics data and used to forecast 2035 employment figures in the Meade County portion of the Metropolitan Planning Organization planning area.

Table 3-7 shows the resulting 2008 and 2035 employment by category for the Meade County portion of the planning area. Table 3-8 and Figure 3-4 summarize future regional control totals for each employment category in the Metropolitan Planning Organization planning area. Figures 3-5 to 3-8 identify graphically where the new growth is anticipated to occur for each employment type. More information on the development of non-residential employment forecasts and how new growth was allocated within each neighborhood area is contained in the Technical Appendix.

Table 3-7: Employment (2008, 2035) by Category for Meade County Portion of Planning Area

Employment Category	2000	2008	2035	2000 to 2008 Growth Rate (%/yr.)	2008 to 2035 Growth Rate (%/yr.)
Retail	983	992	1,072	0.1%	0.3%
Office/Service	984	988	2,423	0.1%	3.4%
Industrial	901	904	1,426	0.0%	1.7%
Public	763	769	804	0.1%	0.2%
Total	**3,631**	**3,653**	**5,725**	**0.1%**	**1.7%**

Table 3-8: Employment (2000, 2008, 2035) in the Planning Area

Category	2000	2008	2035	2000 to 2008 Growth Rate (%/yr.)	2008 to 2035 Growth Rate (%/yr.)
Retail	12,100	14,780	30,772	2.5%	2.8%
Office / Service	12,350	14,983	36,503	2.4%	3.4%
Industrial	11,782	14,542	20,146	2.7%	1.2%
Public	12,467	14,593	16,444	2.0%	0.4%
Total	**48,699**	**58,898**	**103,865**	**2.4%**	**2.1%**

Figure 3-4: Non-Residential Square Footage Growth by Category

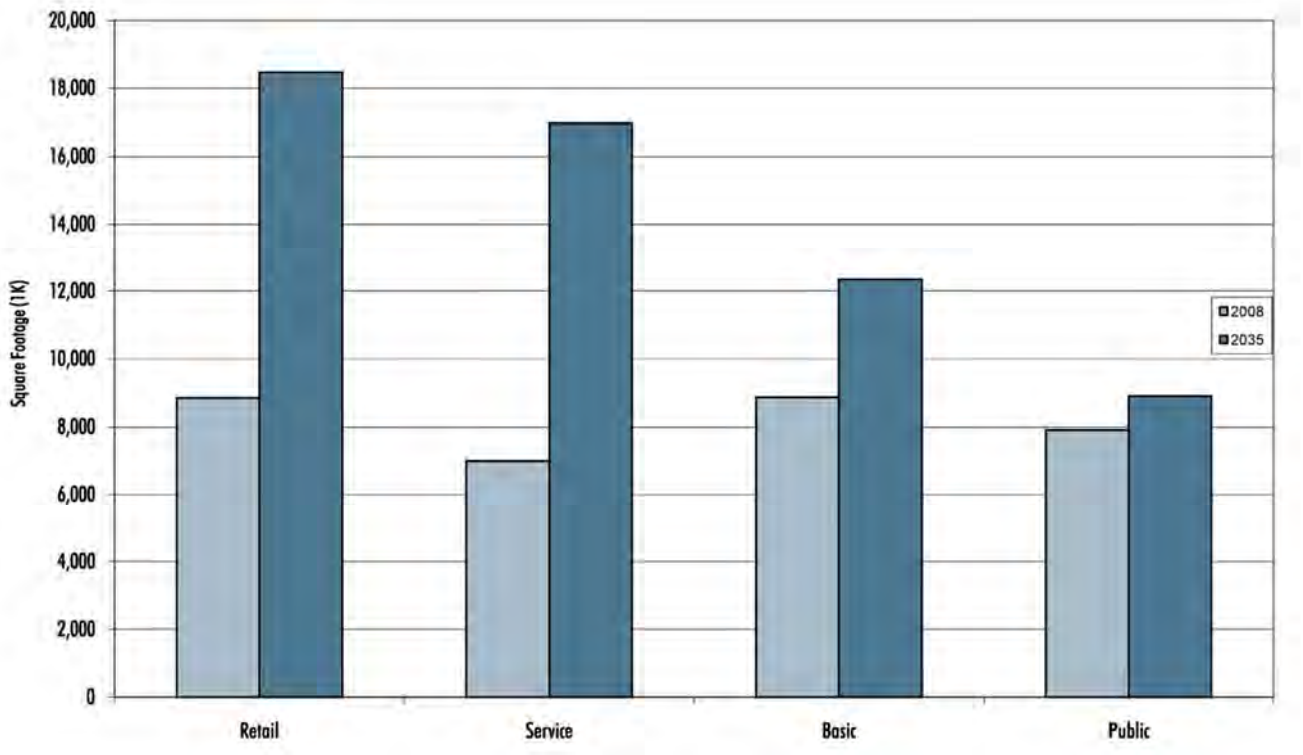
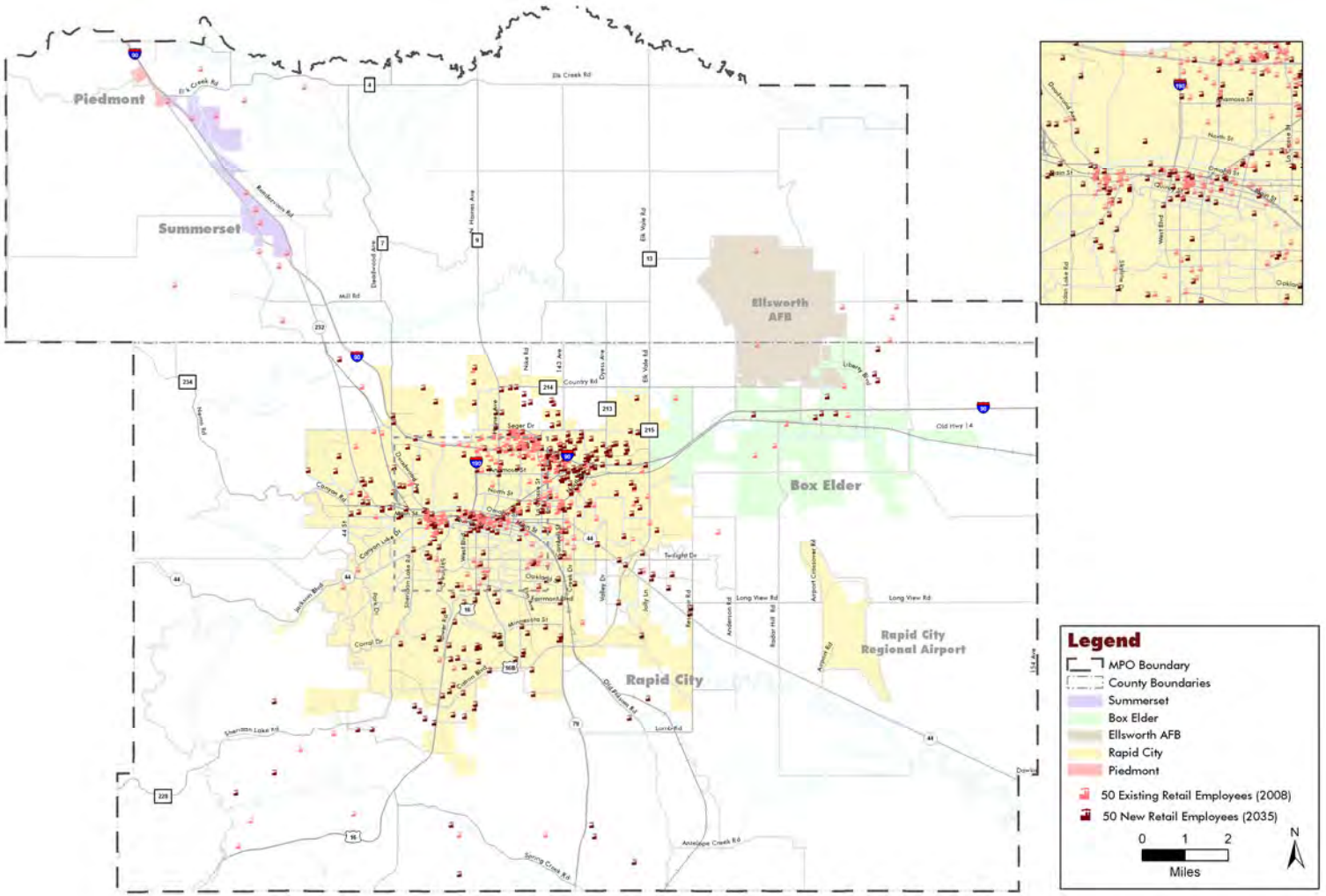
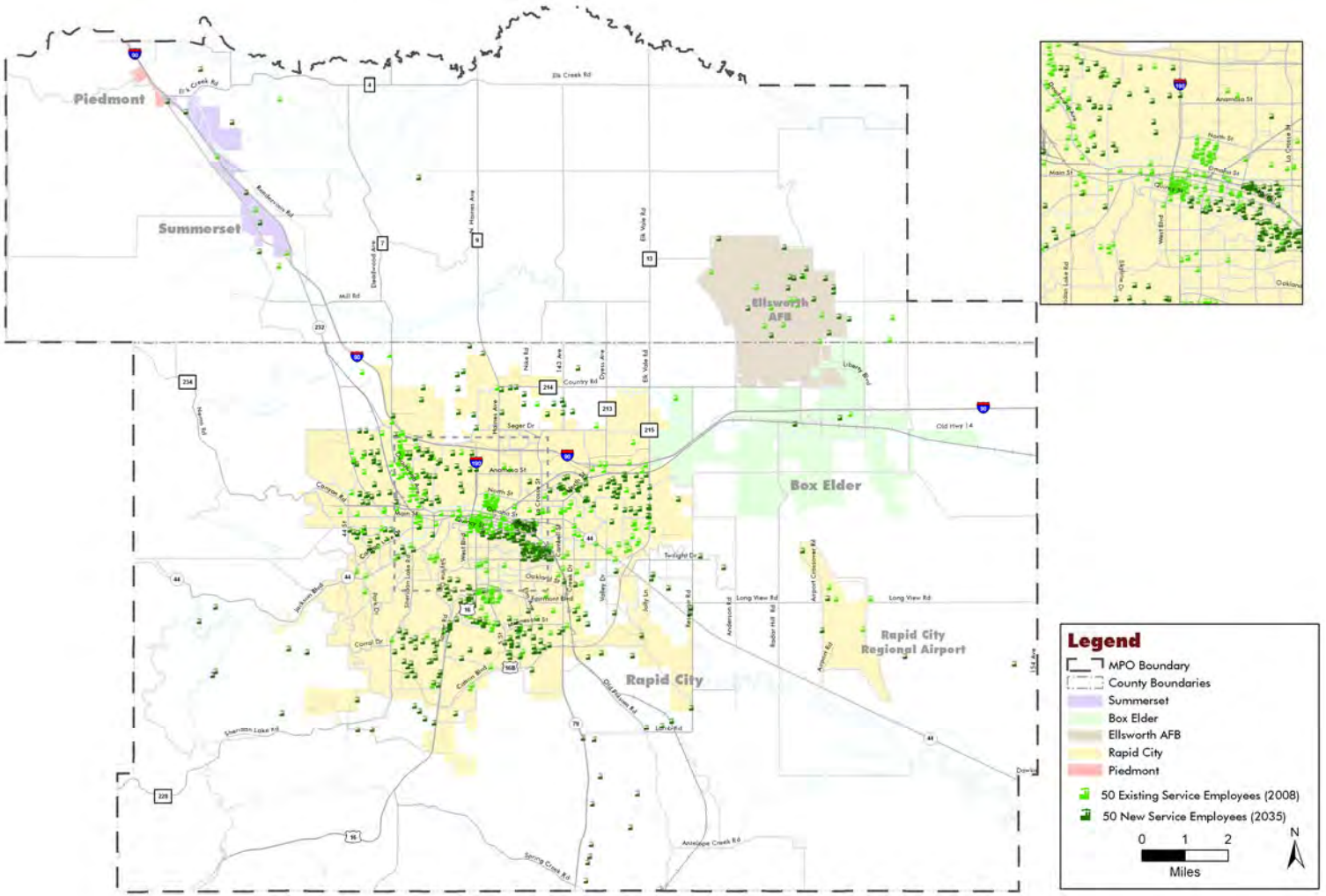


Figure 3-5: Retail Employment Growth



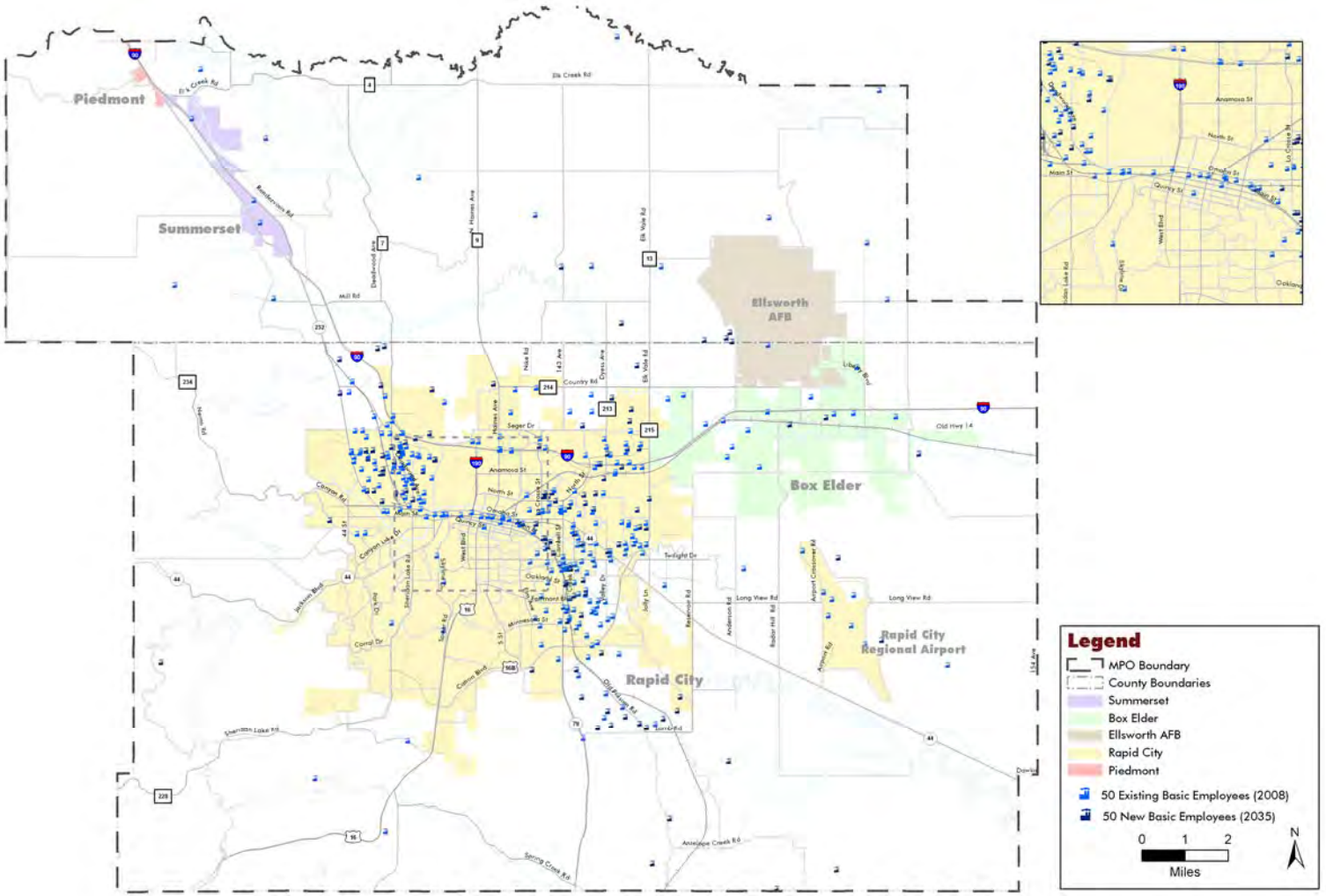
Please refer to the Map Appendix to see a larger version of this map.

Figure 3-6: Office/Service Employment Growth



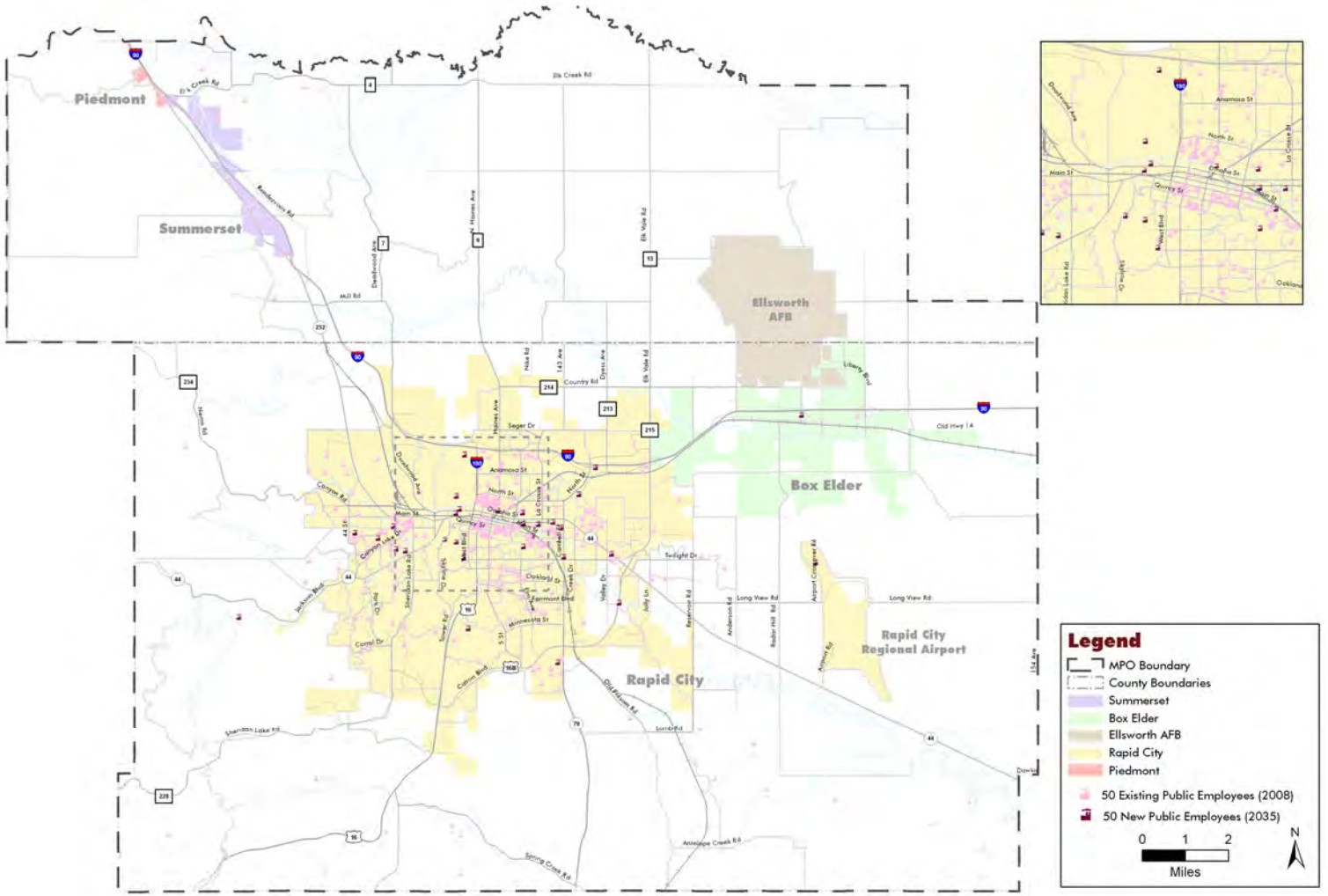
Please refer to the Map Appendix to see a larger version of this map.

Figure 3-7: Industrial Employment Growth



Please refer to the Map Appendix to see a larger version of this map.

Figure 3-8: Public Sector Employment Growth

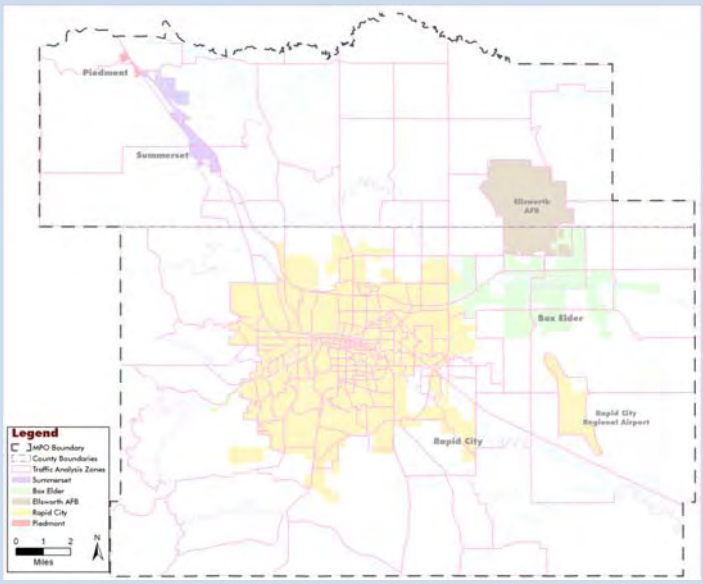


Please refer to the Map Appendix to see a larger version of this map.

Analysis Tools – Rapid City Regional Traffic Model

RapidTRIP 2035 was developed through an analysis of system deficiencies and potential alternative solutions using estimates of future travel demand. Travel demand, including roadway traffic volumes, is forecasted using the Rapid City Regional Traffic Model which was recently updated for this effort.

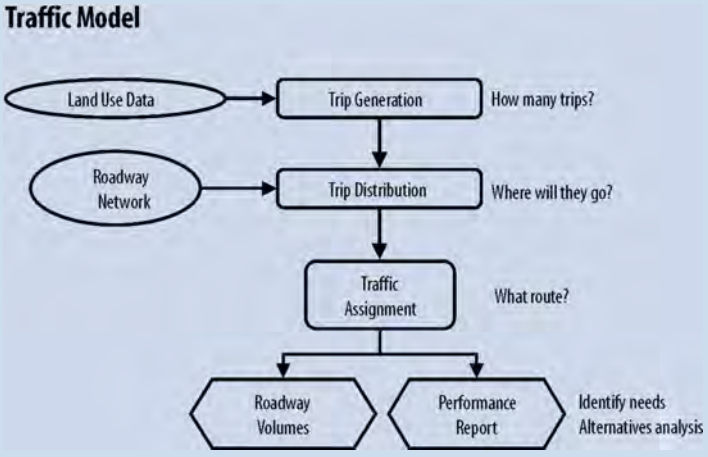
The model process, shown graphically below, uses estimates of household and employment data and the existing roadway network as input assumptions. Household and employment data is estimated and forecasted for small areas, called traffic analysis zones. The Trip Generation module calculates the amount of trip-making that takes place based on activities associated with household and employment data. The Trip Distribution module determines the origin and destination of each trip. In the Traffic Assignment module, specific routes are computed through consideration of travel time, congestion, and distance.



The model can produce reasonable results for several land use and roadway network scenarios. The intent is to produce estimates of average weekday traffic volumes for each roadway segment in the network. These are converted to peak hour traffic volumes for level of service analysis. In this manner, roadway deficiencies can be identified and potential alternative solutions evaluated.

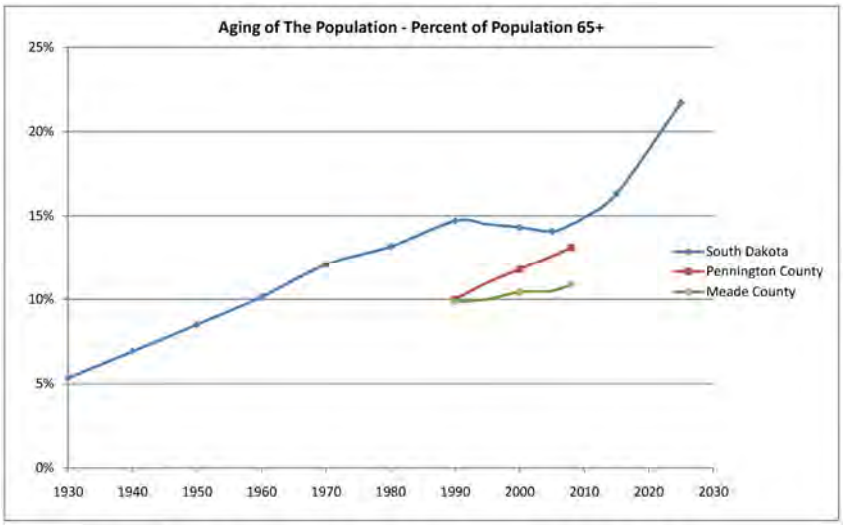
A word of caution: the model is a tool that can be used to assist with the evaluation of potential roadway improvements, but it is not a crystal ball. While the model provides valuable information, it is not sensitive to all of the specific decisions made by travelers or to the specific characteristics of individual roads.

Forecasted model results are estimates of future conditions based on assumptions of socioeconomic activity, transportation system characteristics, and travel behavior. Generally, the model assumes that travel behavior in the future will occur in a similar as today, which may or may not be the case. On the other hand, the model is considered to be sensitive to changes in the transportation system, socioeconomic assumptions, and other distinctive aspects of travel and transportation that influence future needs and solutions.

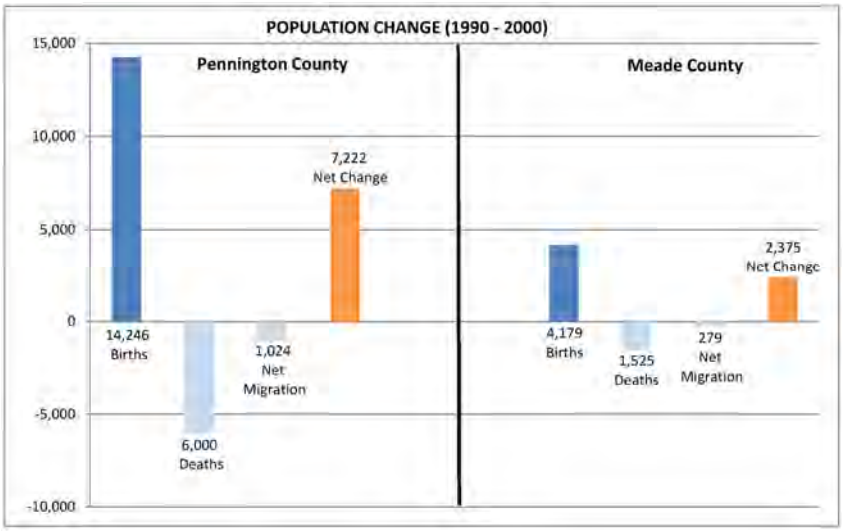


Socioeconomic Issues for *RapidTRIP 2035*

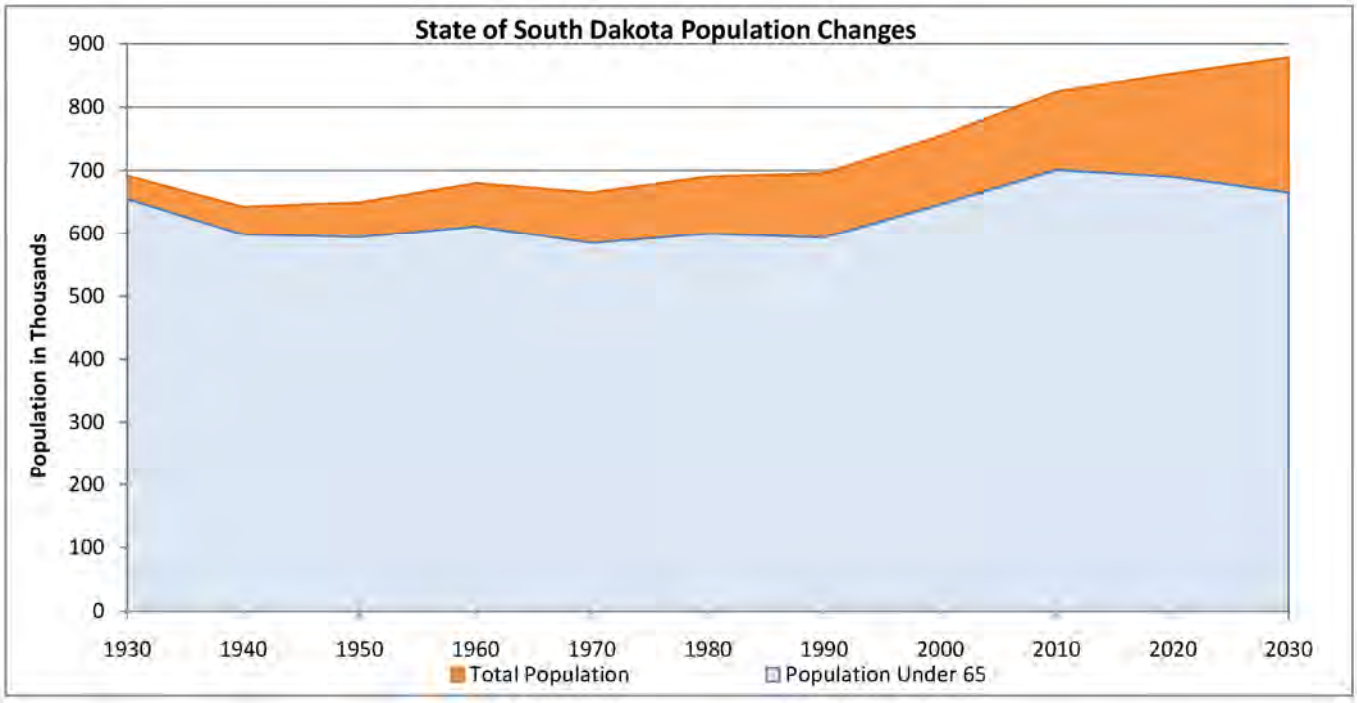
Throughout the development of *RapidTRIP 2035*, several growth-related issues were presented for consideration as to how they may affect the transportation system and how people travel in the future. Issues include amount and location of growth, migration trends, and aging of the population. Since the fastest growing segment of the population is over 65 years, there will be more people with specific travel needs later in life that will affect the provision of transportation system needs and services through the implementation of *RapidTRIP 2035*.



People over age 65 make up the fastest growing segment of the population both in the Rapid City area and statewide.



Population growth in the region from 1990 to 2000 reflects a steady net increase although net migration was actually out of Pennington and Meade Counties.



Men live an average of 6 years after they stop driving. For women, it's 10 years.

4. Financial Analysis And Funding Resources

SAFETEA-LU requires "a financial plan that demonstrates how the adopted transportation plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs."

Beyond the federal requirement, financial planning makes good sense since it is not possible to present a clear picture of the future Rapid City area transportation system without a distinct set of scheduled improvements supported by an accurate financial analysis.

In this chapter, the financial assumptions for roadway, transit, and non-motorized facilities are enumerated. These assumptions form the basis for financially constraining *RapidTRIP 2035* to available funding. In addition, a discussion of funding options for potentially raising additional revenue is presented.

Revenue Forecast - Roadway

Revenue forecasting for the roadway network, including roadway maintenance, new roadway capacity, transportation system management, and other roadway-related improvements, involves a multi-step process with key assumptions made at each step. The process is as follows:

- Review historic and existing funding, including funding represented in the Transportation Improvement Program (TIP).
- Identify the basic split of maintenance and capacity improvements for each funding program/source. This is based on the Transportation Improvement Program with some consideration that the 5-year TIP splits may not be representative of the 25-year plan timeframe.
- Estimate average annual roadway capacity funding for each funding program/source and use this amount for the year 2010.
- Start with the 2010 roadway capacity funding and estimate funding for each year from 2011 to 2035 such that revenues stay flat for most programs and increase for some programs. The programs for which revenues stay flat reflect a decreasing trend of per capita revenue combined with modest population growth so that the cash, or face, value of the funding stays relatively constant over time although the purchasing power decreases due to the inflationary prices of construction materials and other costs. A 2% per year inflation factor was used to adjust between constant year 2010 and year of expenditure dollar figures.

Table 4-1 shows the roadway capacity funding estimated for *RapidTRIP 2035* in year of expenditure (face value) dollars in 5-year increments. Funding programs and sources are defined in the section following the tables.

Table 4-1: Available Funding for Roadway Capacity (Year of Expenditure $$)

Year	2011 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	Total
Rapid City Capital Improvement Program	$0	$0	$0	$0	$0	**$0**
Box Elder Capital Improvement Program	$0	$0	$0	$0	$0	**$0**
Pennington County Road and Bridge	$0	$0	$0	$0	$0	**$0**
Meade County	$6,290,000	$6,290,000	$6,290,000	$6,290,000	$6,290,000	**$31,450,000**
Developer Exactions	$5,516,000	$6,090,000	$6,724,000	$7,424,000	$8,197,000	**$33,952,000**
Interstate Maintenance / State Highway System	$0	$0	$11,736,000	$3,230,000	$2,296,000	**$17,262,000**
Bridge Replacement	$0	$201,000	$201,000	$201,000	$201,000	**$805,000**
Safety Improvements	$0	$809,000	$809,000	$809,000	$809,000	**$3,235,000**
State Maintenance	$0	$0	$0	$0	$0	**$0**
Urban System / Surface Transportation Program - Rapid City	$4,553,000	$4,553,000	$4,553,000	$4,553,000	$4,553,000	**$22,763,000**
Urban System / Surface Transportation Program - Box Elder	$41,000	$203,000	$203,000	$203,000	$203,000	**$853,000**
Urban System / Surface Transportation Program - Summerset	$0	$0	$41,000	$203,000	$203,000	**$447,000**
Surface Transportation Program (STP) Rural - Pennington County	$3,725,000	$3,725,000	$3,725,000	$3,725,000	$3,725,000	**$18,625,000**
Surface Transportation Program (STP) Rural - Meade County	$1,100,000	$1,100,000	$1,100,000	$1,100,000	$1,100,000	**$5,500,000**
Railroad Crossings	$0	$0	$0	$0	$0	**$0**
Transportation Enhancements	$0	$0	$0	$0	$0	**$0**
Total	**$21,224,000**	**$22,971,000**	**$35,381,000**	**$27,738,000**	**$27,577,000**	**$134,892,000**

Local Funding Programs – These typically fund maintenance and reconstruction projects on off-system roads (not on the state highway system), as well as some capacity improvements and include:

- Rapid City Capital Improvement Program
- Box Elder Capital Improvement Program
- Pennington County Road and Bridge
- Meade County Road and Bridge

Developer Exactions – As new development occurs, roadway infrastructure is built and/or fees paid to provide access to new subdivisions and to mitigate the impact of the development on the roadway system.

Federal and State Programs (South Dakota Department of Transportation) – Projects in these federal and state programs are selected and managed by the South Dakota Department of Transportation. Most of these funds are for maintenance and reconstruction although some credit is given for roadway capacity since these projects typically provide additional capacity in the form of higher quality roads (e.g., grades, lane widths, curves, etc.) or system improvements such as turning lanes. Programs in this category include:

- Interstate Maintenance
- State Highway System
- Bridge Replacement
- Safety Improvements

Federal and State Programs (Metropolitan Planning Organization) – These funding sources include urban and rural allocations of the Surface Transportation Program of the federal SAFETEA-LU legislation. These projects are selected by the Rapid City Metropolitan Planning Organization through consultation with local governments and South Dakota Department of Transportation. There is considerable flexibility associated with these funds as they are applicable to both on- and off-system roads or other types of projects including both maintenance and capacity. Programs include:

- Urban System / Local Urban Systems – Rapid City
- Urban System / Local Urban Systems – Box Elder (assumed to start in 2015)
- Urban System / Local Urban Systems – Summerset (assumed to start in 2025)
- County and Secondary Projects / Rural – Pennington County
- County and Secondary Projects / Rural – Meade County

Other – This category includes other projects related to roadway improvements but that don't generally provide capacity improvements, including:

- Railroad Crossings – Safety improvements at railroad crossings.
- Special Projects / Earmarks – Unplanned resource allocations made available through federal or state earmarks or other sources. These funds are extremely difficult to predict and cannot be counted on as available resources.

- Transportation Enhancements – These include federally funded, community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. These typically do not provide roadway capacity improvements.

Revenue Forecast – Maintenance and System Preservation

While preservation of the existing transportation system is of the highest priority, only regionally significant system preservation projects are listed in the regional transportation plan. Regional system preservation projects include larger scale roadway and interchange reconstruction, paving, and resurfacing/striping projects. Maintenance projects, including pothole repair, mowing, crack sealing, snow removal, grading, deck sealing, joint replacement, structure rehabilitation, mill and overlay/resurfacing, pavement restoration, and other related function, are not listed in the plan. The South Dakota Department of Transportation uses a pavement management system to select preservation and maintenance projects, which are analyzed yearly based on projected funding.

The funding analysis for roadway capacity presented in the previous section also provides an estimate for roadway maintenance. Table 4-2 shows the estimated available funding for maintenance of the roadway and trail system in the region in year of expenditure, or face, value dollars. A 2% per year inflation factor was used to adjust between constant year 2010 and year of expenditure dollar figures to develop the estimates in Table 4-2.

Table 4-2: Available Funding for Maintenance and System Preservation (Year of Expenditure $$)

Year	2011 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	Total
Rapid City Capital Improvement Program	$20,750,000	$20,750,000	$20,750,000	$20,750,000	$20,750,000	**$103,750,000**
Box Elder Capital Improvement Program	$1,935,000	$1,935,000	$1,935,000	$1,935,000	$1,935,000	**$9,675,000**
Pennington County Road and Bridge	$3,100,000	$3,100,000	$3,100,000	$3,100,000	$3,100,000	**$15,500,000**
Meade County	$250,000	$250,000	$250,000	$250,000	$250,000	**$1,250,000**
Developer Exactions	$0	$0	$0	$0	$0	**$0**
Interstate Maintenance / State Highway System	$85,391,000	$41,152,000	$41,152,000	$41,152,000	$41,152,000	**$250,000,000**
Bridge Replacement	$1,789,000	$604,000	$604,000	$604,000	$604,000	**$4,204,000**
Safety Improvements	$6,162,000	$2,426,000	$2,426,000	$2,426,000	$2,426,000	**$15,867,000**
State Maintenance	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	**$10,000,000**
Urban System / Surface Transportation Program - Rapid City	$4,553,000	$4,553,000	$4,553,000	$4,553,000	$4,553,000	**$22,763,000**
Urban System / Surface Transportation Program - Box Elder	$41,000	$203,000	$203,000	$203,000	$203,000	**$853,000**
Urban System / Surface Transportation Program - Summerset	$0	$0	$41,000	$203,000	$203,000	**$447,000**
Surface Transportation Program (STP) Rural - Pennington County	$3,725,000	$3,725,000	$3,725,000	$3,725,000	$3,725,000	**$18,625,000**
Surface Transportation Program (STP) Rural - Meade County	$1,100,000	$1,100,000	$1,100,000	$1,100,000	$1,100,000	**$5,500,000**
Railroad Crossings	$90,000	$200,000	$200,000	$200,000	$200,000	**$890,000**
Transportation Enhancements	$0	$0	$0	$0	$0	**$0**
Total	**$130,885,000**	**$81,998,000**	**$82,039,000**	**$82,201,000**	**$82,201,000**	**$459,324,000**

Revenue Forecast - Transit

Funding for transit in the Rapid City area comes from a variety of sources, including state, federal, and local governments; transit fares and pass sales; and advertising. Federal operating assistance comes to the state and planning area through formula allocations and must be matched with local funds.

Funding for the existing fixed bus routes and Dial-A-Ride service is based on the 2011 figures for transit funding shown in the 2009-2013 Transportation Improvement Program. This assumes that transit funding will stay relatively constant over time in constant year dollars. Table 4-3 shows the estimated available transit funding in year of expenditure, or face value, dollars. A 2 percent per year inflation factor was used to adjust between constant year 2010 and year of expenditure dollar figures to arrive at the figures in Table 4-3.

Transit Revenue Sources

Federal Transit Programs

The **Section 5307** Program, formerly known as the Section 9 Program, provides funding to urban areas for transit capital, operating, and planning assistance. These funds are formula-allocated by Federal Transit Administration to metropolitan area recipients.

The **Section 5309** Program, formerly known as the Section 3 Program, provides transit capital discretionary grants awarded by Federal Transit Administration, often with Congressional input. They are available to all jurisdictions.

The **Section 5310** Program, formerly known as the Section 16 Program, supplies capital assistance for the elderly, and disabled transportation programs.

The **Section 5311** Program, formerly known as the Section 18 Program, provides capital and operating assistance for rural public transportation programs. These funds cannot be used in urbanized areas.

State Transit Program

The State Transit Program provides a small amount of funding for urban and rural public transportation.

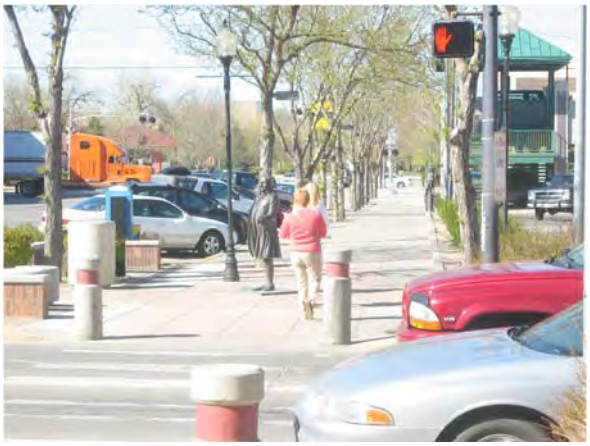
Table 4-3: Available Funding for Transit (Year of Expenditure $$)

	Operating				Capital			
Year	Federal	State	Local	Total	Federal	State	Local	Total
2011 - 2015	$4,101,000	$151,000	$3,536,000	$7,788,000	$1,806,000	$0	$370,000	**$2,176,000**
2016 - 2020	$4,528,000	$167,000	$3,904,000	$8,598,000	$1,994,000	$0	$408,000	**$2,403,000**
2021 - 2025	$4,999,000	$184,000	$4,310,000	$9,493,000	$2,202,000	$0	$451,000	**$2,653,000**
2026 - 2030	$5,519,000	$203,000	$4,759,000	$10,481,000	$2,431,000	$0	$498,000	**$2,929,000**
2031 - 2035	$6,094,000	$224,000	$5,254,000	$11,572,000	$2,684,000	$0	$550,000	**$3,234,000**
Total	**$25,240,000**	**$929,000**	**$21,762,000**	**$47,931,000**	**$11,118,000**	**$0**	**$2,277,000**	**$13,395,000**

The figures in Table 4-3 indicates that the federal operating and capital costs are increasing at a rate of 2% per year so that the funding increases each year yet remains stable in constant year dollars. As such, the federal, state, and local funds for operating the existing fixed route and Dial-A-Ride transit services are assumed to stay constant over the 25-year life of *RapidTRIP 2035* (in constant year 2010 dollars) so that annual increases offset the inflation that erodes the spending power of the money over time. In other words, the existing transit services currently operating in the Rapid City area are assumed to be funded to the extent that they continue without cutbacks or enhancements for the 25 years of the Plan.

Revenue Forecast – Non-Motorized

Revenue forecasts for non-motorized travel modes – bicycle and pedestrian – are difficult to predict for several reasons. For example, many bicycle facilities are constructed as part of roadway improvements and are not itemized in the Transportation Improvement Program or local Capital Improvement Programs. While some pedestrian facilities such as pedestrian overpasses are identified, investments in sidewalks rarely are specified unless part of a larger project. In addition, sidewalk improvements are often made as part of commercial and residential developments and are therefore funded privately and not necessarily inventoried.



The 5-year 2009-2013 Rapid City Area Transportation Improvement Program lists two bicycle-specific projects at a total cost of $2.241 million. One of these projects is a $166,000 Fairgrounds Bike Path project funded through the Transportation Enhancements program. The other is for an extension of the Greenway Pedestrian and Bike Path in Rapid City listed in the Special Projects category of the Transportation Improvement Program at a cost of $2.075 million. By themselves, these two projects suggest a bicycle investment of about $450,000 per year (in 2010 dollars). However, while the Transportation Enhancements funding can be assumed for the future, the Special Projects funding cannot.

Using only the Transportation Enhancements example would suggest only $33,000 per year in bicycle facility funding, which amounts to less than $1 million over the 25-year life of the Plan. No doubt including the portion of roadway projects that serve bicycle and pedestrian modes and also including privately funded investments would significantly increase this amount, but again it is very difficult to predict.

As a point of reference, there are approximately 32.5 miles of off-street bicycle paths and bike lanes in the regional network in 2010 and about 45,000 dwelling units. In 2035, the number of dwelling units is expected to swell by about 17,000 to 62,000. This 38% increase in dwelling units would suggest that an additional 12.3 miles of off-street bicycle paths and bike lanes would be built to keep pace with growth. This represents approximately $3.0 million in 2010 dollars based on unit costs of $400,000 and $100,000 per mile of off-street paths (50%) and bike lanes (50%), respectively. This consumption approach to bike planning assumes that the bike network began when the area was first settled with constant investment since that time. In reality, the investment in bicycle facilities has occurred since the early 1970's when the number of dwelling units was about half what it is today.

Therefore, for planning purposes the 25-year funding for the bicycle network was doubled to $6.0 million in today's (2010) dollars. Half of this amount is assumed to come from the Transportation Enhancements program and the other half is based on Special Projects Funding. Table 4-4 contains the annual base year funding assumptions; and Table 4-5 shows 25 years of funding by 5 year increment in year of expenditure dollars.

Table 4-4: Annual Funding for Non-Motorized Facilities (2010 $$)

Program / Source	Federal	State	Local	Total
Transportation Enhancements	$96,000	-	$24,000	$120,000
Special Projects Funding	$96,000	-	$24,000	$120,000
Total (annual)	$192,000	$0	$48,000	$240,000
	80%	0%	20%	

Table 4-5: Available Funding for Non-Motorized Facilities (Year of Expenditure $$)

Program / Source	Federal	State	Local	Total
2011 - 2015	$1,019,000	$0	$255,000	$1,274,000
2016 - 2020	$1,125,000	$0	$281,000	$1,407,000
2021 - 2025	$1,242,000	$0	$311,000	$1,553,000
2026 - 2030	$1,372,000	$0	$343,000	$1,715,000
2031 - 2035	$1,514,000	$0	$379,000	$1,893,000
Total	$6,273,000	$0	$1,568,000	$7,841,000

Revenue Forecast Summary

Table 4-6 summarizes the funding assumptions for *RapidTRIP 2035* in year of expenditure dollars.

Table 4-6: RapidTRIP 2035 Funding Summary (Year of Expenditure $$)

Program / Source	2011 – 2015	2016 – 2020	2010 – 2025	2026 - 2030	2031 – 2035	Total	%
Roadway Capacity	$21,224,000	$22,971,000	$35,381,000	$27,738,000	$27,577,000	**$134,892,000**	21%
Maintenance	$130,885,000	$81,998,000	$82,039,000	$82,201,000	$82,201,000	**$459,324,000**	69%
Transit - Operating	$7,788,000	$8,598,000	$9,493,000	$10,481,000	$11,572,000	**$47,931,000**	7%
Transit – Capital	$2,176,000	$2,403,000	$2,653,000	$2,929,000	$3,234,000	**$13,395,000**	2%
Non-Motorized Facilities	$1,274,000	$1,407,000	$1,553,000	$1,715,000	$1,893,000	**$7,841,000**	1%
Total	**$163,347,000**	**$117,376,000**	**$131,118,000**	**$125,064,000**	**$126,477,000**	$663,383,000	

Options for Additional Transportation Revenues

Although the total revenues for transportation over the 25-year life of *RapidTRIP 2035* seem like a large amount (see Table 4-6), when broken down annually and after subtracting maintenance, what remains is relatively small compared to the challenges to maintain acceptable service levels and the desires of the public. The comparisons of available resources and needs are discussed in the modal plan chapters later in this document. In this section, several alternative funding sources are presented.

The need for additional funding beyond anticipated revenues stems from the long list of transportation improvements desired by elected officials, staff, and the public. In many cases, there are strong technical or emotional arguments for additional improvements beyond what can be afforded with base anticipated revenues. Therefore, several funding options were presented and discussed during the Plan's development. Those with potential are discussed in more detail below.

Feasible Funding Options

Of the numerous funding options discussed throughout the development of *RapidTRIP 2035*, a handful rose to the top as being potentially feasible. Many of the other options were not allowed under state law or not possible for other reasons. Those that are allowed include:

- Transportation Maintenance Fee
- Special Improvement Districts
- Tax Increment Financing
- Tolls
- Wheel Tax

Tables 4-7 through 4-11 provide more information on each of these options. Table 4-12 summarizes the funding options.

Table 4-7: Funding Option - Transportation Maintenance Fee

Transportation Maintenance Fee

(also known as transportation utility fee, street maintenance fee, road user fee, or street utility fee)

Description

A fee that is paid monthly by residential and commercial property owners to provide funds to maintain the existing transportation system. It is paid through the regular utility bill and could be passed on to renters/tenants.

The fee is intended to be based on the amount of use of the transportation system by the property owner or occupant. Fees are often based on land uses, Institute of Transportation Engineers trip generation rates, and/or amount of roadway frontage so that they are proportional to the use.

Advantages

Generally reflective of use based on trips and land use. Tax-exempt land uses still pay the maintenance fee.

Stable, perpetual source of income for preventive maintenance of the transportation system.

Equitable since virtually everyone benefits from a maintained street system, including those without vehicles.

Disadvantages

Trips are based on trends not actual use.

No visitor/tourist participation.

Difficult to administer due to variability in trip-making.

Would require legislation.

Application

Monthly fee typically used for street maintenance. Could be expanded to include on-system highways, bikeways, sidewalks, graffiti, snow/ice, signs/markings, and other maintenance items. Can be applied as a tax, which may require a vote. Requires implementation by local governments.

Measure / Basis

Applied by land use category based on number of trips.

Examples

Loveland, CO:

$16.50/yr. per dwelling unit;

$184/yr. per industrial acre;

$700 to $1800/yr. per retail acre;

$240/yr. per office / institution acre

About $1m per year collected.

Several examples in Oregon, Montana, and Florida.

Corvallis, Oregon generates $400k per year from about 20,000 households for about $20 per household per year.

Revenue Potential

An annual fee of $250 per dwelling unit per year with additional 25% borne by business would generate about $15 million per year ($360m / 25 years).

An annual fee of $33/yr per dwelling unit plus business participation would generate about $2 million per year.

Table 4-8: Funding Option – Special Improvement Districts

Special Improvement Districts
Description
Local tax or special assessment similar to a property tax for a specific area and typically for specific improvements.
Advantages
Benefits local area generating revenues.
Disadvantages
Doesn't have widespread application due to district approach.
Application
A special district is setup to fund an improvement based on local sales taxes collected in that district. Bond sales are generally used to finance the cost of the improvement(s), which may include a plan for public improvements or a single project such as a new interchange. Special Improvement Districts are formed by local governments, property owners, and/or developers; and they can continue for 10 years in South Dakota.
Measure / Basis
Cumulative annual assessments on property in the district must cover the bond repayment and other costs associated with running the district.
Examples
Special Improvement Districts are used widely throughout the US.
Revenue Potential
Revenue potential varies although perhaps the best possibility for the use of Special Improvement Districts in the Rapid City area would be to fund a new diamond interchange on I-90. This would need to generate on the order of $25 million per new intersection location; but this is highly dependent on the viability of the developments in the district to generate cash to fund the district's improvement needs.

Table 4-9: Funding Option – Financing Districts

Financing Districts

(including Tax Increment Financing (TIF) and Urban Transportation Districts (UTD))

Description
A special financing district is created with sales taxes collected within the district for improvements to roads and other infrastructure within the district.
Advantages
Provides a dedicated funding stream for a specific location with transportation needs such as a blighted area.
Disadvantages
Does not generate new revenues since the sales tax collected within the district stays in the district and because the incremental increase in property tax is redirected.
Application
This method is typically used to raise funds for infrastructure improvements in a specific local area. They can also be used to fund downtown improvements and transit service.
Measure / Basis
n/a
Examples
Most states including South Dakota allow TIFs.
Revenue Potential
No new revenue generated.

Table 4-10: Funding Option - Tolls

Tolls
Description
A user fee, or toll, to finance new toll roads and in some limited cases existing facilities. Tolls can vary based on congestion, time of day, vehicle size or number of axles, and other criteria.
Advantages
A new road is financed directly by the traveling public that uses it.
Disadvantages
Concerns about public perception of paying for something that was previously perceived to be free. Difficult to justify without significant traffic congestion.
Application
Traditionally, tolls are used to finance individual projects but have been expanded in recent years to provide funding for a network of toll facilities. Toll facilities are implemented by state or local governments. Since they are based on traffic congestion in the rest of the transportation network, toll roads are not deemed viable in the short-term in Rapid City.
Measure / Basis
Tolls must be based on a comprehensive study that weighs the ability to pay back the bonds used to finance the road and the cost of congestion compared to the price of the toll. Toll roads are not viable unless they provide a significant time savings relative to congestion in the rest of the network or provide access to a particular area that is not otherwise available.
Examples
There are several examples of toll roads around the country. Possibly the closest is E-470/Northwest Parkway in Denver.
Revenue Potential
No revenue potential likely for the 2035 time frame, but this strategy should be monitored for long-term viability.

Table 4-11: Funding Option – Wheel Tax

Wheel Tax

(also known as local vehicle registration fees)

Description
A Wheel Tax is an additional tax levied by a municipality or county that applies to motor vehicles registered in the jurisdiction. Monies collected from the Wheel Tax are used for transportation purposes.
Advantages
Allows local jurisdictions to collect funds from vehicle owners (users) to fund roadway maintenance and capacity projects. Difficult to evade paying since collected as part of vehicle registration.
Disadvantages
Tends to be regressive since it is typically not based on the value of the vehicle. Not typically indexed to inflation, so revenue growth is based on increasing numbers of vehicles.
Application
The Wheel Tax is enacted by local governments and paid during the annual renewal of vehicle registration.
Measure / Basis
Flat-rate tax per vehicle.
Examples
Omaha, Nebraska's Wheel Tax generates about $15 million annually based on $35 per vehicle.
Revenue Potential
At $35 per vehicle, this strategy could generate about $3.2 million annually. At $20 per vehicle, it could make about $1.8 million annually.

Table 4-12: Summary of Funding Options

Option	Revenue Potential
Transportation Maintenance Fee	$2 million per year may be reasonable based on $33 per dwelling unit annually (would require legislation)
Special Improvement Districts	Dependent on specific applications – $25 million for one new interchange may be reasonable over the 25-year life of *RapidTRIP* ($1 million annually)
Tax Increment Financing	No new revenues / redirects incremental increase in property tax
Tolls	Dependent on specific applications, but no toll roads are expected over the 25 years of the Plan
Wheel Tax	$2 million per year may be reasonable based on $20 per vehicle annually
Total	**Possibly $5 million annually could be generated based on these options.**

As Tables 4-7 to 4-12 indicate, there are viable options for increasing transportation funding in the Rapid City area but at least two options (maintenance fee and wheel tax) would require significant political will and public acceptance. An additional $5 million annually would increase transportation funding in the Rapid City area by about 20%. It is assumed that these funds would have flexibility or at least increase the overall flexibility of all funds to be used for roadway, transit, and non-motorized uses.

One strategy that might be considered by the Metropolitan Planning Organization is to require local over-matching of federal funds. The local funds necessary for this over-match could be offset by the adoption of a Transportation Maintenance Fee. A Wheel Tax would further supplement funding for the local transportation system.

Unfeasible Funding Options

Several funding options were reviewed and determined to not be feasible at this time because they are not allowed under state law or other reasons:

- Dedicated Sales Tax / Regional Transportation Authority
- Development Excise Tax (including Impact Fees)
- Vehicle Miles of Travel (Odometer) Fees
- Local Gas Tax
- Head Tax (Local Income Tax) – not allowed under state statute
- Bed Tax
- Car Rental Tax

- Vehicle Registration Property Tax
- Parking Fees / Parking Improvement District
- Road Damage / Weight Tax
- Alternative Fuels Tax
- Bicycle Purchase Tax or Annual Registration Fee

Transit Funding Issues

Federal transit assistance to the region is currently limited by the amount of available matching funds. In other words, available federal funding is being "left on the table" due to a lack of matching local and state funds. A high priority for the region should be to secure additional local and state funding to leverage against available federal funds to provide increased transit service in Rapid City.

The fares for the fixed-route bus service are $1.50 per ride and $0.75 for elderly/disabled/Medicare. Dial-A-Ride fares for Americans with Disabilities Act trips can be as high as double the regular fixed-route bus fare. Dial-A-Ride is a curb-to-curb transit service for those individuals who qualify under the Americans with Disabilities Act. The service is available within the city limits of Rapid City.

State funding for public transportation in the Rapid City area is very low at the current 2% contribution. This is another potential source of additional funding for transit and could be pursued. Specifically, state funding for transit should be increased to secure additional federal funding available to the region.

Therefore, high priority transit funding initiatives for the first 5 years of *RapidTRIP 2035* are to:

- Pursue additional local funding to leverage against available federal formula funds;
- Consider raising Dial-A-Ride fares for trips requested by the general public; and
- Solicit additional transit funding from the South Dakota Department of Transportation.

5. Bicycle and Pedestrian Plan

Bicycling and walking can be healthy alternatives to the automobile for many types of trips. They can also play an important role in helping the region to reduce congestion, improve air quality, and develop a more balanced transportation system by providing additional modal choices to more people. As part of the development of *RapidTRIP 2035*, the regional bikeway/walkway network was reviewed, updated, and analyzed. In the context of *RapidTRIP 2035*, bikeways and walkways include those facilities of a regional or community-wide nature for use by non-motorized travel modes. Individual sidewalk segments are considered a local issue and are not addressed in this Plan.

It is important to note that in the final phases of the development of *RapidTRIP 2035*, the Rapid City Area Metropolitan Planning Organization embarked on an effort to prepare a regional Bicycle and Pedestrian Master Plan for the Rapid City area. The upcoming Master Plan can be thought of as an extension or implementing component of *RapidTRIP 2035*.

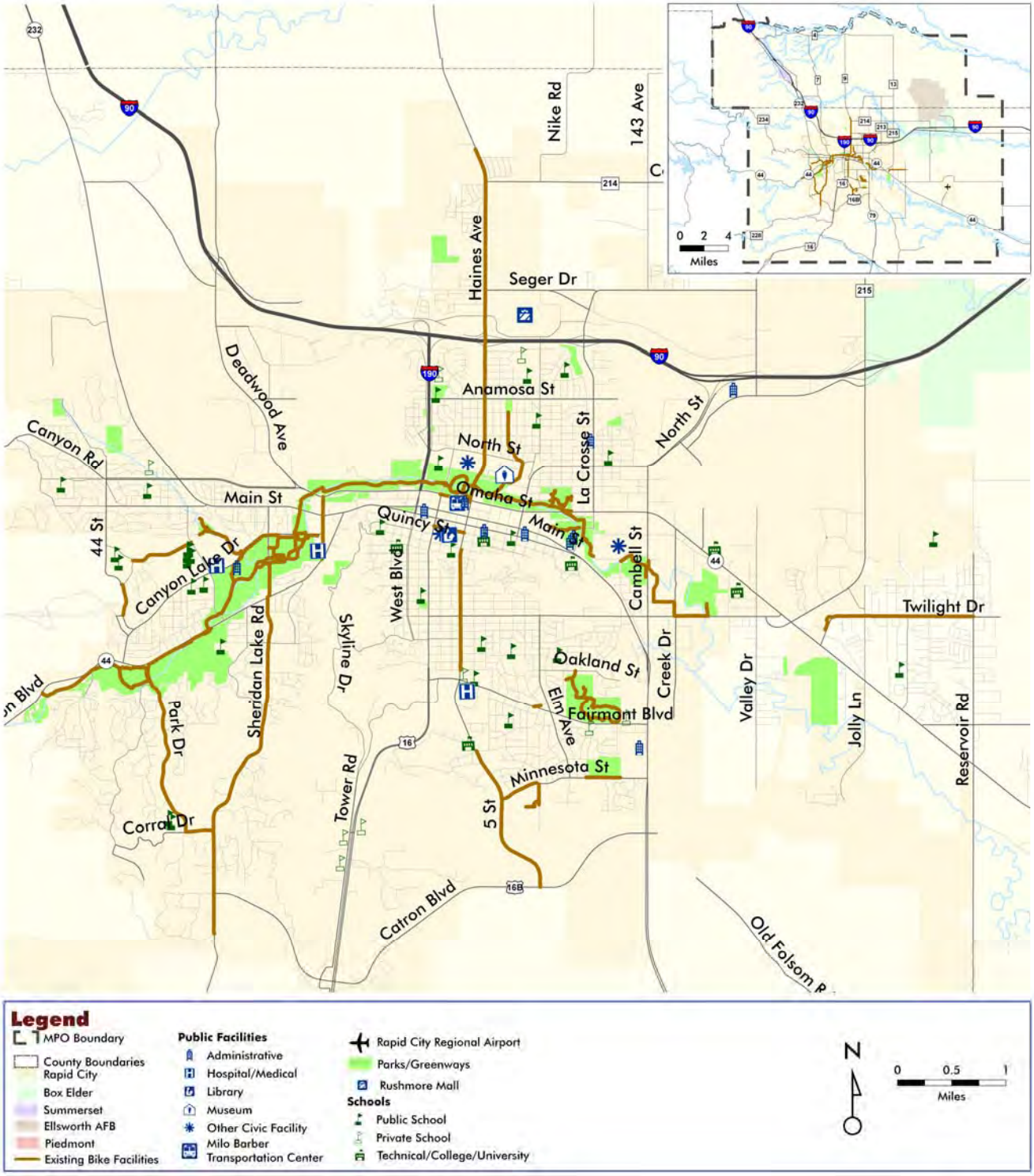
Existing Conditions

The existing bicycle and pedestrian network is anchored by a path that follows Rapid Creek through the City. In 1972, Rapid Creek flooded when stationary thunderstorms over the eastern slopes of the Black Hills dumped as much as 15 inches of rain in as little as six hours over the Rapid Creek basin. In all, 238 people died, making this one of the deadliest flash floods in the United States this century. The flood also significantly changed the look of Rapid City.

As a result, City officials turned the flood plain into a greenbelt to lessen the effect of future floods. The corridor is also ideal for recreational uses since development opportunities are limited.

The existing non-motorized network of on-street bike lanes and off-street paths in the region is shown in Figure 5-1. The Leonard "Swanny" Swanson Memorial Pathway along Rapid Creek represents a major component of the existing bicycle network. The path is an 8-foot wide concrete path that parallels Rapid Creek through the center of the community. It is augmented by several additional paths, including those along Haines Avenue, Fifth Street, Minnesota Street, Twilight Drive in Rapid Valley, Sheridan Lake Road, Park Drive, Corral Drive, and others.

Figure 5-1: Existing Pedestrian and Bicycle Facilities



What We Heard About Non-Motorized Modes

In all phases of the development of *RapidTRIP 2035*, a significant public involvement effort allowed people from around the region an opportunity to provide input on their priorities for the non-motorized network of sidewalks, bike lanes, and off-street paths. Bicycle interests tend to be more active than those of other modes, so there was good input received on these topics through the open houses, online resident and business surveys, and the Connections Workshops. A summary of that input is provided in this section.

Online Resident Survey

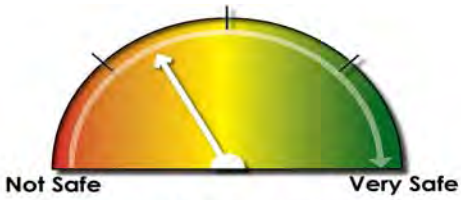
How would you rate the following areas for BICYCLE SAFETY in the Rapid City Area?
(The average of all responses is shown for each question.)

On Roadways

On Roadways with Bike Lanes or Wide Shoulders

To the Parks and Open Spaces in Your Neighborhood

On Paved Recreational Trails



To the Schools in Your Neighborhood

From Your Neighborhood to Local Shopping

How would you rate the following areas for PEDESTRIAN SAFETY and other factors that promote walking? (The average of all responses is shown for each question.)

In Downtown Rapid City

Along Major Streets in Rapid City

Along Paved Off-street Trails and Paths in Rapid City

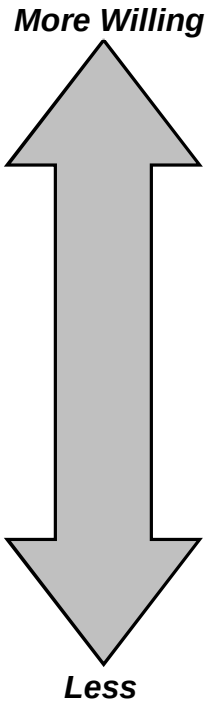
Near Schools in Your Neighborhood

<u>Please indicate your LEVEL OF SUPPORT for the following statements</u>:
(The average of all responses is shown for each question)

Sidewalks and trails to increase connectivity for pedestrians and bicyclists in neighborhoods should be provided in all new developments.

Streets should be improved to accommodate all modes of travel – auto, truck, bus, pedestrian, and bicycle.

How willing are you to have your TAX DOLLARS used to support the following improvements? (Average Rating shown where 1 = not willing and 5 = very willing)

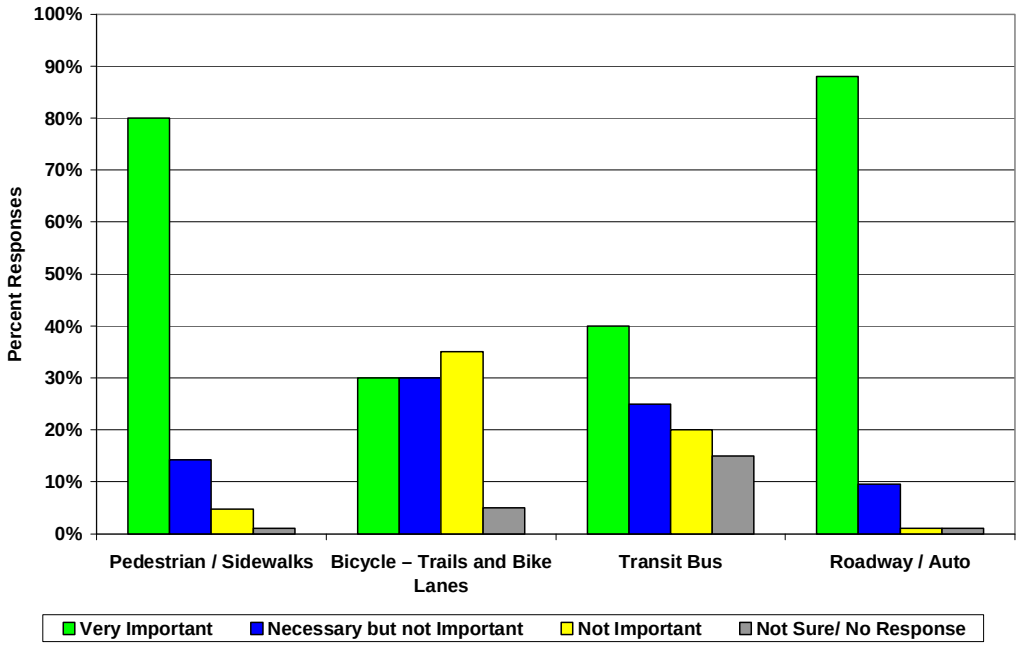


Improvements	Average Rating
Improving major streets in the Rapid City area	3.7
Adding pedestrian facilities such as sidewalks, crosswalks, bridges, etc.	3.7
Adding trails for walking and bicycling	3.5
Improving the timing of traffic signals	3.4
Improving transportation for seniors and persons with disabilities	3.4
Attracting more airlines and flights to the airport	3.3
Reducing delays caused by trains	3.2
Adding on-street bike lanes	3.0
Adding more bus routes to serve more of the community	3.0
Improving rural roads around Rapid City area	2.7
Adding bus service in the evenings	2.7
Adding bus service on weekends	2.7
Improving the airport	2.5
Improving I-90 interchanges	2.2
New interchanges on I-90	2.0
Adding lanes to I-90	1.9
Improving roads in Box Elder and Summerset	1.9

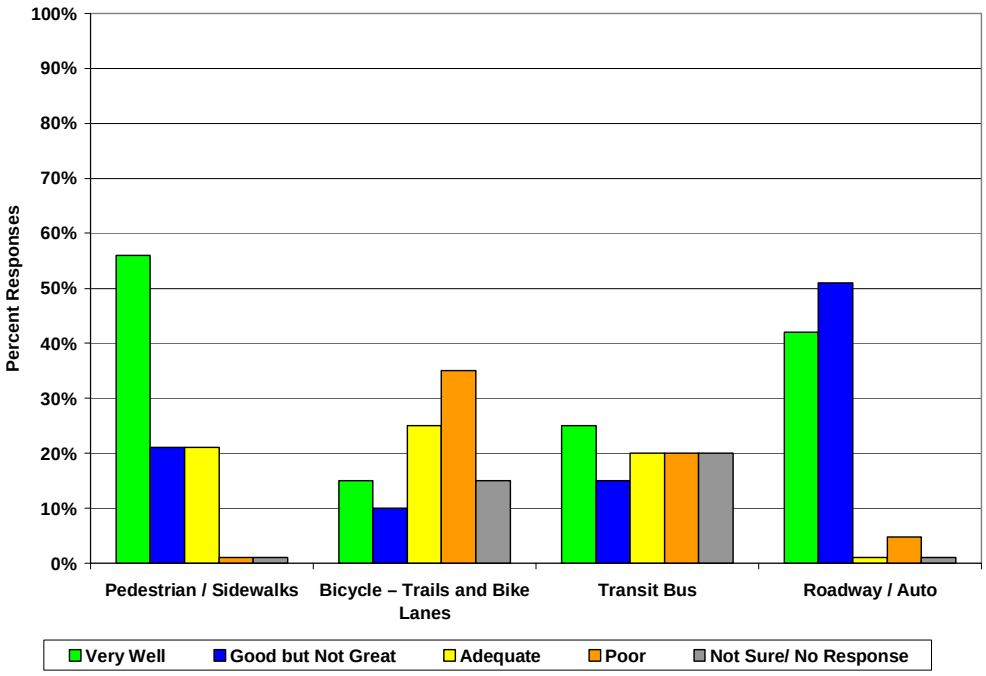
Note: Highlighted rows indicate bicycle and pedestrian recommendations.

Online Business Survey

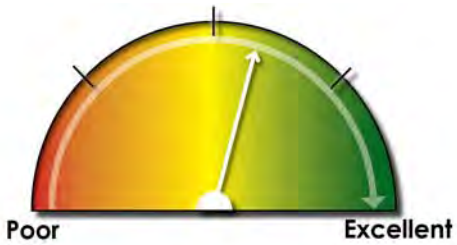
How important is it for your CUSTOMERS TO HAVE GOOD ACCESS TO YOUR PLACE OF BUSINESS for the following travel modes?



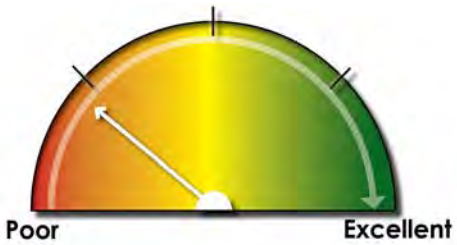
How well do the following TRAVEL MODES serve your place of business FOR YOUR CUSTOMERS AND CLIENTS?



What do you think your CUSTOMERS would say about their ability to ACCESS YOUR PLACE OF BUSINESS using the transportation system?
(The average of all responses is shown for each question.)



Pedestrian/Sidewalks



Bicycle – Trails and Bike Lanes

How would you rate the following areas for BICYCLE SAFETY in the Rapid City area?
(The average of all responses is shown for each question.)

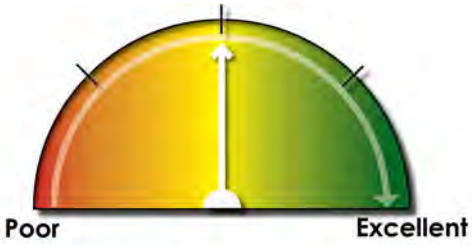
On Roadways

On Roadways with Bike Lanes or Wide Shoulders

On Paved Recreational Trails

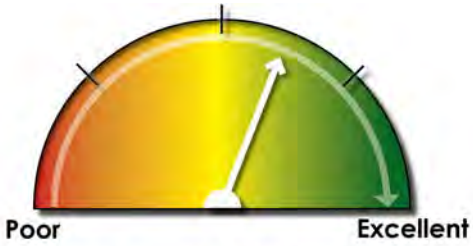
In the Vicinity of Your Business

How would you rate the following areas for PEDESTRIAN SAFETY and other factors that promote walking? (The average of all responses is shown for each question.)

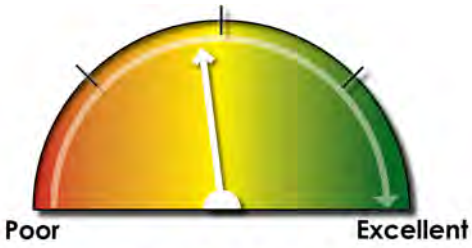


In Downtown Rapid City

Along Major Streets in Rapid City



Along Paved Off-street Trails and Paths in Rapid City



In the Vicinity of Your Business

Non-Motorized Plan Development

Throughout the 1980's, a core group of bicyclists met periodically to address specific bicycle and pedestrian issues such as school crossings, dangerous storm drain grates, feeder routes, and signage. In 1992, the City and Metropolitan Planning Organization recognized the formation of a Bike Walk Run Task Force. The purpose of the task force is to improve, expand, and promote the safe use of the community's bikeway and walkway facilities.

Over the years, the task force evolved into the Bike Walk Run Committee, which is made up of members of the community selected for their expertise and/or interest in developing alternative transportation opportunities.

The Bike Walk Run Committee assisted in the development of the *Bikeway/Walkway Plan* for the Rapid City area, which was last updated in June 2006. The Plan identifies needs and priorities for the bike and walk network, establishes standards, and identifies proposed enhancements to the system. RapidTRIP 2035 borrows ideas from the Bikeway/Walkway Plan and has included alternatives from the Plan into the alternatives evaluation process.

In addition to the aforementioned activities, the Rapid City Metropolitan Planning Organization initiated the development of the Bicycle and Pedestrian Master Plan in the Fall of 2009. The Master Plan was still underway at the writing of *RapidTRIP 2035*, so the Master Plan will build on the concepts identified in *RapidTRIP 2035*.

Bicycle Alternatives

Throughout the public process for the Plan's development, ideas were generated that built on the Bikeway/Walkway Plan so that a comprehensive list of alternatives was prepared. Figure 5-2 and Table 5-1 identify the refined set of alternatives that evolved from the planning process.

Bicycle Facilities

Bicycle facilities include paths, trails, bike lanes, bike routes, and sidewalks. All roads in the region are considered part of the bicycle network, since bicycles are considered vehicles and may legally travel on any street that does not have a minimum speed requirement. On the other hand, many roads do not provide a reasonable option for the casual or less-experienced cyclist due to traffic volumes, speeds, and other factors

Bike Lane – A portion of roadway that has been designated by striping, signing, and/or pavement markings for the exclusive use of bicyclists.

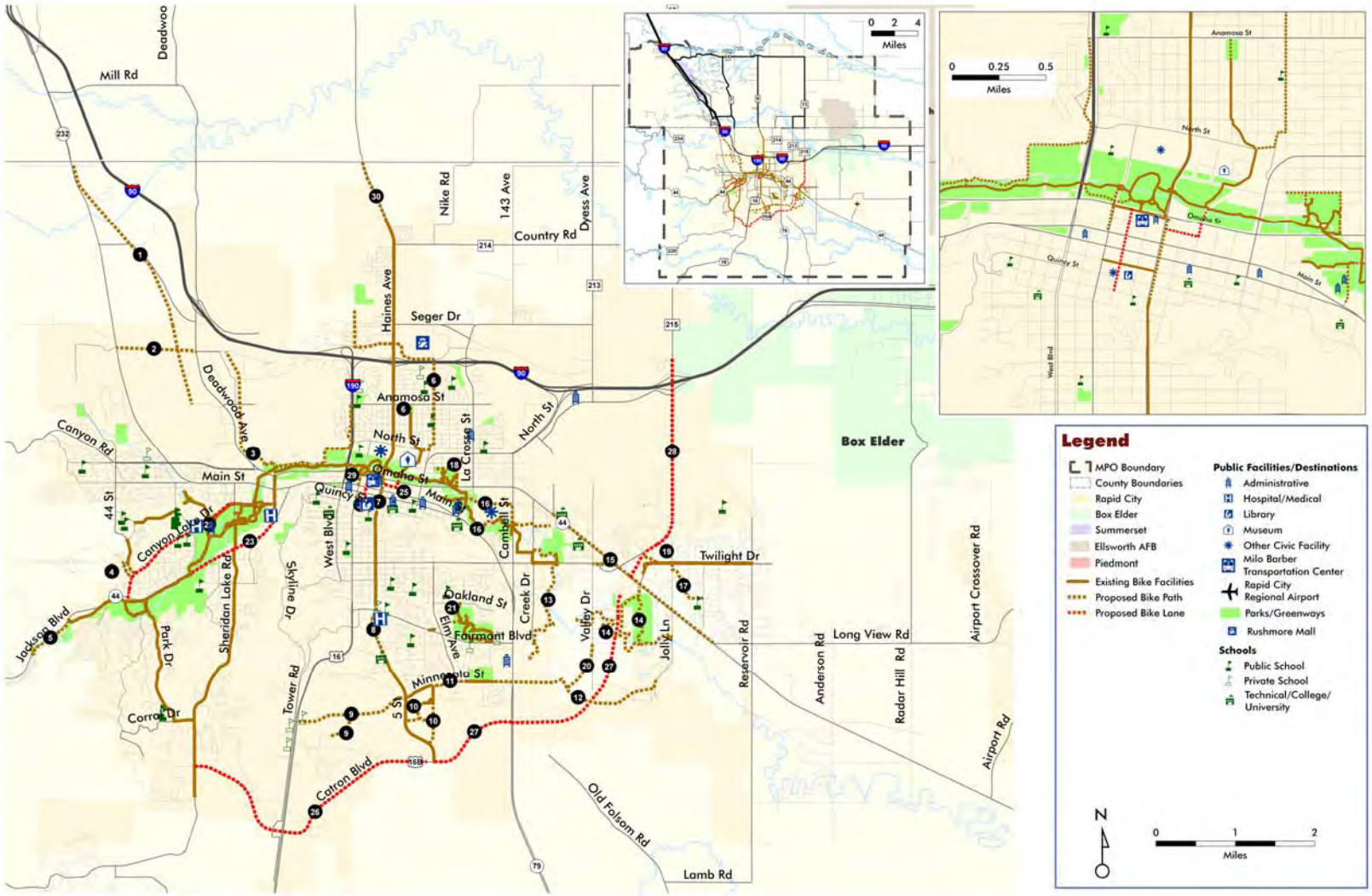
Path – A facility that is physically separated from motorized vehicle traffic by a parkway, open space, or barrier and is either within the road right-of-way or within an independent right-of-way. Paths have hard surfaces of concrete or asphalt.

Trail – Similar to a path, except a trail has a soft and/or natural surface, such as compacted soil or small gravel.

Bike Route – A segment or system of roadways signed for the shared use of automobiles and bicycles without striping or pavement markings.

Sidewalk – The portion of a roadway designated for preferential use by pedestrians and for the allowable use by bicyclists. Bicycles are prohibited from sidewalks within the downtown area.

Figure 5-2: Bicycle Network Alternatives



Please refer to the Map Appendix to see a larger version of this map.

Table 5-1: Bicycle Network Alternatives

Alternative ID	Street	From	To	Improvement Type	Length (Miles)	Improvement Costs (2010 $$)
1	Sturgis Rd/Universal Dr.	Merritt Rd	Lien St	Bike Path	3.45	$1,380,000
2	N Plaza Dr.	Sturgis Rd	Deadwood Ave	Bike Path	1.01	$400,000
3	Deadwood Ave	N Plaza Dr.	Omaha St	Bike Path	3.65	$1,460,000
4	Hillsview Dr./ Red Dale Dr.	W St Patrick St	Canyon Lake Dr.	Bike Path	0.46	$180,000
5	Jackson Blvd	Fish Hatchery	Cliffside Park	Bike Path	0.75	$300,000
6	Maple Ave/Disk Dr./Bunker Dr.	Vickie Powers Park	North St	Bike Path	3.01	$1,200,000
7	5th St	Columbus St	Omaha St	Bike Path	0.47	$190,000
8	5th St	Oakland St	Texas St	Bike Path	0.80	$320,000
9	Minnesota St	5th St	US Hwy 16/ Enchanted Pines Dr.	Bike Path	1.87	$750,000
10	Parkview Dr./Parkview Park	Parkview Dr.	5th St	Bike Path	1.15	$460,000
11	Minnesota St	Parkview Dr.	Odde Dr.	Bike Path	0.44	$180,000
12	E Minnesota St	LaCroix Links	Jolly Ln	Bike Path	2.35	$940,000
13	Rapid Creek	E St Patrick St	Fairmont Blvd/South	Bike Path	2.61	$1,040,000
14	Rapid Creek/ Wally Byam	Valley Dr.	Jolly Ln	Bike Path	4.57	$1,830,000
15	SD Hwy 44	Mickelson Dr.	Long View Rd	Bike Path	2.85	$1,140,000
16	Centre St	LaCrosse St	Star of the West	Bike Path	4.02	$1,610,000
17	Rapid Valley Drainage	Twilight Dr.	Covington St	Bike Path	0.72	$290,000
18	Roosevelt Park/E New York St/Waterloo St	Maple Ave	Omaha St	Bike Path	0.54	$220,000
19	Concourse Dr.	Elk Vale Rd	Twilight Dr.	Bike Path	0.22	$90,000
20	S Valley Dr.	E Fairmont St	E Minnesota St	Bike Path	0.68	$270,000
21	E Fairlane Dr.	Robbinsdale Park	Elm Ave	Bike Path	0.11	$40,000
22	Canyon Lake Dr	Sheridan Lake Rd	Beach Dr.	Bike Lane	1.92	$190,000
23	Jackson Blvd	Mountain View Rd	32nd St	Bike Lane	1.22	$120,000
24	7th St	Omaha St	Columbus St	Bike Lane	0.45	$50,000
25	Rapid St/ 3rd St	5th St	Omaha St	Bike Path	0.34	$140,000
26	Catron Blvd	5th St	Sheridan Lake Rd	Bike Lane	3.77	$380,000
27	Elk Vale Rd	Highway 44	5th St	Bike Lane	3.95	$390,000
28	Elk Vale Rd	Mall Dr.	Highway 44	Bike Lane	2.97	$300,000
29	Memorial Park	I-190	7th St	Bike Path	0.53	$210,000
30	Mt Rushmore Rd	Omaha St	Main St	Bike Path	0.80	$320,000
Total						$16,390,000

Bicycle Evaluation Criteria

As presented in Chapter 1, Context and Issues, bicycle evaluation criteria were designed for testing alternatives based on the principles of SAFETEA-LU, goals and objectives developed through the public process, and the desire to keep the evaluation process simple. The following criteria were used to subjectively rate each alternative.

- Connectivity - Does the alternative serve to connect attractions and activity centers with the bicycle network?
- Continuity - Does the alternative provide a missing segment to the bicycle network?
- Potential Use - How well does the alternative serve short trips that could be made by bicycle? This analysis was based on a short-trip assignment of trips less than 6 miles in length to gauge potential use of the facility.
- Joint Construction - Does the alternative offer the opportunity to combine resources with another project?
- Safety - What are the relative safety characteristics of the alternative?

Project Prioritization

Each alternative was scored subjectively for each criteria listed above based on a low (1), medium (2), and high (3) scale. The scores for all criteria were added together with the highest scoring project being the highest priority. Table 5-2 shows the results of the alternatives analysis process. Project costs are based on unit costs of $400,000 per mile for an off-street bike path and $100,000 for bike lanes on both sides of a street. Since the bike lane unit costs are considerably less than the off-street bike path unit costs, it stands to reason that the bike lanes are more cost effective in general than bike paths although this measure is not included in the prioritization process because of the lack of reliable bicycle ridership forecasts.

Table 5-2: Bicycle System Alternatives Prioritization

ID	Improvement Type	Length (Miles)	Connectivity	Continuity	Potential Use	Joint Construction	Safety	Composite Score	Improvement Cost (2010 $$)	Cumulative Costs (2010 $$)
7	Bike Path	0.47	2	3	3	1	2	11	$190,000	$190,000
6	Bike Path	3.01	3	2	3	1	2	11	$1,200,000	$1,390,000
23	Bike Lane	1.22	2	3	3	1	1	10	$120,000	$1,510,000
3	Bike Path	3.65	2	2	2	2	2	10	$1,460,000	$2,970,000
4	Bike Path	0.46	2	2	2	1	2	9	$180,000	$3,150,000
22	Bike Lane	1.92	2	3	2	1	1	9	$190,000	$3,340,000
8	Bike Path	0.8	2	2	2	1	2	9	$320,000	$3,660,000
26	Bike Lane	3.77	2	1	2	3	1	9	$380,000	$4,040,000
15	Bike Path	2.85	2	2	2	1	2	9	$1,140,000	$5,180,000
16	Bike Path	4.02	2	2	2	1	2	9	$1,610,000	$6,790,000
19	Bike Path	0.22	1	2	2	1	2	8	$90,000	$6,880,000
25	Bike Path	0.34	2	1	2	1	2	8	$140,000	$7,020,000
11	Bike Path	0.44	2	2	1	1	2	8	$180,000	$7,200,000
29	Bike Path	0.53	1	2	2	1	2	8	$210,000	$7,410,000
27	Bike Lane	3.95	2	1	2	2	1	8	$390,000	$7,800,000
9	Bike Path	1.87	2	1	2	1	2	8	$750,000	$8,550,000
12	Bike Path	2.35	2	2	1	1	2	8	$940,000	$9,490,000
13	Bike Path	2.61	2	2	1	1	2	8	$1,040,000	$10,530,000
1	Bike Path	3.45	2	1	1	2	2	8	$1,380,000	$11,910,000
24	Bike Lane	0.45	2	1	2	1	1	7	$50,000	$11,960,000
28	Bike Lane	2.97	2	1	2	1	1	7	$300,000	$12,260,000
5	Bike Path	0.75	2	1	1	1	2	7	$300,000	$12,560,000
30	Bike Path	0.8	2	1	1	1	2	7	$320,000	$12,880,000
10	Bike Path	1.15	1	2	1	1	2	7	$460,000	$13,340,000
14	Bike Path	4.57	2	1	1	1	2	7	$1,830,000	$15,170,000
21	Bike Path	0.11	1	1	1	1	2	6	$40,000	$15,210,000
18	Bike Path	0.54	1	1	1	1	2	6	$220,000	$15,430,000
20	Bike Path	0.68	1	1	1	1	2	6	$270,000	$15,700,000
17	Bike Path	0.72	1	1	1	1	2	6	$290,000	$15,990,000
2	Bike Path	1.01	1	1	1	1	2	6	$400,000	$16,390,000
Total									$16,390,000	

Financially Constrained Non-Motorized Plan

Based on the analysis described above, each segment of the proposed non-motorized network was reviewed and prioritized for implementation. As presented in Chapter 4, Funding, for planning purposes the 25-year funding for the bicycle network was estimated to be about $6.0 million in constant year 2010 dollars, or about $240,000 per year.

Table 5-3 shows 25 years of funding by 5 year increment in constant year 2010 dollars for non-motorized facilities; and Table 5-4 shows the year of expenditure dollars.

Table 5-3: Available Funding for Non-Motorized Facilities (2010 $$)

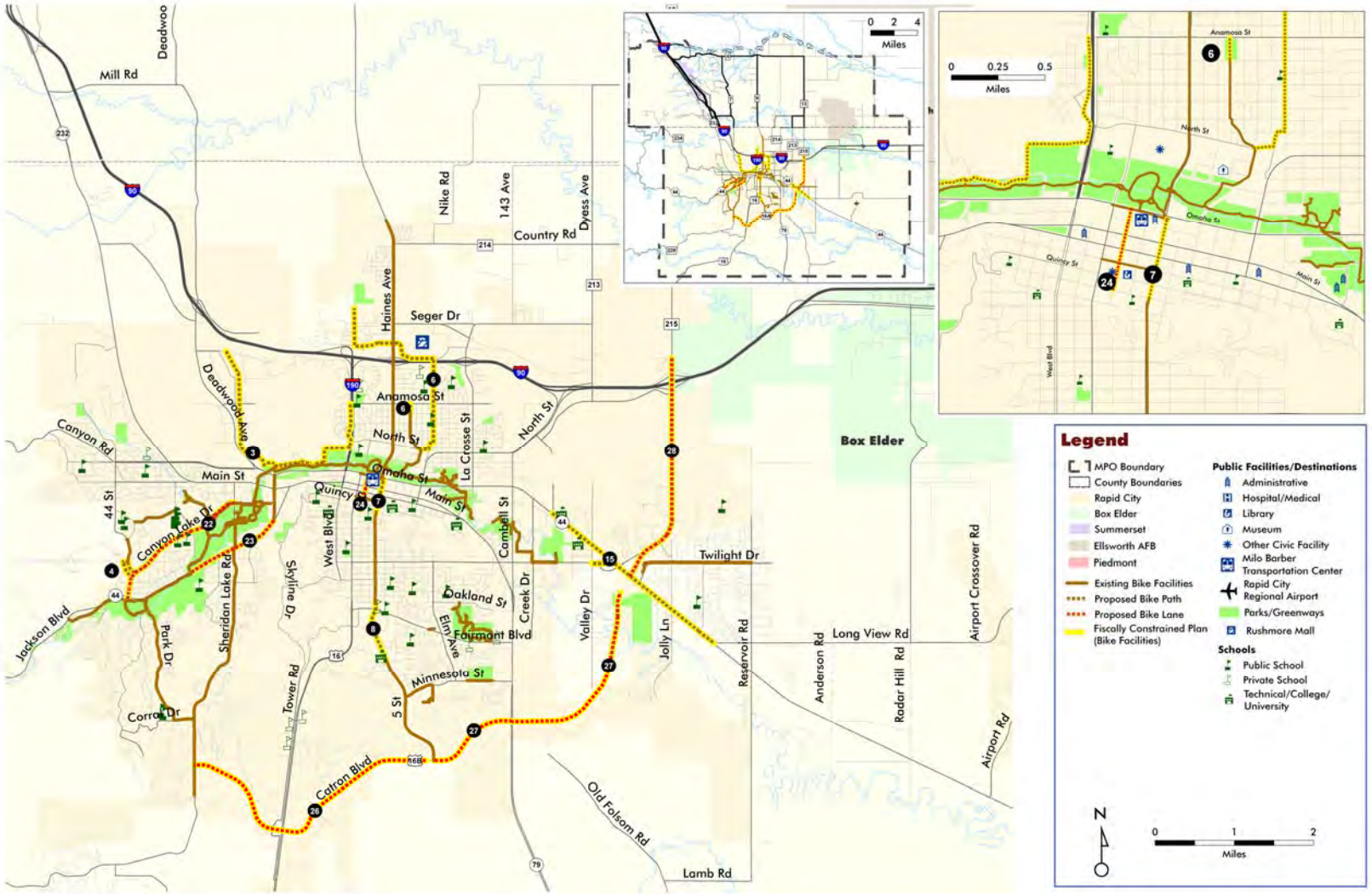
Program / Source	Federal	State	Local	Total
2011 - 2015	$960,000	$0	$240,000	$1,200,000
2016 - 2020	$960,000	$0	$240,000	$1,200,000
2021 - 2025	$960,000	$0	$240,000	$1,200,000
2026 - 2030	$960,000	$0	$240,000	$1,200,000
2031 - 2035	$960,000	$0	$240,000	$1,200,000
Total (25 years)	$4,800,000	$0	$1,200,000	$6,000,000

Table 5-4: Available Funding for Non-Motorized Facilities (Year of Expenditure $$)

Program / Source	Federal	State	Local	Total
2011 - 2015	$1,019,159	$0	$254,790	$1,273,949
2016 - 2020	$1,125,234	$0	$281,309	$1,406,543
2021 - 2025	$1,242,349	$0	$310,587	$1,552,937
2026 - 2030	$1,371,654	$0	$342,914	$1,714,568
2031 - 2035	$1,514,417	$0	$378,604	$1,893,021
Total	$6,272,814	$0	$1,568,203	$7,841,017

Figure 5-3 and Table 5-5 identify the recommended priorities for the Non-Motorized Plan. Bike routes are not prioritized. It is estimated that about 20% ($1.5 million) of the funding for non-motorized facilities is for bike lanes implemented as part of a roadway improvement. Bike lanes are inherently more cost-effective than bike paths due to their significantly lower unit costs ($400,000 vs. $100,000 per mile).

Figure 5-3: Financially-Constrained Non-Motorized Plan



Please refer to the Map Appendix to see a larger version of this map.

Table 5-5: Financially-Constrained Non-Motorized Plan

Time Frame	ID	Street Name	Improvement Type	Total Cost (2010$$)	Approximate Cost (Funded Amount) in Year of Construction
2011 - 2015	7	5th Street	Bike Path	$190,000	$202,638
Subtotal				$190,000	$202,638
2016 - 2020	6	Maple Ave/Disk Dr/Bunker Dr	Bike Path	$1,200,000	$1,300,907
	23	Jackson Blvd	Bike Lane	$120,000	$141,302
Subtotal				$1,320,000	$1,442,209
2021 - 2025	3	Deadwood Ave	Bike Path	$1,460,000	$1,789,033
	4	Hillsview Dr/Red Dale Dr	Bike Path	$180,000	$234,013
	22	Canyon Lake Dr	Bike Lane	$190,000	$247,014
Subtotal				$1,830,000	$2,270,060
2026 - 2030	8	5th Street	Bike Path	$320,000	$424,143
	26	Catron Blvd	Bike Lane	$380,000	$545,447
Subtotal				$700,000	$969,590
2031 - 2035	15	SD Highway 44	Bike Path	$1,140,000	$1,693,112
	27	Elk Vale Rd	Bike Lane	$390,000	$618,066
	24	7th Street	Bike Lane	$50,000	$79,239
	28	Elk Vale Rd	Bike Lane	$300,000	$475,435
Subtotal				$1,880,000	$2,865,852
Total				$5,920,000	$7,750,349

6. TRANSIT PLAN

Transit plays an important part in the provision of transportation facilities and services in the Rapid City region. Although not suitable for everyone, transit serves many residents of the community for whom driving is not an option, or a poor one, due to disability, income limitations, or other factors. As part of *RapidTRIP 2035's* development, various transit issues were considered and discussed with the public to develop a list of recommendations and service priorities for the transit component of the Plan.

Existing Conditions

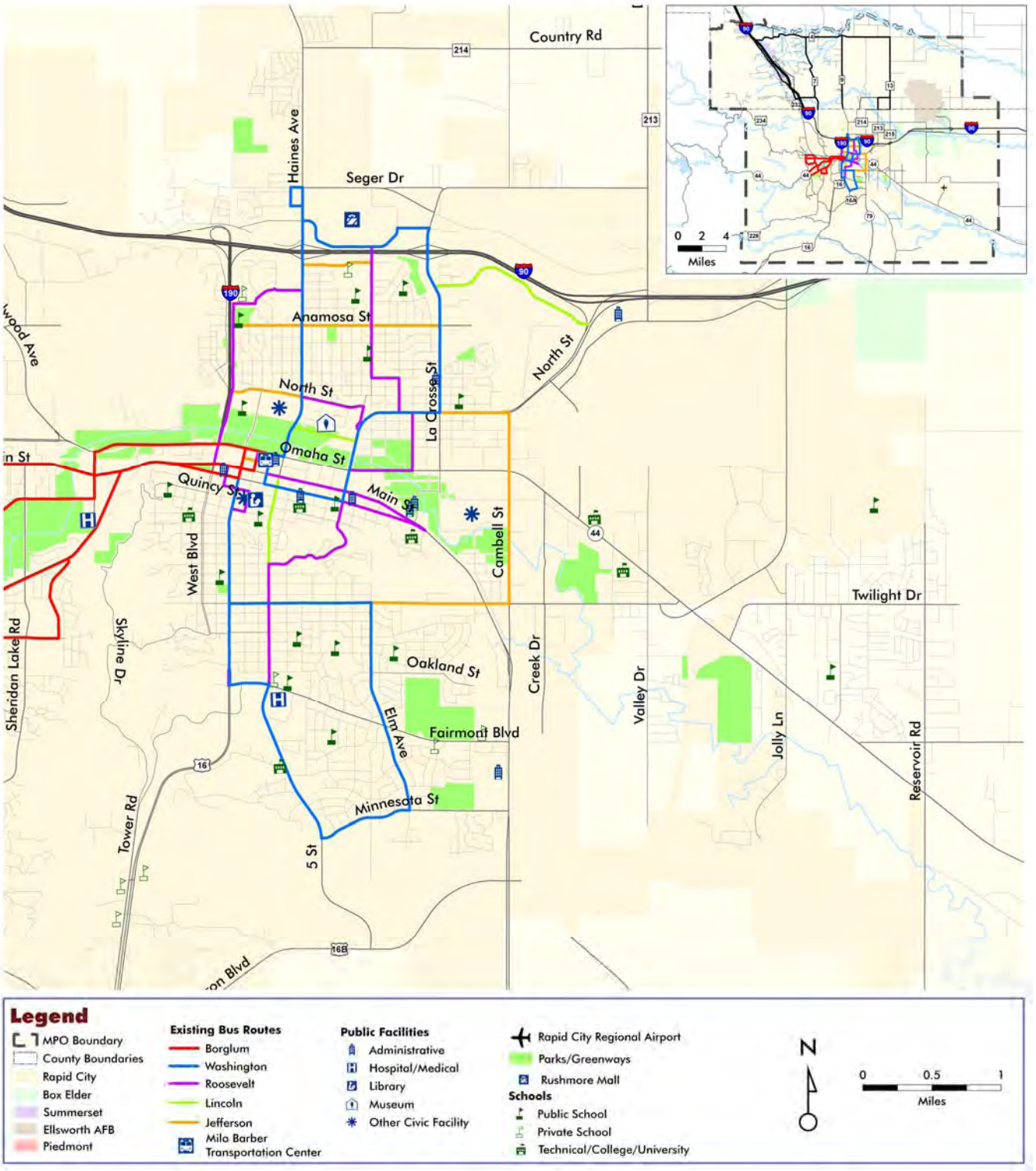
Rapid City provides two types of transit services – a fixed bus route system known as *RapidRide* and an Americans with Disabilities Act paratransit service with curb-to-curb or door-to-door service, known as Dial-A-Ride. Both of these are operated by Rapid Transit System.

Significant changes to the fixed-route *RapidRide* system were made in August 2009, including:

- Improved Overall Route System
- New Route Names
- Saturday Service
- Expanded Service Area
- More Convenient Locations
- Reduced Bus Transfers
- Reduced Ride Times
- Increased Service Frequency
- Extended Service Hours
- Fifteen (15) Additional Passenger Shelters
- Seventy-Five (75) Additional Passenger Benches

The fixed-route system, shown in Figure 6-1, consists of five routes that serve the north, south, west, and central parts of the community. These routes operate on a 30 – 60 minute frequency (headway) depending on the route. The fixed-routes operate roughly from 6:30 am to 6:00 PM weekdays and from about 9:30 AM to 4:30 PM on Saturdays. All routes begin and end at the downtown Milo Barber Transportation Center to facilitate transfers.

Figure 6-1: Existing Fixed Bus Routes



The Dial-A-Ride service provides bus transport for the general public and a door-to-door (or curb-to-curb) service for patrons that are certified passengers through the Americans with Disabilities Act provisions. Americans with Disabilities Act certified passengers have disabilities that prevent them from using the regular fixed-route service. Dial-A-Ride goes anywhere within the incorporated city limits of Rapid City and operates every day, but Sunday and holidays. Requests for rides must be made at least one day in advance.

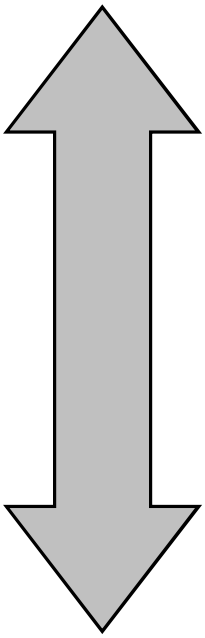
What We Heard About Transit

In all phases of the development of *RapidTRIP 2035*, a significant public involvement effort allowed people from around the region an opportunity to provide input on their priorities for the transit system. Input was received on several transit-related topics through the open houses, online resident and business surveys, and the Connections Workshops. A summary of that input is provided in this section. Since input was received from throughout the Metropolitan Planning Organization planning area, much of the input was received from people living outside of the city limits of Rapid City. Many of these respondents may not be actual users of the transit system since *RapidRide* currrently does not provide service outside the city lmits of Rapid City.

Online Resident Survey

HOW WILLING ARE YOU TO HAVE YOUR *TAX DOLLARS* USED TO SUPPORT THE FOLLOWING IMPROVEMENTS? (AVERAGE RATING SHOWN WHERE 1 = NOT WILLING AND 5 = VERY WILLING)

More Willing

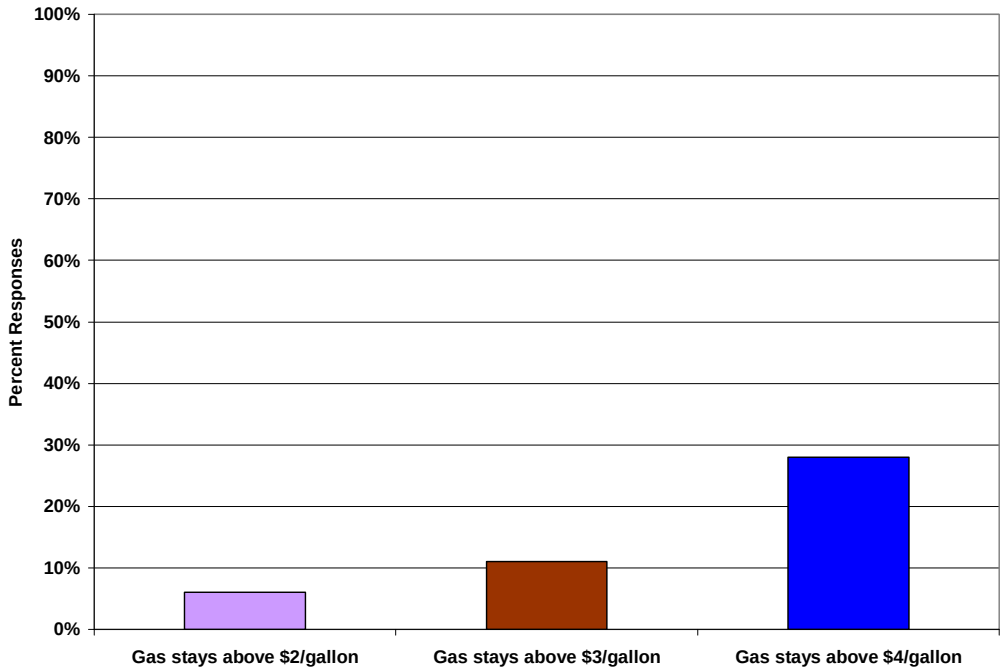


Less Willing

Improvements	Average Rating
Improving major streets in the Rapid City area	3.7
Adding pedestrian facilities such as sidewalks, crosswalks, bridges, etc.	3.7
Adding trails for walking and bicycling	3.5
Improving the timing of traffic signals	3.4
Improving transportation for seniors and persons with disabilities	3.4
Attracting more airlines and flights to the airport	3.3
Reducing delays caused by trains	3.2
Adding on-street bike lanes	3.0
Adding more bus routes to serve more of the community	3.0
Improving rural roads around Rapid City area	2.7
Adding bus service in the evenings	2.7
Adding bus service on weekends	2.7
Improving the airport	2.5
Improving I-90 interchanges	2.2
New interchanges on I-90	2.0
Adding lanes to I-90	1.9
Improving roads in Box Elder and Summerset	1.9

Note: Highlighted rows indicate transit issues.

HOW LIKELY WOULD YOU BE TO *USE THE BUS* MORE OFTEN IF:



WHAT IS YOUR IMPRESSION OF THE BUS SYSTEM? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

Frequency of the Buses

On-Time Reliability of the Bus

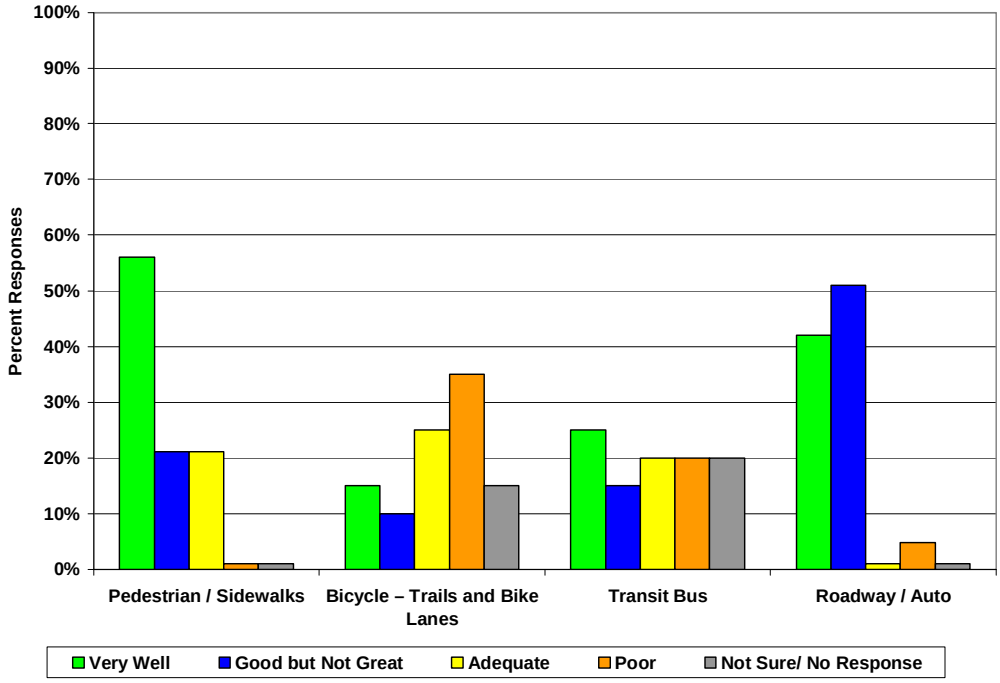
Coverage of the Bus Routes – Do they go where you need them to go?

Bus Stop Locations

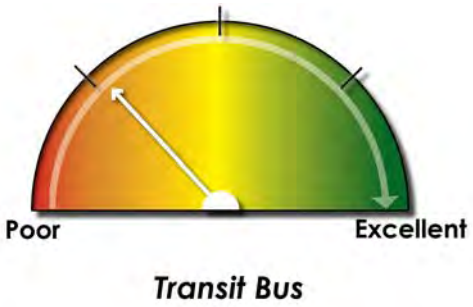
Condition of Bus Shelters

Online Business Survey

HOW WELL DO THE FOLLOWING *TRAVEL MODES* SERVE YOUR PLACE OF BUSINESS *FOR YOUR CUSTOMERS AND CLIENTS?*

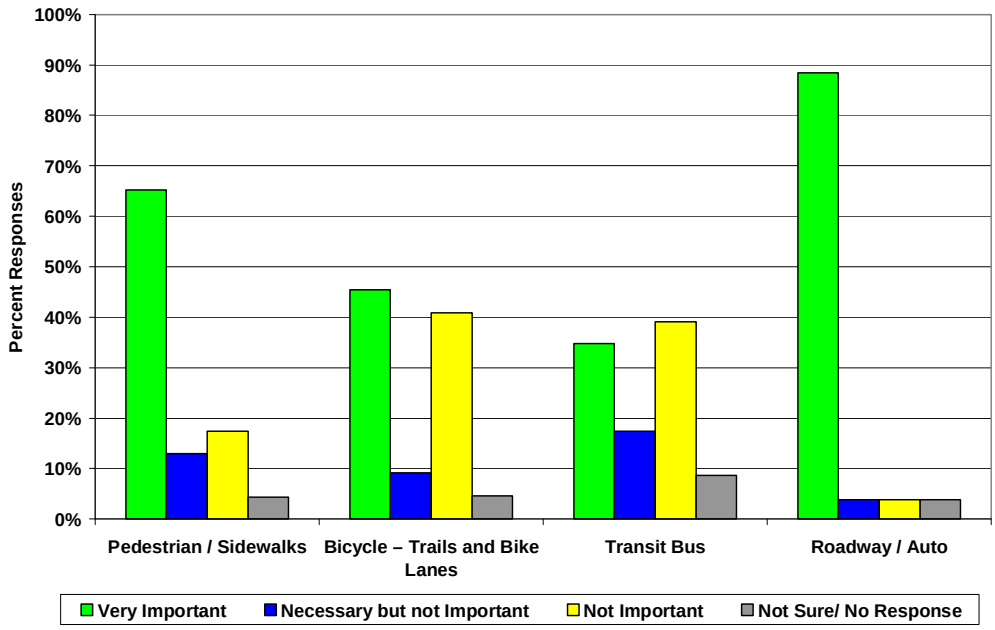


WHAT DO YOU THINK YOUR *CUSTOMERS* WOULD SAY ABOUT THEIR ABILITY TO *ACCESS YOUR PLACE OF BUSINESS* USING THE TRANSPORTATION SYSTEM? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)

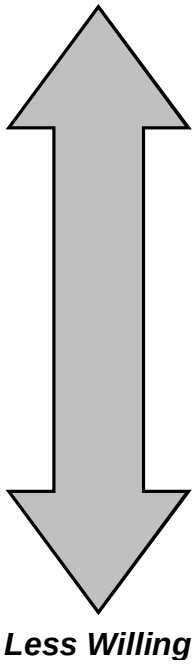


Transit Bus

How important is it for your *employees to have good access* to your place of business using the following travel modes?



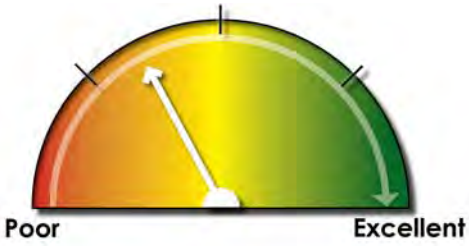
How willing are you to have your *tax dollars* used to support the following improvements? (Average Rating shown where 1 = not willing and 5 = very willing)



Improvements	Average Rating
Adding pedestrian facilities such as sidewalks, crosswalks, bridges, etc.	4.0
Improving major streets in the Rapid City area	3.9
Adding trails for walking and bicycling	3.8
Adding bus service on weekends	3.7
Improving transportation for seniors and persons with disabilities	3.6
Improving the timing of traffic signals	3.5
Adding on-street bike lanes	3.5
Adding bus service in the evenings	3.5
Adding more bus routes to serve more of the community	3.5
Attracting more airlines and flights to the airport	3.5
Reducing delays caused by trains	3.0
Improving rural roads around Rapid City area	2.5
Improving the airport	2.5
Improving I-90 interchanges	1.8
Improving roads in Box Elder and Summerset	1.7
Adding lanes to I-90	1.6
New interchanges on I-90	1.6

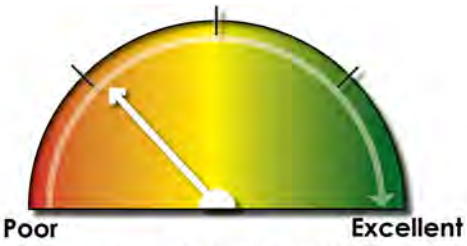
Note: Highlighted rows indicate transit issues.

WHAT IS YOUR IMPRESSION OF THE BUS SYSTEM? (THE AVERAGE OF ALL RESPONSES IS SHOWN FOR EACH QUESTION.)



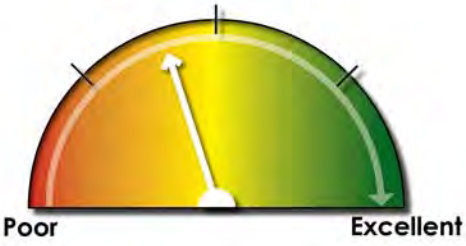
Frequency of the Buses

On-Time Reliability of the Bus



Coverage of the Bus Routes – Do they go where you need them to go?

Condition of Bus Shelters

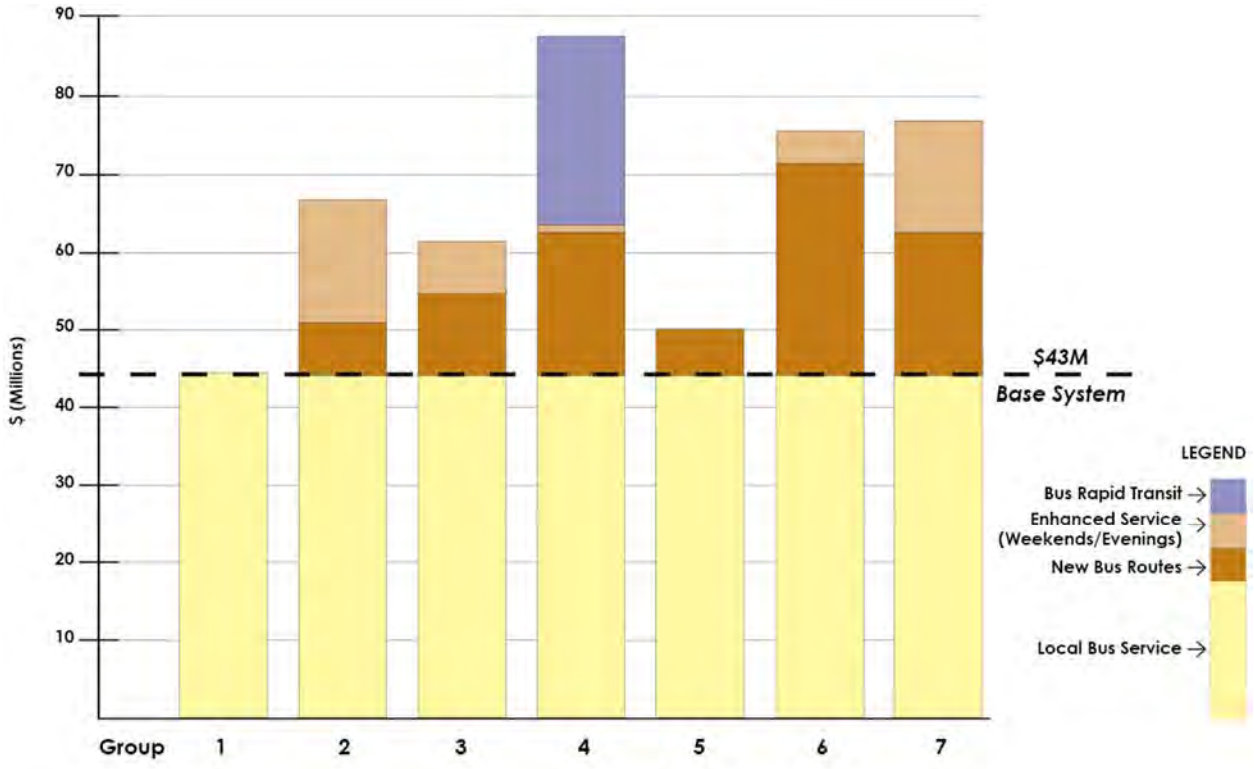


Bus Stop Locations

Connections Workshops

The following results were summarized from the improvement cost tally sheets and the game boards with transportation improvements identified by each table in the Connections Workshop.

Transit Improvements



As the graphic shows, every table included funding for at least the base level of transit service, which would equate local bus service similar to today's Rapid Ride service. Six of the seven tables suggested new bus routes, while five desired enhanced evening and weekend service. One table allocated funds for bus rapid transit service in north and west Rapid City.

Transit Plan Development

As part of the public involvement process for developing *RapidTRIP 2035*, several comments and suggestions were received with regard to transit service. Generally, the participating public indicated a desire for increased geographic coverage, higher bus frequencies, and more evening and weekend service. The public also suggested several areas in the community that should be considered for bus service in the future. Of course, it would require more funding to operate an expanded system, which will be difficult to secure with today's limited resources.

Based on the input from the public in the early stages of the Plan's development, a refined set of alternative transit service options was prepared as shown in Figure 6-2 and Table 6-1. Table 6-1 contains information on service route miles, population and employment served within ¼ mile of the route, and population and employment served per route mile. Information on the existing system is provided for reference. Costs for the alternatives in Table 6-1 represent planning estimates based on extrapolation of existing costs.

Transit Alternatives 1a to 1d include enhanced service options that would build on the existing fixed-route service. Alternative 1b assumes that maintaining existing service levels would actually require growing the fixed-route system as socioeconomic growth occurs. Alternatives 2 – 4 are regional transit bus routes that would provide service to Summerset, Box Elder, and/or the Rapid City Regional Airport.

No attempt has been made to prioritize the transit alternatives because technical tools were not available to do so and because no additional funding is anticipated other than to maintain the existing system. Chapter 4, Funding, provides a discussion on the assumptions regarding available resources for transit. If additional funds are procured to support the transit system, the information provided in Table 6-1 could be used to support a decision on how to invest it, although a study is recommended. Within the enhanced service options (Alternatives 1a - 1d), no clear priority emerged through the public process. For the regional route options, the airport route had the lowest cost per new potential rider and also seemed to have the most support from a public perspective.

Figure 6-2: Transit Service Alternatives

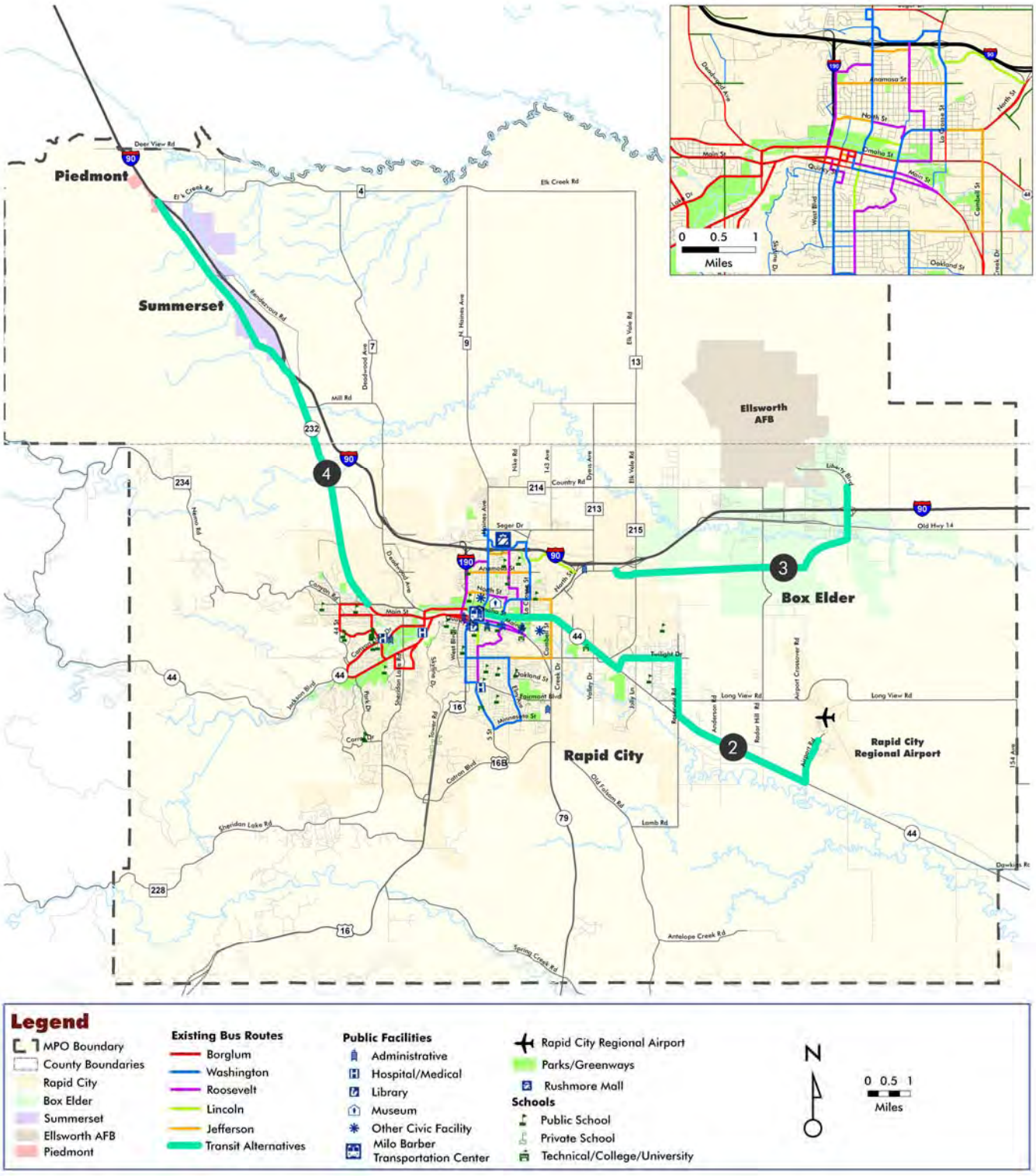


Table 6-1: Transit Service Alternatives

		Service Route Miles	Population + Employment Served (Within 1/4 mile)	Population + Employment Served Per Route Mile	Costs of Service ($$ millions)	Cumulative Costs ($$ millions)
Existing (2010)		77.3	70,894	917		
Future Transit Service Alternatives (2035)						
Future Base	Existing Fixed-Route Transit Service Continued Through 2035	77.3	88,434	1,144	$47	$47
Alt. 1a	Expanded Transit Service to Maintain Current Transit Population/Employment Service Levels	19.1			$12	$59
Alt. 1b	Increase Service (from 1 hour to 30 minutes)				*$47*	
Alt. 1c	Extend Service Hours (from 12 to 15 hours per day)				*$12*	
Alt. 1d	Add Sunday Service				*$8*	
Alt. 2	Alt 1: Rapid City to Airport	9.4	8,828	935	$6	$64
Alt. 3	Alt 2: Rapid City to Box Elder/Ellsworth AFB	9.3	6,452	693	$6	$70
Alt. 4	Alt 3: Rapid City to Somerset/Piedmont	11.1	7,431	672	$7	$77

Financially Constrained Transit Plan

The financially-constrained transit plan for *RapidTRIP 2035* is the continuation of the existing fixed-route bus and paratransit service with minor modifications through the year 2035. This Plan is based on the reality that resources for transit should remain reasonably constant over the next 25 years, so that increases in funding stay consistent with cost increases associated with inflation. Chapter 4, Financial Analysis and Funding Resources, contains more information on available funding for transit.

The transit component of *RapidTRIP 2035* is augmented and supported by the *2009-2013 Rapid City Transit Development Plan* and the *Coordinated Public Transit – Human Service Transportation Plan (2007)*.

7. ROADWAY PLAN

The roadway network forms the backbone of the entire multi-modal transportation system in the Rapid City transportation planning area. Roads accommodate transit buses, bicycles, and pedestrians and in some cases, all-terrain vehicles in addition to automobiles and trucks. Commercial vehicles moving freight travel on roads. Streets and highways are an important part of the local, state, and national economy, and they provide mobility for virtually all users of the surface transportation system. In addition, roads provide access to other components of the transportation system, including airports, railroads, and pipelines.

Historically, the automobile and roadway construction have dominated transportation investments in the region. Roadway improvement will continue to be an issue as the transportation system expands to accommodate future growth and travel. For the foreseeable future, the automobile is expected to continue to be the primary mode of transportation, although energy costs and federal mileage requirements will likely change our vehicles and how we travel to some degree. Nevertheless, *RapidTRIP 2035* recognizes the desires of the community to maintain our existing roadway system and enhance it to keep pace with growth.

In the development of *RapidTRIP 2035*, the relationships between four interrelated elements – land use, transportation improvements, level of service, and available resources – were examined. This involved a review of the transportation needs that would result from anticipated growth and analyzing the level of service of the current and future roadway system.

Based on the review of transportation needs, several roadway alternatives were developed to test and evaluate. A prioritization process was applied to rank the alternative projects so that improvements could be selected based on available financial resources and values important to the community. This chapter documents this process for developing the roadway plan for *RapidTRIP 2035*. It concludes with a discussion of high priority yet unfunded Illustrative Projects and a section presenting future planning studies for consideration.

Existing Conditions

Figure 7-1 shows the roadway level of service during the highest peak hour of the day for the 2008 existing roadway system. In this context, the highest peak hour is typically the morning or evening rush hour of a typical workday. The year 2008 is used for the existing, or base year, analysis because it is the observation/validation year on which the regional travel demand forecasting model is based.

The existing roadway system handles current traffic demands quite well. Congestion problems are sporadic and generally occur at intersections with deficient signalization or where the addition of turn lanes could alleviate the congested condition. Recent roadway improvements have led to this favorable situation, although roadways under construction can also be the cause of congestion however temporary the condition may be. One location of recurring congestion in the system is on Main Street crossing the gap in the north-south ridgeline that separates west Rapid City from the rest of the City. Congestion in this location is due to a lack of adequate capacity to accommodate vehicles in the peak hours.

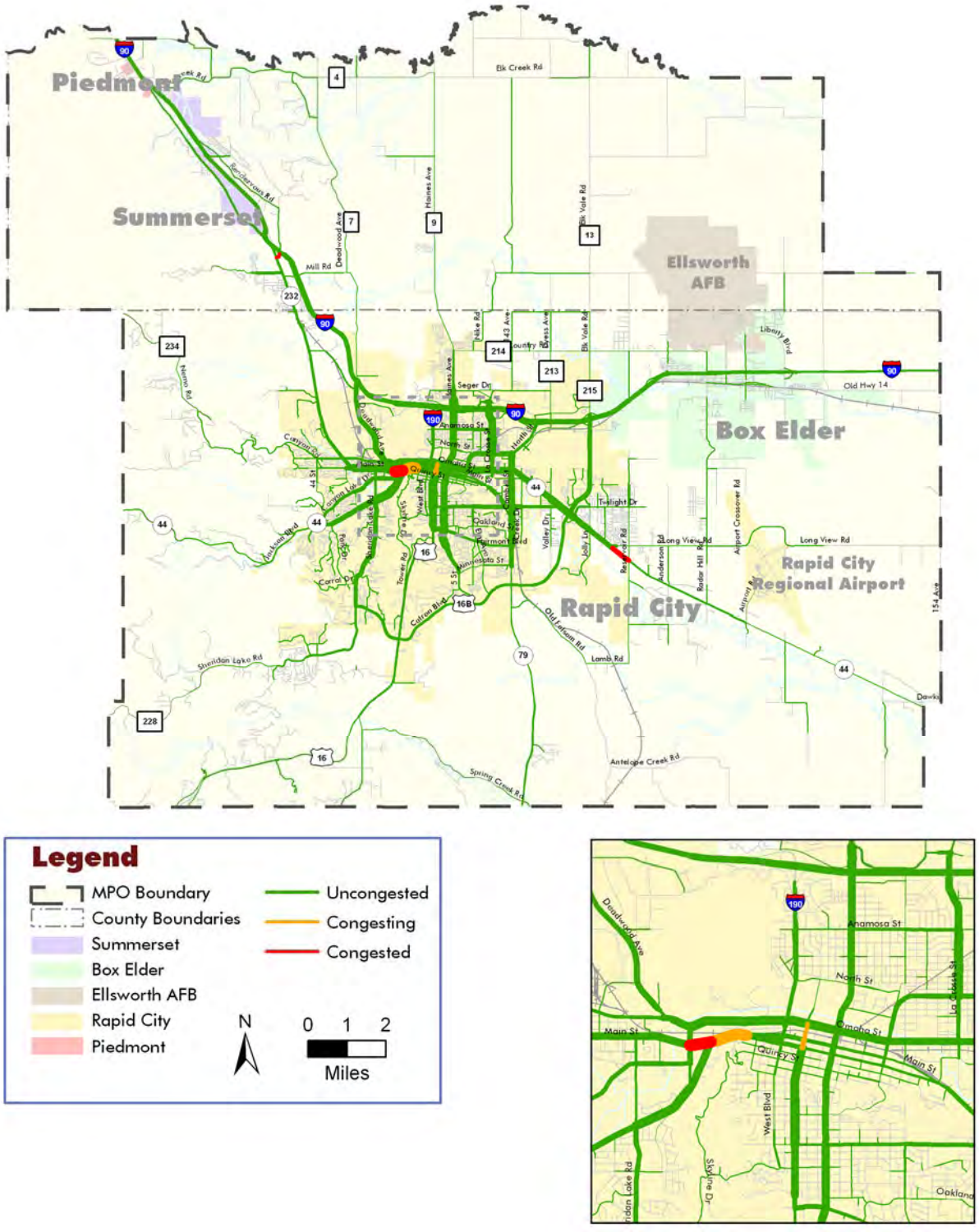
Roadway Level of Service

A common measure of operational performance for an intersection or corridor is level of service. In its simplest form, roadway level of service can be compared to a grading scale from "A" to "F," where "A" represents excellent level of service (no congestion) and "F" indicates failure (severe congestion). Level of service takes into account vehicular delay, maneuverability, driver comfort, congestion delay, and travel speed. Level of service is typically reported for the worst peak hour of a typical weekday, also known as rush hour.

The City of Rapid City tries to maintain level of service C for the roadway system and for intersection operations. These standards are fairly typical for a city and region of this size and character, although more and more communities across the country are struggling to meet them. As congestion reaches very high levels at specific corridor or intersection locations, the level of service standards can be relaxed at specific locations. In some locations, it is not possible to eliminate congestion due to physical constraints of adjoining land uses, topographical constraints that hinder improvements or make them too costly, and other factors.

	A	B	C	D	E	F
Driver Comfort	High	High	Some Tension	Growing Tension	Un-comfortable	Distressed
Average Travel Speed	Speed Limit	Close to Speed Limit	Close to Speed Limit	Some Slowing	Significantly Slower than Speed Limit	Significantly Slower than Speed Limit
Maneuverability	Almost Completely Unimpeded	Only Slightly Restricted	Somewhat Restricted	Noticeably Limited	Extremely Unstable	Almost None
Intersection Delay (control delay per vehicle, sec)	< 10	> 10 and < 20	< 20 and < 35	> 35 and < 55	> 55 and < 80	> 80
Arterial Volume/ Capacity Ratio	< 0.6	0.6 - 0.7	0.7 - 0.8	0.8 - 0.9	0.9 - 1.0	> 1.0

Figure 7-1: Congestion Levels in the Year 2008



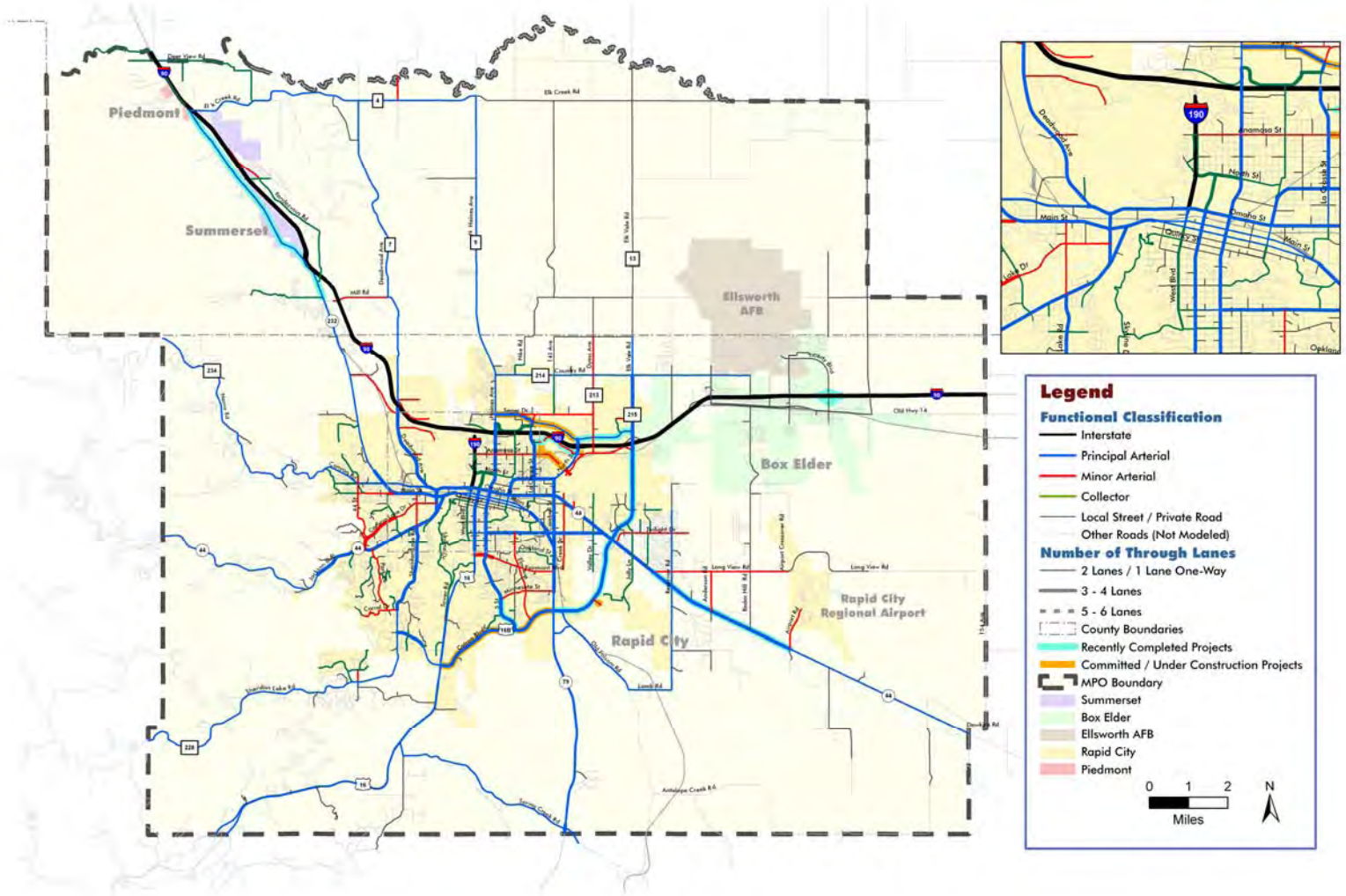
Recently Completed, Under Construction, and Committed Projects

The year 2008 is used to show existing peak hour level of service conditions in the previous section because the information is readily available from the regional travel demand forecasting model that is calibrated to observed 2008 base year conditions. Since that time, roadway improvements have been constructed, are under construction, or have committed funds and will be constructed in the near future. These projects are important because they establish a baseline roadway network upon which to evaluate future needs and alternatives.

Recently completed, under construction, and committed roadway capacity projects are identified on Figure 7-2 and in Table 7-1. These projects, combined with the existing roadway system, make up the Existing and Committed network.

Committed projects include those with dedicated funding in the region's Transportation Improvement Program. The current Transportation Improvement Program programs regional transportation improvements for implementation through the year 2015. Therefore, the Existing and Committed roadway network represents approximately the year 2015. Beyond that, additional improvements will be necessary to accommodate future growth and traffic demands.

Figure 7-2: Existing and Committed Roadway Network



Please refer to the Map Appendix to see a larger version of this map.

Table 7-1: Recently Completed, Under Construction, and Committed Roadway Capacity Improvements

No.	Street Name	From	To	Length (miles)
1	Mall Dr	Elk Vale Rd	E North St	1.4
2	Elk Vale Rd	I-90	Highway 79	5.3
3	Highway 44	Long View Rd	Airport Rd	4
4	5th St	Minnesota St	Catron Blvd	1
5	Eglin St	E North St	Pine St	1.2
6	Exit 67 Interchange	n/a	n/a	n/a
7	Mall Dr	E North St	Haines Ave	2.2
8	Eglin St	Eglin St	E North St	0.2
9	E Anamosa St	E North St	Lacrosse St	0.9
10	Luna Ave	Eglin St	E Anamosa St	0.3
11	Catron Blvd	Highway 79	Highway 16	3.4
12	Minnesota St	west of Jolly Ln	Elk Vale Rd	0.3
13	Sturgis Rd	Elk Creek Rd	Mill Rd	6.0

Roadway Classification

The classification of a roadway reflects its role in the region's street and highway system and forms the basis for access management, corridor preservation, and street design guidelines and standards. Within a given roadway classification, however, there can be varying operational characteristics depending on the amount of urbanization in a particular corridor, the degree (or lack of) access control, street design standards applicable when the road was built, local land uses, and other factors. The differences in the nature and intensity of development between urban and rural areas also imply that these areas should have roadway design characteristics that consider the surrounding land uses.

The roadway functions of the facilities in RapidTRIP 2035 represent a desired function for the year 2035. Existing roadways may not meet all of the desired characteristics described by their function, but strategic improvements can serve to fulfill the future vision over time. As proposed roadways are planned and developed, the guidelines and standards associated with their function should be considered to the degree practical and appropriate.

Roadway classifications are summarized below. These classifications reflect local definitions and are different from those defined by the Federal Highway Administration.

Freeway

A divided, limited access facility with no direct land access and no at-grade crossings or intersections, freeways are intended to provide the highest degree of mobility serving higher traffic volumes and longer-length trips. Freeways in the region include I-90 and I-190.

Expressway

These are similar to freeways but can include some at-grade intersections at cross-streets. Access may be either full or partial control with small amounts of direct land access. Expressways are intended to provide higher levels of mobility rather than local property access.

Principal Arterial

Principal arterials permit traffic flow through the urban area and between major destinations. They are of great importance in the transportation system since they connect major traffic generators, such as the central business district, to other major activity centers. Principal arterials carry a high proportion of the total urban travel on a minimum of roadway mileage. In urban areas, a gridded pattern of arterials is recommended with one-mile spacings for principal arterials.

Since movement and not necessarily access is the primary function of principal arterials, access management is essential to preserve capacity and enhance safety. Medians can be used to control potential conflict points and to separate opposing traffic movements. Left turn lanes are essential at intersections to maintain mobility for through traffic. Right turn deceleration lanes are desirable at intersections with significant turning activity.

Minor Arterial

Minor arterials collect and distribute traffic from principal arterials and expressways to streets of lower classification and, in some cases, allow traffic to directly access destinations. They typically serve secondary traffic generators such as community business centers, neighborhood shopping centers, multi-family residential areas, and traffic between neighborhoods. Access to land use activities is generally permitted but should be consolidated, shared, or limited to larger-scale users. Minor arterial street spacings are recommended to be at 1/2-mile intervals.

Collector Street

Collectors provide for land access and traffic circulation within and between residential neighborhoods and commercial and industrial areas. They distribute traffic movements from these areas to the arterial streets. Collectors do not typically accommodate long through trips and are not continuous for long distances. In areas where arterial streets are adequately spaced, collector streets should penetrate but not necessarily completely traverse through residential areas. Individual access from residential lots should be discouraged, particularly where bicycle lanes or routes are provided. The cross section of a collector street may vary depending on the scale and density of adjacent land uses and the desired character of the local area. Left turn lanes should be considered on collector streets adjacent to non-residential development.

Subcollector

A special category of collector streets, the subcollector is characterized by lower speeds and the residential nature of land uses along the corridor. Subcollectors serve neighborhoods with more than 20 dwellings. Bicycle and pedestrian facilities/routes are recommended for residential collectors. Various treatments, such as raised crosswalks and other traffic-calming devices, could be used to reduce travel speeds. Subcollectors should be limited to two lanes - this standard is especially important for residential collector streets with adjacent single family and multi-family residential land uses. *(Note: Subcollector streets are not typically shown on the maps in this document because they are not included in the regional travel demand forecasting model nor are there any regional transportation funds applied to these roads.)*

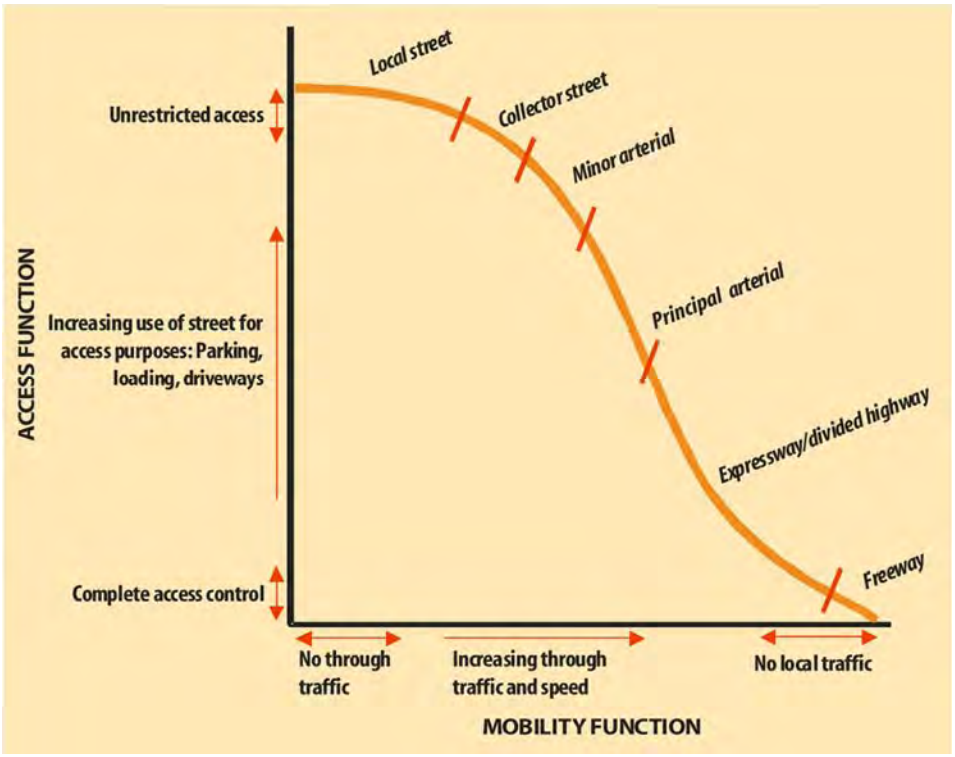
Industrial Collector

The industrial collector is a street intended primarily to facilitate movement of large trucks or other goods carriers into and within and industrial or commercial sites.

Lane/Place/Local Street

Local streets provide direct access to adjacent land uses including direct land access to residential lots. Direct access from a local street to an arterial street is discouraged. Local streets offer the lowest level of mobility and the highest level of local property access. Traffic volumes are typically low and speeds relatively slow. Local streets typically make up the largest percentage of street mileage. *(Note: Local Streets are not typically shown on the maps in this document because they are not included in the regional travel demand forecasting model nor are there any regional transportation funds applied to these roads.)*

Roadway Function – Access vs. Mobility



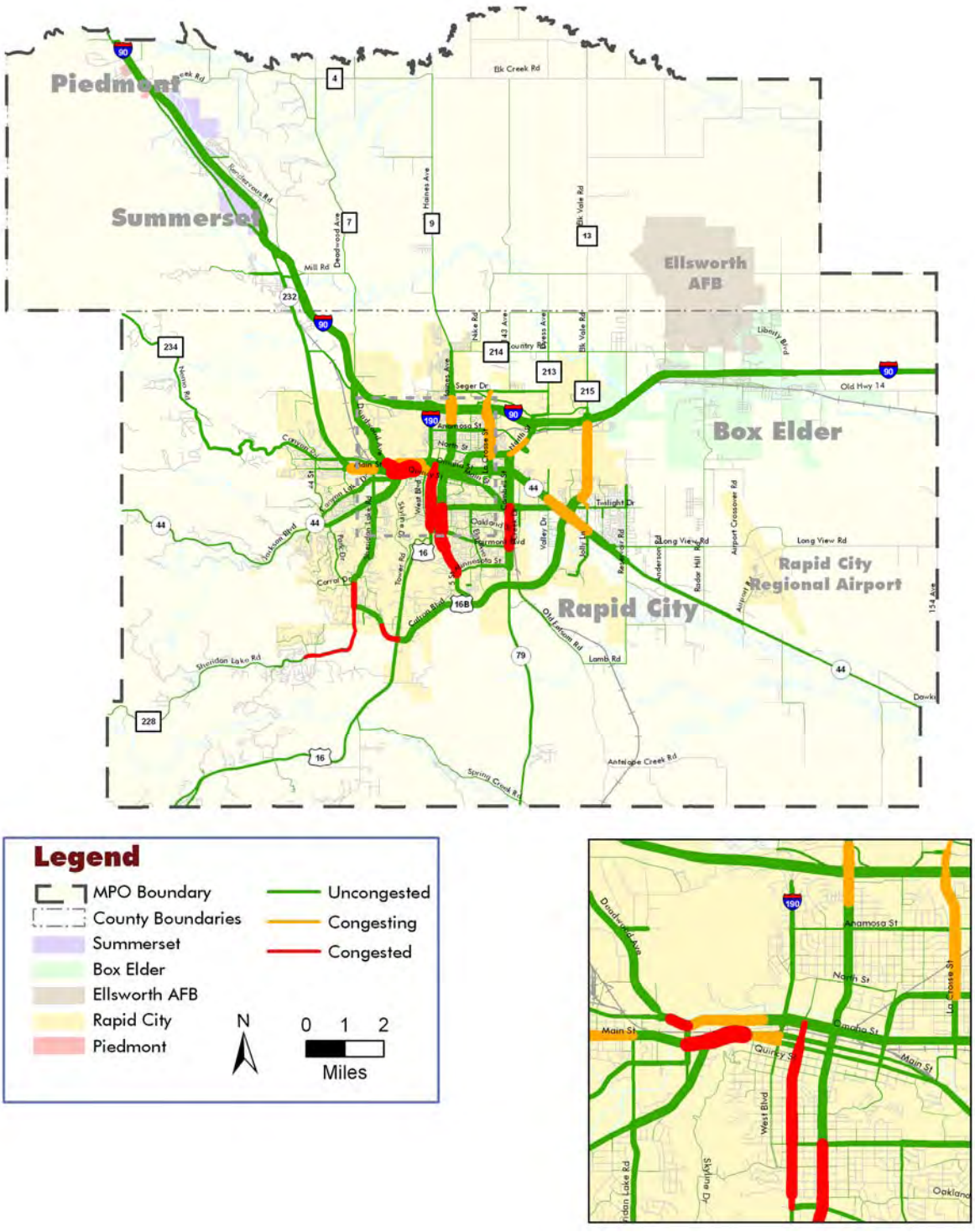
Roadways have both access and mobility functions.

Needs Assessment

As discussed previously, the existing roadway network and committed improvements make up the Existing and Committed network that serves as a baseline from which to evaluate future congestion levels and test alternative improvements. To begin the analysis, the traffic demand that results from household and employment activity in the year 2035 as presented in Chapter 3, Growth in the Region, was applied to the Existing and Committed network. Since the Existing and Committed network represents the roadway system in about the year 2015, congestion increases in this somewhat hypothetical scenario as expected.

Congestion results for the 2015 Existing and Committed network are shown on Figure 7-3. As the map shows, several roadways are experiencing congestion under the needs assessment test. As the growth maps in Chapter 3 suggest, residential growth in the south and southwest areas of the region will increase traffic on north/south arterial streets in Rapid City as shown on Figure 7-3 to the point they are experiencing significant peak hour congestion. Other residential and employment growth patterns across the region influence the future anticipated congestion levels shown on Figure 7-3.

Figure 7-3: Needs Assessment – Congestion Levels with 2035 Traffic on the 2015 Existing and Committed Network



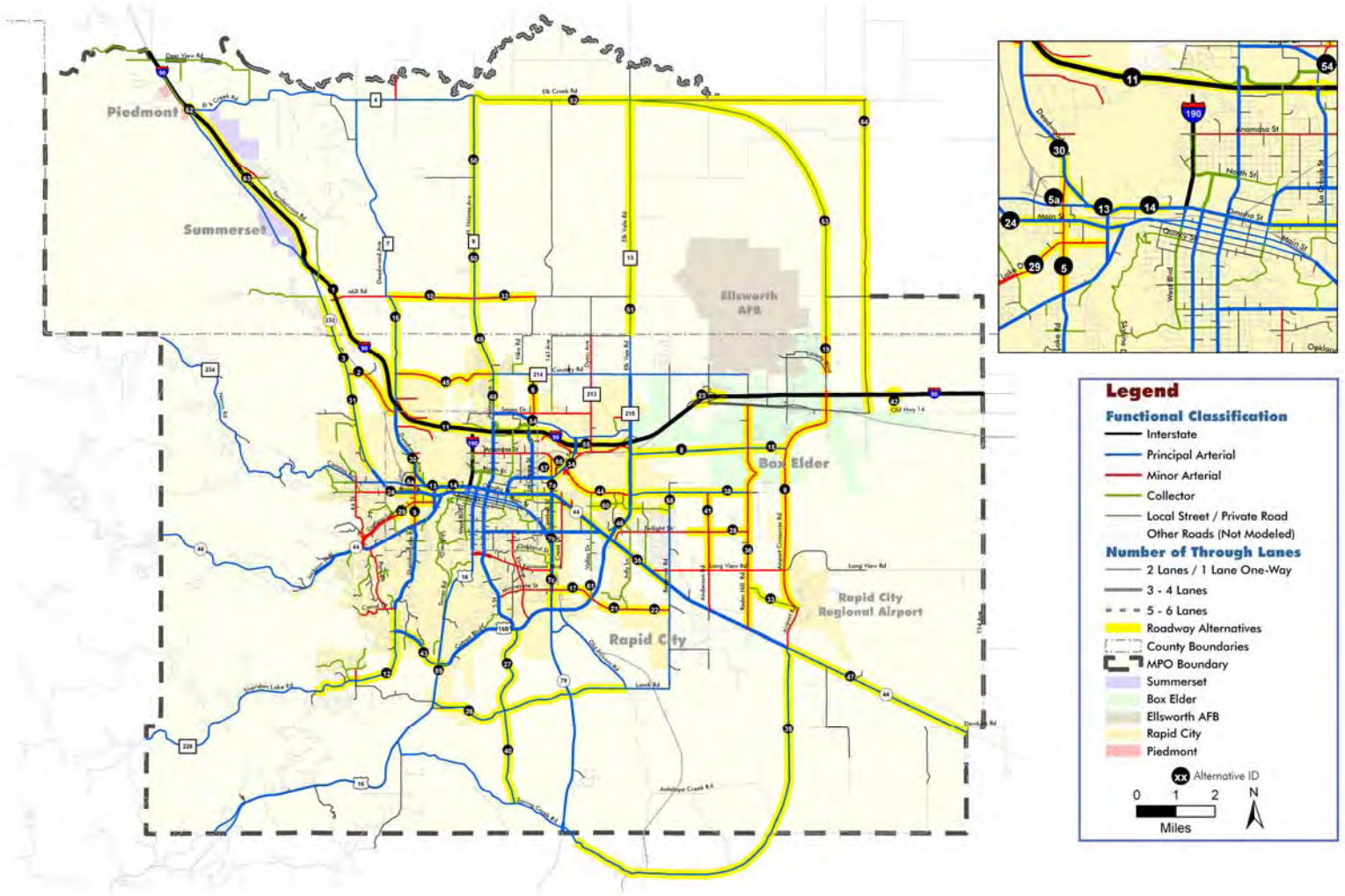
Alternatives Analysis

Roadway Alternatives

In response to the needs assessment, a number of potential roadway improvements were identified for testing and evaluation to develop the roadway plan. Likewise, several roadway alternatives were generated through the public outreach effort. The current Rapid City Area 2030 Long Range Transportation Plan, which lapses in September 2010, was also reviewed to identify other alternatives to test. Other sources that provided input in developing the list of alternatives include Rapid City's Major Streets Plan; Metropolitan Planning Organization staff, committees, and elected officials; and others.

Figure 7-4 shows graphically all of the roadway alternatives that were considered for *RapidTRIP 2035*. Table 7-2 contains more information on the alternatives.

Figure 7-4: Roadway Alternatives



Please refer to the Map Appendix to see a larger version of this map.

Table 7-2: Roadway Alternatives

Alternative Number	Street Name	From	To	Type of Improvement	Length (Miles)	Total Cost (2009 $)
1	I-90	Elk Creek Rd	Deadwood Ave	Widen Interstate 4 to 6 Lanes	9.55	$57,516,277
2	Universal Dr	Deadwood Ave	Sturgis Rd	Widen Minor Arterial 2 to 3 Lanes	1.72	$3,545,475
3	Sturgis Rd	Mill Rd	Universal Dr	Widen Principal Arterial 2 to 3 Lanes	2.16	$6,022,647
5	Sheridan Lake Rd	Main St	Jackson Blvd	Widen Minor Arterial 2 to 3 Lanes	0.83	$1,710,898
5a	Sheridan Lake Rd Ext	Deadwood Ave	Main St	Construct New 4 Lane Minor Arterial	0.50	$21,493,712
6	Lacrosse St Extension	Country Rd	Seger Dr	Construct New 2 Lane Minor Arterial	1.02	$2,209,200
7a	Campbell St	North St	Omaha St	Widen Principal Arterial 4 to 6 Lanes	0.43	$1,798,429
7b	Campbell St	Omaha St	St Joseph St	Widen Principal Arterial 4 to 6 Lanes	1.34	$5,604,408
7c	Campbell St	St Joseph St	Catron Blvd	Widen Principal Arterial 4 to 5 Lanes	2.10	$7,026,422
8	Cheyenne Blvd	Radar Hill Rd	Elk Vale Rd	Construct New 4 Lane Minor Arterial	3.02	$9,022,020
9	Airport Rd Extension	I-90	Airport Rd	Construct New 2 Lane Minor Arterial	6.33	$13,710,033
10	Mill Rd Ext	Haines Ave	Deadwood Ave	Construct New 2 Lane Minor Arterial	2.26	$4,894,893
11	I-90	Haines Ave	Deadwood Ave	Widen Interstate 4 to 6 Lanes	2.75	$16,562,279
12	Sheridan Lake Rd	Corral Dr	Clarkson Rd	Widen Principal Arterial 2 to 3 Lanes	3.78	$10,539,632
13	Omaha St	Mountain View Rd	Deadwood Ave	Widen Principal Arterial 4 to 6 Lanes	0.28	$1,171,070
14	Omaha St	12th St	Mountain View Rd	Widen Principal Arterial 4 to 6 Lanes	0.72	$3,011,324
15	Cheyenne Blvd	Airport Rd Ext	Radar Hill Rd	Construct New 4 Lane Minor Arterial	2.00	$5,974,848
16	Deadwood Ave	Mill Rd	I-90	Widen Principal Arterial 2 to 3 Lanes	2.88	$8,030,196
17	Minnesota St Ext	Elk Vale Rd	Highway 79	Construct New 2 Lane Minor Arterial	1.09	$2,360,811
18	Omaha St	Creek Dr	East Blvd	Widen Principal Arterial 4 to 6 Lanes	1.46	$6,106,295
19	150th Ave Ext	225th St	Liberty Blvd	Construct New 2 Lane Minor Arterial	1.00	$2,165,882
20	Highway 44	Valley Dr	Creek Dr	Widen Principal Arterial 4 to 6 Lanes	1.57	$6,566,359
21	Minnesota St Ext	Jolly Ln	E/O Elk Vale Rd	Construct New 2 Lane Minor Arterial	0.74	$1,602,753
22	Minnesota St Ext	Reservoir Rd	Jolly Ln	Construct New 2 Lane Minor Arterial	1.10	$2,382,470
23	Exit 63 Interchange			Interchange Improvements		$15,000,000
24	W Main St	Jackson Blvd	Sturgis Rd	Widen Principal Arterial 4 to 6 Lanes	1.30	$5,437,112
26	Sammis Trail	Old Folsom Rd / Lamb Rd	US Highway 16	Construct New 2 Lane Principal Arterial	5.30	$14,513,902
27	5th St Extension	Catron Blvd	Sammis Trail	Construct New 4 Lane Principal Arterial	2.35	$10,530,670
28	Twilight Dr Ext	Radar Hill Rd	Reservoir Rd	Construct New 4 Lane Minor Arterial	1.58	$4,720,130
29	Canyon Lake Dr	Mountain View Rd	Soo San Dr	Widen Minor Arterial 2 to 4 Lanes	1.19	$3,066,217
30	Deadwood Ave	Commerce Rd	Omaha St	Widen Principal Arterial 4 to 6 Lanes	0.86	$3,596,859
31	Sturgis Rd	Universal Dr	Dean Ln	Widen Principal Arterial 2 to 3 Lanes	2.55	$7,110,069
32	Mill Rd Ext	Nike Rd	Haines Ave	Construct New 2 Lane Minor Arterial	1.56	$3,378,776

Alternative Number	Street Name	From	To	Type of Improvement	Length (Miles)	Total Cost (2009 $)
33	New Road W/O Airport	Airport Rd	Radar Hill Rd	Construct New 2 Lane Collector	1.47	$2,547,078
34	North St	I-90	Campbell St	Widen Principal Arterial 4 to 6 Lanes	1.94	$8,113,844
35	Highway 44	Reservoir Rd	Valley Dr	Widen Principal Arterial 4 to 6 Lanes	2.56	$8,565,543
36	Radar Hill Rd	Highway 1416	Highway 44	Widen Minor Arterial 2 to 3 Lanes	5.90	$12,161,802
38	East Anamosa Ext	Radar Hill Rd	Elk Vale Rd	Construct New 2 Lane Principal Arterial	3.02	$8,270,185
39	Spring Creek Rd Ext	Highway 44	Highway 79	Construct New 2 Lane Principal Arterial	10.50	$28,753,956
40	5th St Extension	Lamb Rd	Spring Creek Rd	Construct New 4 Lane Principal Arterial	2.45	$10,978,783
41	Anderson Rd Ext	Anamosa St Ext	Long View Rd	Construct New 2 Lane Minor Arterial	2.02	$4,375,082
42	Interchange (Transload)	I-90	E/O 151st Ave	New Interchange + Local Access		$15,000,000
43	Catron Blvd	Mt.Rushmore Rd	Nugget Gulch Rd	Widen Principal Arterial 2 to 3 Lanes	1.20	$3,345,915
44	Anamosa St Ext	Elk Vale Rd	Creek Dr	Construct New 4 Lane Minor Arterial	1.78	$5,317,615
45	Country Rd Ext	Existing Country Rd	Deadwood Ave	Construct New 2 Lane Minor Arterial	2.71	$5,869,540
46	Elk Vale Rd	I-90	Highway 44	Widen Principal Arterial 4 to 6 Lanes	2.75	$11,501,584
47	Highway 44	St Germaine Rd	Airport Rd	Widen Principal Arterial 2 to 3 Lanes	5.08	$14,164,373
48	Haines Ave	Country Rd	Lodgepole St	Widen Principal Arterial 2 to 4 Lanes	0.87	$3,032,235
49	Haines Ave	Mill Rd Ext	Country Rd	Widen Principal Arterial 2 to 3 Lanes	2.03	$5,660,173
50	Haines Ave	Elk Creek Rd	Mill Rd Ext	Widen Principal Arterial 2 to 3 Lanes	5.20	$14,498,964
51	Elk Vale Rd	Elk Creek Rd	225th St	Upgrade to 2 Lane Collector	6.03	$5,215,950
52	Elk Creek Rd	Elk Vale Rd	Haines Ave	Upgrade to 2 Lane Collector	4.02	$3,477,300
53	New Road E/O Ellsworth AFB	Elk Vale Rd	225th St	Upgrade to 2 Lane Collector	9.46	$8,182,900
54	Exit 59 Interchange			Interchange Improvements		$15,000,000
55	I-90	Elk Vale Rd	Haines Ave	Widen Interstate 4 to 6 Lanes	3.51	$21,139,490
56	Century Rd	Anamosa St Ext	North St	Construct New 2 Lane Minor Arterial	0.31	$671,423
57	Cambell St Ext	Anamosa St Ext	North St	Construct New 2 Lane Minor Arterial	0.50	$1,082,941
58	Reservoir St Ext	Anamosa St Ext	Meadow Ridge Dr	Construct New 2 Lane Principal Arterial	0.42	$1,150,158
59	Catron Blvd Interchange			New Interchange		$15,000,000
60	Homestead St	Valley Dr	Reservoir Rd	Upgrade to 2 Lane Collector	2.05	$1,773,250
61*	Valley Dr/E 27th St	S/O Fairmont Blvd	Elk Vale Rd/ SE Connector	Upgrade to 2 Lane Collector ; Intersection Improvements	0.20	$1,423,000
62	Elk Creek Rd Interchange			Interchange Improvements		$15,000,000
63	Stage Stop Rd Interchange			Interchange Improvements		$15,000,000
64	Elk Creek Rd Extension	Elk Vale Rd	I-90	Upgrade to 2 Lane Collector	14.00	$12,110,000

** Project 61 includes $1.25 million for intersection improvements.*

Roadway Capacity Evaluation Criteria

As presented in Chapter 1, Context and Issues, roadway evaluation criteria were designed for testing roadway alternatives based on the principles of SAFETEA-LU, goals and objectives developed through the public process, and the desire to keep the evaluation process simple while also based on a solid technical foundation.

The Evaluation Criteria for prioritization and selection of roadway capacity projects are as follows:

- **EFFICIENCY (40 POINTS)** – The Efficiency criteria is measured as the reduction in daily vehicle miles of travel in 2035 attributable to the alternative. This criteria also acts as a surrogate measure for other important considerations. For example, fuel economy and energy conservation benefits, while difficult to measure directly, can be implied by reduced travel. Likewise, air quality information can be inferred as well since mobile source emissions are a function (in part) of the amount of vehicular travel and energy consumed.

- **EFFECTIVENESS (40 POINTS)** – Effectiveness refers to the amount of vehicle hours of congestion delay reduced per day in 2035 as a result of the implementation of the alternative. In addition to this important measure, the Effectiveness criteria also implies consideration of fuel economy, air quality, and other benefits similar to the Efficiency criteria that measures vehicle miles of travel reduction.

- **COST EFFECTIVENESS (10 POINTS)** – Cost Effectiveness is measured as the cost of congestion delay reductions for each alternative in dollars per minute of delay reduced.

- **MULTI-MODAL (10 POINTS)** – The multi-modal criteria is based on the idea that projects with increased potential to serve alternative travel modes should receive additional credit. This criteria speaks directly to the primary objectives and requirements of SAFETEA-LU and its transportation planning regulations. Since it is difficult to measure direct multi-modal benefits of a specific project improvement 25 years in the future, this criteria awards 5 points for transit accommodation (as measured by the number of local bus routes served/accommodated by the alternative) and 5 points for bicycle/pedestrian accommodation (as measured by the presence of existing or future planned bike lanes).

In developing the alternatives analysis, the Rapid City area travel forecasting model was used to test the transportation system's performance results for each alternative as compared to the Existing and Committed model. By comparing the two model runs, the measures for each criteria were calculated for each alternative.

Within each criteria, the alternative with the greatest benefit received the maximum points for that criteria. Projects with no measured benefits received zero points in that criteria. Scores for all other projects were prorated against the project with the most benefit for each criteria. The only exception is the multi-modal criteria in which points are simply awarded based on transit and/or bicycle accommodation. The total maximum score any project can attain is 100 points, but this is very difficult to achieve since a single project would need to have the greatest measured benefit for every criteria and receive the 10 points for multi-modal.

Unit Costs

Unit costs for various improvements were established for *RapidTRIP 2035* in order to develop cost estimates for each alternative roadway improvement to support the alternatives analysis. The unit costs are based on recent construction costs for actual projects or from public works and engineering cost estimates in regions across the western United States in recent years. These unit costs have been used in many areas across Colorado, Wyoming, and other states; and they have been reviewed by several public works directors and engineers in recent years. The unit costs reflect year 2010 dollars and have been adjusted to reflect significant construction cost increases in recent years.

Table 7-3 contains the unit costs used for *RapidTRIP 2035* in year 2010 dollars. A formulae field is shown in the table in order to retain the knowledge of how some of the unit costs were established through relationships among the other improvement types. Many of the unit costs rely directly on their relationship to the base unit costs for new roads on new rights of way.

Planning, design, right-of-way, and other costs associated with project implementation may affect the timing, priority, and feasibility of each project and, therefore, should be considered in the early phases of project development. Project costs generally include all costs related to a project's implementation, including engineering, design, and construction. Right-of-way costs are generally not included in the unit costs since right-of-way is dedicated in many cases and because right-of-way costs can vary significantly from project to project.

Table 7-3: Unit Costs (2010 $$)

Category	Improvement	Formulae for Unit Cost Relationships	Unit Costs (2010 $$/linear foot)	Unit Costs per Mile (2010 $$/ centerline mile)	Category Description
New Roads on New Right-of-Way	New 2/3 lane Minor Arterial	A	$410	$2,165,882	These are new roadways on new rights of way.
	New 4/5 lane Minor Arterial	B	$566	$2,987,424	
	New 2/3 lane Principal Arterial	C	$519	$2,738,472	
	New 4/5 lane Principal Arterial	D	$849	$4,481,136	
Road Widening - Significant Reconstruction	Widen 2 to 4/5 lanes (Minor)	E = (A+B)/2	$488	$2,576,653	For these projects, the improvement will generally be an addition to existing roads of acceptable quality. These could include phased roadway construction in which one side of
	Widen 2 to 4/5 lanes (Principal)	F	$660	$3,485,328	
	Widen 2 to 4/5 lanes (Expressway)	R = F x 1.2	$792	$4,182,394	
	Widen 4 to 6 lanes (Minor)	G = E x 1.2	$586	$3,091,984	
	Widen 4 to 6 lanes (Principal)	H = F x 1.2	$792	$4,182,394	

Category	Improvement	Formulae for Unit Cost Relationships	Unit Costs (2010 $$/linear foot)	Unit Costs per Mile (2010 $$/ centerline mile)	Category Description
	Widen 4 to 6 lanes (Expressway)	Q = H x 1.2	$951	$5,018,872	the road is built and operates as a 2-lane, two-way road until the second side is built within a relatively short time.
Road Widening - Addition of New Lanes	Widen 2 to 4/5 lanes (Minor)	I = E x 0.6	$293	$1,545,992	These projects can include significant reconstruction of a low quality, existing road due to outdated design, deterioration, or other condition. Another example would be an older road with significant access control issues that would be addressed with the improvement.
	Widen 2 to 4/5 lanes (Principal)	J = F x 0.6	$396	$2,091,197	
	Widen 2 to 4/5 lanes (Expressway)	S = J x 1.2	$475	$2,509,436	
	Widen 4 to 6 lanes (Minor)	K = I x 1.2	$351	$1,855,190	
	Widen 4 to 6 lanes (Principal)	L = J x 1.2	$475	$2,509,436	
	Widen 4 to 6 lanes (Expressway)	P = L x 1.2	$570	$3,011,323	
Other Widenings	Upgrade 2 lane Minor to 2/3 lane Principal	M = C x 0.5	$259	$1,369,236	
	Widen 2 to 4/5 lanes (Collector)	N = E x 0.80	$390	$2,061,323	
Other New Road	New 2/3 lane Collector	O = A x 0.80	$328	$1,732,706	
	Upgrade gravel to 2 lane Collector	P = O x 0.50	$164	$865,920	
Interchange	New Interchange	n/a	$15-25 million per location	n/a	New diamond interchange on interstate/freeway.

Project Prioritization and Selection

Once each roadway capacity project alternative was evaluated and scored, all capacity projects were sorted based on the total score with the highest scoring project at the top of the list. Each alternative was also identified relative to the eligible funding programs. The funds in each program were applied to the highest scoring projects that could be funded with available resources. This process was straightforward since most projects were only eligible for one funding source. Project costs are based on the unit costs presented in the previous section; and available resources by funding program were developed as presented in Chapter 4, Financial Analysis and Funding Resources.

The South Dakota Department of Transportation uses a pavement management system to select preservation and maintenance projects, which are analyzed yearly based on projected funding.

Financially Constrained Roadway Plan

Federal legislation over the last 20 years (i.e., Intermodal Surface Transportation Efficiency Act, Transportation Efficiency Act-21, and SAFETEA-LU) formalized the concept that regional transportation plans should as accurately as possible describe the transportation system for a point at least 20 years in the future. This was done through the financial constraint mechanism so that the planned transportation system can be implemented and maintained with expected available funding.

As presented previously in Chapter 4, Financial Analysis and Funding Resources, the total estimated funding for roadway capacity improvements is about $138 million over the 25-year period of the *RapidTRIP 2035*. This represents the federal, state, and local funding that is reasonably expected to be available as discussed in Chapter 4. Additional information on the assumptions and adjustments for developing the revenue forecasts can be found in Chapter 4 and the Technical Appendix.

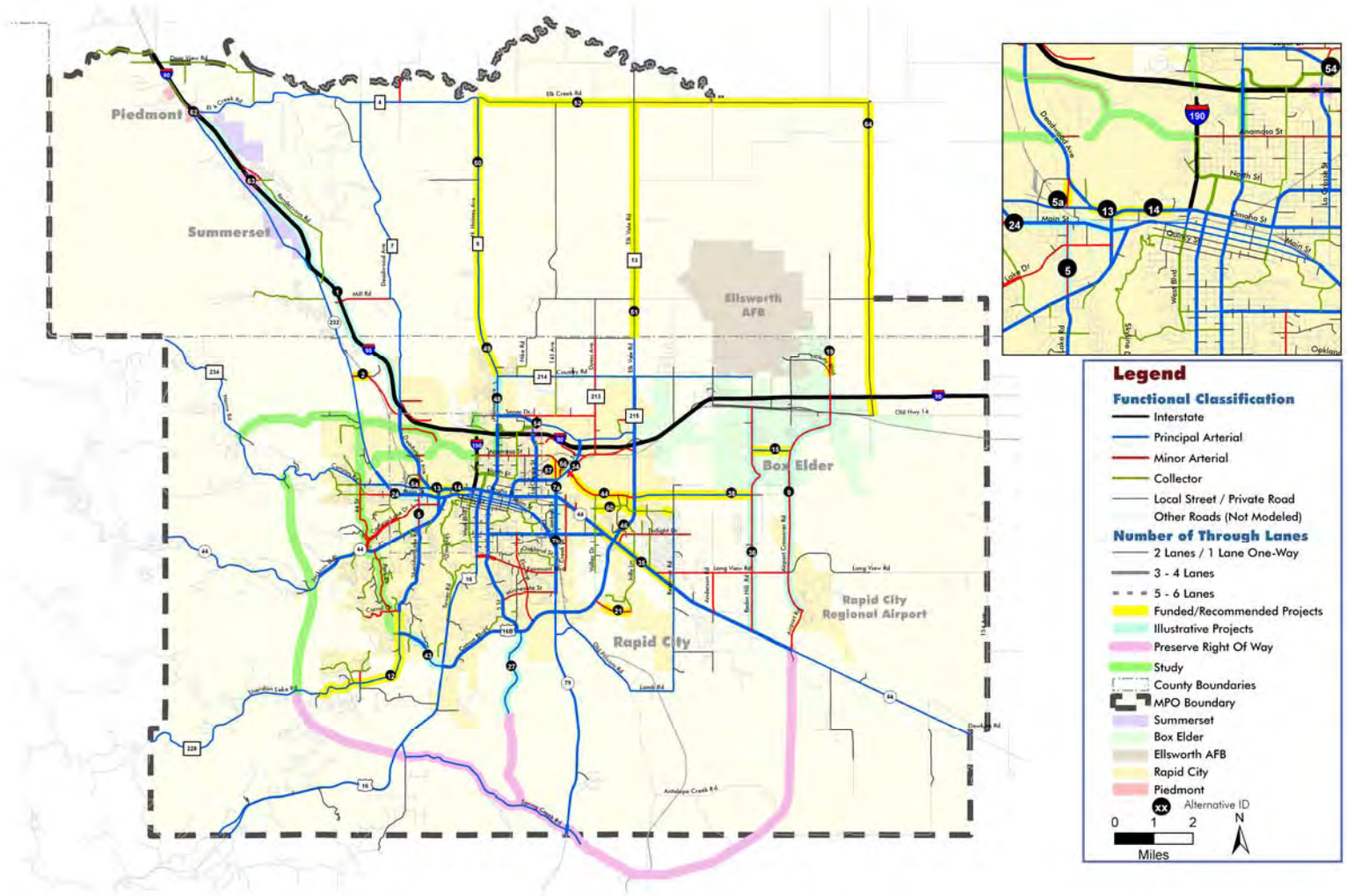
In developing the financially constrained project list, efforts were made to match each funding program with appropriately eligible projects. For example, local funds were assumed to be exclusive to off-system arterial streets. Federal and state funds were generally assigned to on-system roadways in the region with the exception of Surface Transportation Program funds that can be used on-system or off-system. Interstate Maintenance and National Highway System funding was matched to eligible projects for those programs as well.

In addition to public funding, additional roadway capacity is provided through private sector investments in land development projects. These private developer investments are included in the local source categories. Generally, it is the responsibility of the developer to connect new streets in newly developing areas to the arterial street system. Implementation of these projects is tied to trends and timing of developer activities in the free market. Nevertheless, they are based on past developer activity and historical private sector investments, and as such are reasonably expected to be implemented by 2035.

It is noteworthy that the funding analysis is based on 2010 dollars and not the costs and revenues for the specific year of project implementation. This is necessary because costs in the year of implementation are generally not known until after project selection. Therefore, the project prioritization and selection processes use constant 2010 dollars for defining project costs.

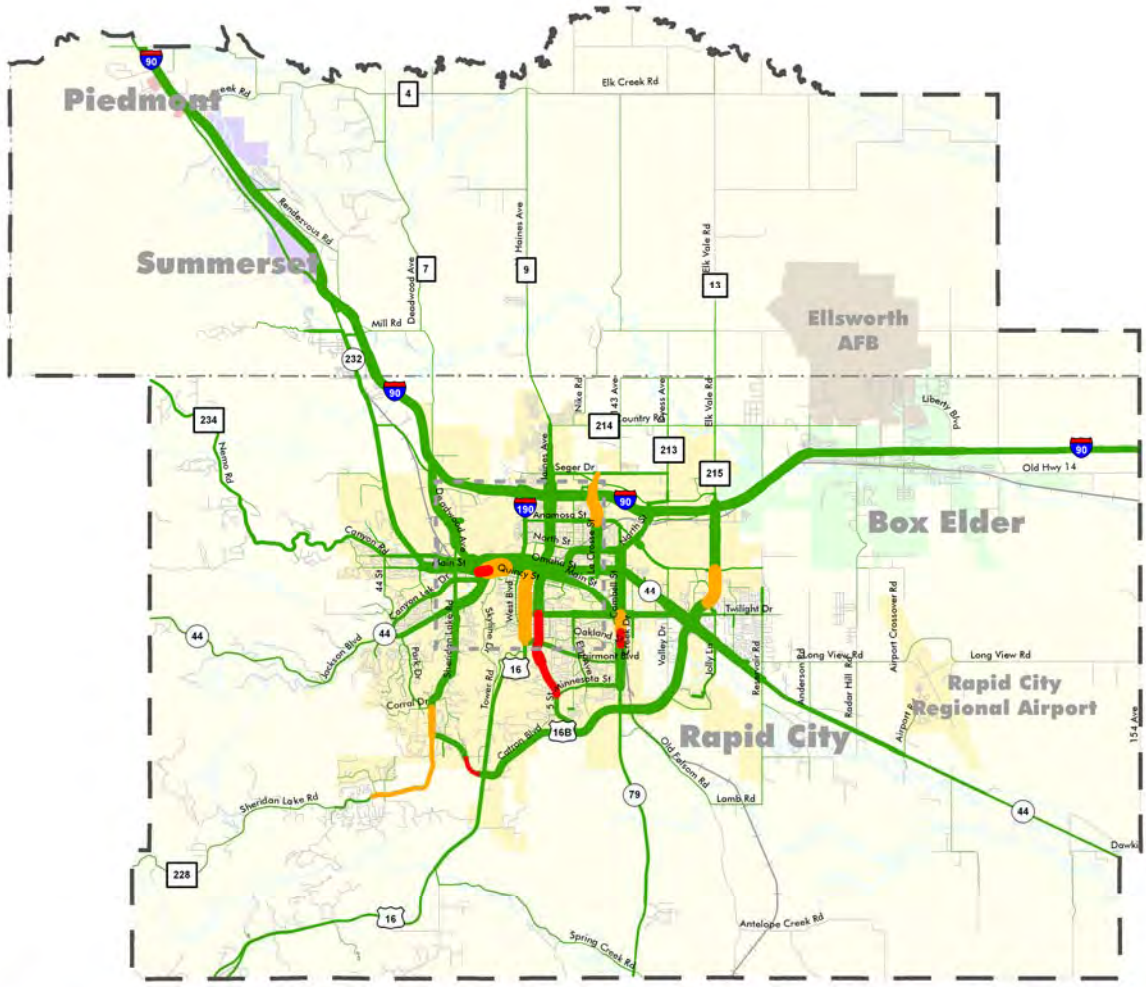
The recommended Financially Constrained Roadway Plan is shown graphically in Figure 7-5 with resulting level of service shown in Figure 7-5. Table 7-6 contains a list of regionally significant system preservation projects that planned for the near future. Table 7-6 shows the assumptions for developer-funded roads.

Figure 7-5: Recommended Financially Constrained Roadway Capacity Improvements



Please refer to the Map Appendix to see a larger version of this map.

Figure 7-6: Congestion Levels for 2035 Financially Constrained Roadway Plan



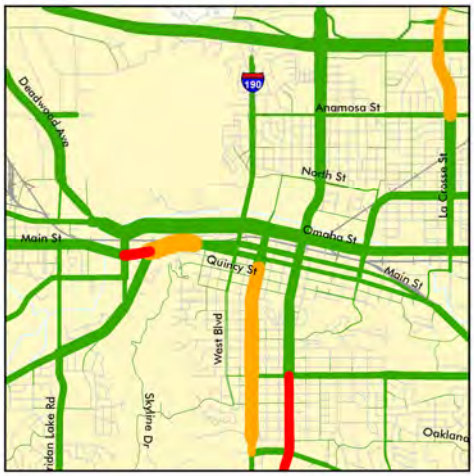


Table 7-4: Financially Constrained Roadway Capacity Improvements

Time Frame	ID	Street Name	Approximate Cost (Funded Amount) in Year of Construction	Unfunded Amount (2010$$)
Special Projects Earmark – 2011	n/a	East Anamosa Street (Lacrosse to East North, widening/new road)	$6,737,000	$0
Subtotal			**$6,737,000**	**$0**
2011-2015	51	Elk Vale Rd	$5,533,287	$0
Subtotal			**$5,533,287**	**$0**
2016-2020	5a	Sheridan Lake Rd Ext	$6,487,669	$0
	49	Haines Ave	$6,436,210	$0
	52	Elk Creek Rd	$2,811,168	$0
	12	Sheridan Lake Rd	$4,520,114	$0
Subtotal			**$20,255,161**	**$0**
2021-2025	12	Sheridan Lake Rd	$3,725,168	$0
	52	Elk Creek Rd	$1,392,940	$0
	14	Omaha St	$4,608,000	$0
	13	Omaha St	$1,792,000	$0
	64	Elk Creek Rd Extension	$15,511,231	$0
	35	Highway 44	$6,899,663	$0
Subtotal			**$33,929,002**	**$0**
2026-2030	12	Sheridan Lake Rd	$3,725,168	$0
	35	Highway 44	$4,611,673	$0
Subtotal			**$8,336,841**	**$0**
2031-2035	12	Sheridan Lake Rd	$1,765,492	$0
	5a	Sheridan Lake Rd Ext	$15,128,981	$0
	19	150th Ave Ext	$1,006,424	$1,527,431
	50	Haines Ave	$22,855,472	$0
	2	Universal Dr	$1,959,675	$2,302,303
	46	Elk Vale Rd	$3,620,019	$9,205,130
Subtotal			**$46,336,063**	**$13,034,864**
TOTAL			**$121,127,354**	**$13,034,864**

Table 7-5: Regionally Significant System Preservation Improvements

Year	Project	Cost (Year of Expenditure $$)
2011 - 2015	Mall Drive - Lowes Driveway to LaCrosse Street (Construction)	$3,482,000
	East North Street from Pine to Campbell	$4,500,000
	SD44 - Jackson Blvd from Rapid Creek to Mt View	$9,152,000
	Anamosa St from Haines to Midway	$2,100,000
	Radar Hill Road from 228th to 229th	$1,687,000
	I-90 Service Roads from 40 - 44 and 44 - 46	$4,997,000
	I90 EBL from Exit 40 - 44 and EBL/WBL from Exit 44 - 50	$8,845,000
	East North Street - Maple to Pine	$3,300,000
	I90 WBL from Exit 40 - 44	$4,308,000
	Anamosa Street - Midway to Milwaukee	$3,075,000
	US16 - Mt Rushmore Rd from Divided segment to St Patrick St	$8,250,000
	SD44 - Jackson Blvd from Chapel Lane to West of Argyle St	$7,569,000
	East Blvd & East North St from St Joseph St to Maple Ave	$4,200,000
	I-90 Exit 44 Interchange	$10,002,000
	I-190 Exit 1 - Silber Street	$12,981,000
	US16 - Mt Rushmore Rd from St Patrick St to Kansas City St	$9,557,000
Subtotal		**$98,005,000**
2016-2020	62 - Elk Creek Road Interchange (Alternative 62)	$9,900,000
	63 - Stage Stop Road Interchange (Alternative 63)	$10,100,000
	Mt Rushmore Road from Kansas City Street to Omaha St	$1,000,000
Subtotal		**$21,000,000**
2021-2025	n/a	$0
Subtotal		$0
2026-2030	Exit 59 Interchange (Alternative 59)	$10,700,000
Subtotal		**$10,700,000**
2031-2035	n/a	$0
Subtotal		**$0**
TOTAL		**$129,705,000**

Table 7-5 is a list of regionally significant preservation projects. Pavement management systems are used to select preservation and maintenance projects. Projects are analyzed yearly based on projected funding.

Table 7-6: Developer-Funded Improvements

ID	Street Name	Total Cost (2010 $)	Federal/State Funded (2010$)	Local Funded (2010$)	Developer Funded (2010$)	Total Funded Amount (2010$)	Funded Cumulative Amount (2010$)	Unfunded Amount (2010$)	Comments
44	Anamosa St Ext	$5,317,615	$0	$0	$5,317,615	$5,317,615	$5,317,615	$0	
21	Minnesota St Ext	$1,602,753	$0	$0	$1,602,753	$1,602,753	$6,920,367	$0	
60	Homestead St	$3,552,047	$0	$0	$3,552,047	$3,552,047	$10,472,415	$0	
57	Cambell St Ext	$1,082,941	$0	$0	$1,082,941	$1,082,941	$11,555,356	$0	
15	Cheyenne Blvd	$5,974,848	$0	$0	$5,974,848	$5,974,848	$17,530,204	$0	
56	Century Rd	$671,423	$0	$0	$671,423	$671,423	$18,201,627	$0	
38	East Anamosa Ext	$8,270,185	$0	$0	$8,270,185	$8,270,185	$26,471,813	$0	

Roadway capacity improvements include street widenings, new roads, and roadway extensions. Regional system preservation projects include larger scale roadway and interchange reconstruction, paving, and resurfacing/striping projects. While preservation of the existing transportation system is of the highest priority, only regionally significant system preservation projects are listed in the regional transportation plan. Maintenance projects, including pothole repair, mowing, crack sealing, snow removal, grading, deck sealing, joint replacement, structure rehabilitation, mill and overlay/resurfacing, pavement restoration, and other related function, are not listed in the plan. The South Dakota Department of Transportation uses a pavement management system to select preservation and maintenance projects, which are analyzed yearly based on projected funding.

Unfunded and Illustrative Projects

> *"The financial plan may include, for illustrative purposes, additional projects that would be included in the adopted transportation plan if reasonable additional resources beyond those identified in the financial plan were available."*
>
> (SAFETEA-LU and Metropolitan Transportation Planning Regulations)

As noted previously, the available resources for roadway capacity only fund about $122.6 million of approximately $620 million in alternative transportation improvements. It could be said therefore that there are several desirable projects that remain unfunded. As the maps in Figures 7-1 and 7-6 show, roadway level of service decreases over time since the available resources for roadway capacity cannot provide for all future roadway system needs. Therefore, a list of higher priority but unfunded projects is shown in Table 7-7 for future reference. If additional funding is secured in the future to augment the anticipated funding revenues, the list of Illustrative Projects in Table 7-7 would be used to identify and select additional improvements through a Plan amendment.

Table 7-7: Unfunded Illustrative Projects

ID	Street Name	Total Cost (2010 $)	Federal/State Funded (2010$)	Local Funded (2010$)	Developer Funded (2010$)	Funded Amount (2010$)	Funded Cumulative Amount (2010$)	Unfunded Amount (2010$)
9	Airport Rd Extension	$13,710,033	$0	$0	$0	$0	$0	$13,710,033
7b	Campbell St	$5,604,408	$0	$0	$0	$0	$0	$5,604,408
36	Radar Hill Rd	$12,161,802	$0	$0	$0	$0	$0	$12,161,802
7a	Campbell St	$1,798,429	$0	$0	$0	$0	$0	$1,798,429
34	North St	$8,113,844	$0	$0	$0	$0	$0	$8,113,844
1	I-90	$57,516,277	$0	$0	$0	$0	$0	$57,516,277
48	Haines Ave	$3,032,235	$0	$0	$0	$0	$0	$3,032,235
24	W Main St	$5,437,112	$0	$0	$0	$0	$0	$5,437,112
43	Catron Blvd	$3,345,915	$0	$0	$0	$0	$0	$3,345,915
5	Sheridan Lake Rd	$1,710,898	$0	$0	$0	$0	$0	$1,710,898
27	5th St Extension	$10,530,670	$0	$0	$0	$0	$0	$10,530,670

Studies

Several studies have been identified for future conduct to assist with determining feasibility for some projects, clarifying the specific improvement needs associated with a project, estimating engineering construction costs, or other related issues and needs. These studies are identified in Table 7-8.

Table 7-8: Studies

Corridor	From	To	Description
Outer South Loop Rd	Sheridan Lake Rd	Airport Crossover Rd	New 2-lane Minor Arterial
West Outer Loop	Sheridan Lake Rd	Canyon Rd / Nemo Rd	New 2-lane Minor Arterial
West Loop Connector	Sheridan Lake Rd	Hwy 79 / Sturgis Rd	New 2-lane Principal Arterial
West Anamosa St. Extension	Sturgis Rd	Plaza Dr. Ext	New 2-lane Minor Arterial
Plaza Dr Extension	Sturgis Rd	Nemo Rd	New 2-lane Minor Arterial
West Anamosa St Extension	Plaza Dr. Ext	I-190	New 2-lane Minor Arterial
Plaza Dr	Anamosa St Extension	Sturgis Rd	New 2-lane Minor Arterial
Haines Avenue	Anamosa	Mall Drive	Access Management Study
Lacrosse Street	E. North	Mall Drive	Access Management Study
I-190/I-90 Interchange	north to Mall Drive		Feasibility Study
Haines Avenue	I-90	Anamosa St.	Widening from 4 to 6 lanes

8. INTERMODAL TRANSPORTATION

The economic success of a region to a large degree depends on its connections to the rest of the world and its ability to facilitate the movement of people and goods across and within its boundaries. Increased competition in today's global economy rewards those regions that actively plan for and pursue seamless transportation systems, which depend on efficient connections between all modes of travel. Transportation facilities and service levels are important elements that companies consider when locating to a new area because of the cost savings and increased economic competitiveness these regions provide.

The Rapid City region fulfills a role as an important link in the regional, statewide, and national transportation system. At the local level, intermodal planning activities and ongoing improvements that address freight and other needs will help to maintain the region's economy and competitiveness.

Intermodalism is the concept that binds the modes together so that people and freight movements can be made in an efficient manner possible. Beyond the travel needs of Rapid City area residents, there are additional travel considerations for moving freight on rail and truck and for personal inter-regional travel via bus, rail, and plane.

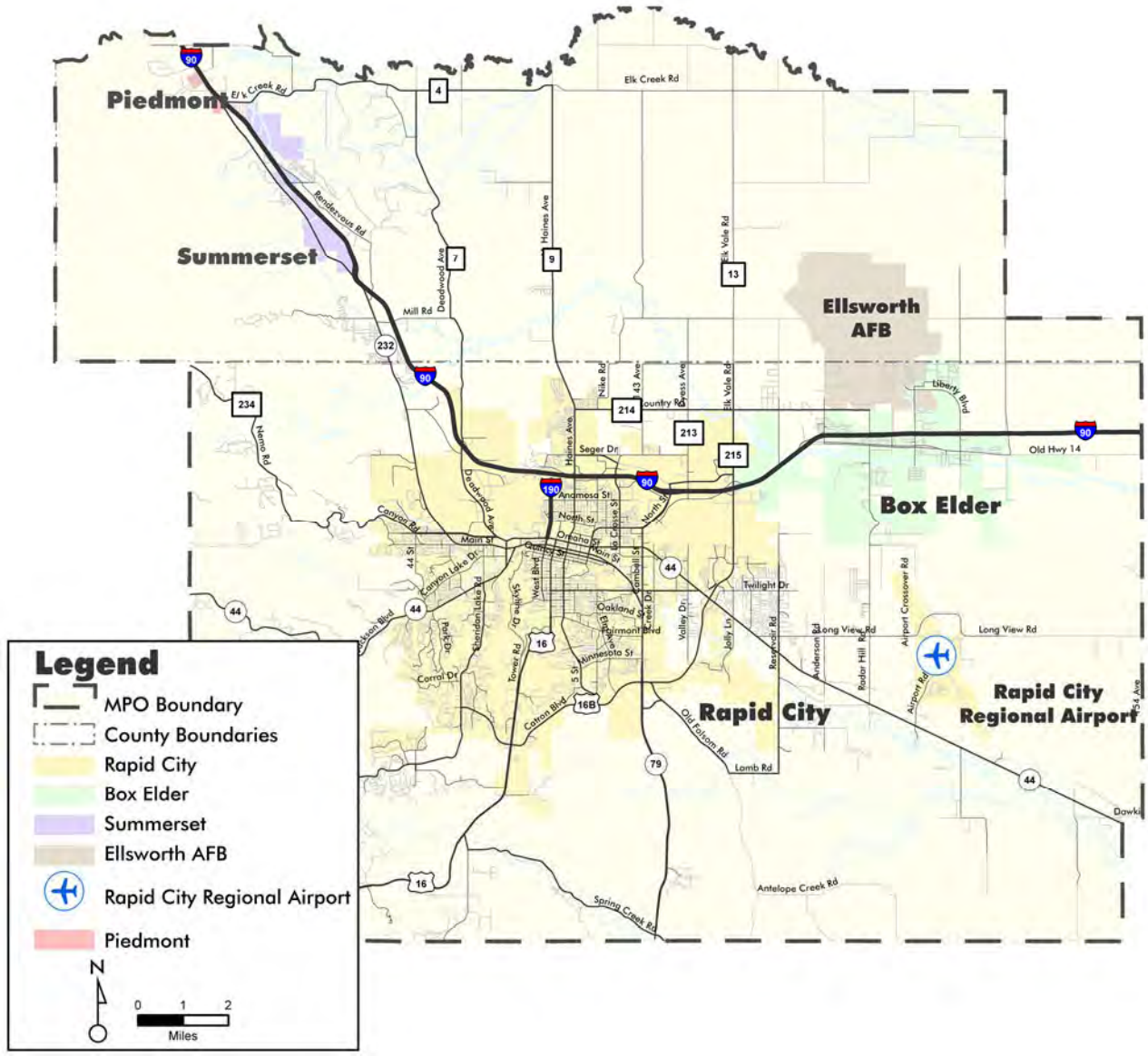
Air, rail, truck, and inter-city bus industries are essential components in the local economy and play a fundamental role in the Rapid City area transportation system. *RapidTRIP 2035's* modal system plans represent a comprehensive effort to build a multimodal transportation system, but additional efforts are necessary to maintain the economic competitiveness and attractiveness of the region. Since many of these planning elements involve private sector entities, it is desirable to involve them in the planning process.

Aviation

Commercial aviation for the region is provided by the Rapid City Regional Airport. The facility is owned and operated by the City of Rapid City and run by an Executive Director and the Airport Board of Directors. The *Airport Master Plan* guides the operations, management, development, and improvements at the airport. The *Airport Master Plan* was updated in January 2000, May 2004, and again in June 2008. It is available from the Rapid City Growth Management Department.

In 2010, the Airport is serving direct passenger flights to seven other US cities. The Airport is also an important component of the region's intermodal freight traffic network. Its location relative to the Rapid City area is shown in Figure 8-1.

Figure 8-1: Rapid City Regional Airport



The Rapid City Regional Airport is located approximately 10 miles east of downtown Rapid City off SD 44, which provides the primary ground access to the Airport. When the Airport opened at its current site in August of 1950 it served about 15,000 annually. The Rapid City Regional Airport is a primary commercial service airport that served about 252,000 passengers (boardings) in 2005, up to 284,000 in 2010, and forecasted to be 408,000 in 2035 based on Airport Master Plan forecasts. This represents a long-term growth rate of 2.4% per year.

During the development of the *RapidTRIP 2035*, a number of issues related to the Rapid City Regional Airport were discussed or planned as follows:

- Public comments were received that expressed a desire for regular bus service between the Airport and downtown Rapid City.
- A bike path is planned along SD 44 between Long View Road and Mickelson Drive.
- Airport Crossover Road and Radar Hill Road (Illustrative Projects) were discussed, evaluated, and proposed for implementation if additional funding becomes available. These corridors would provide additional access to the airport via a direct connection north to I-90.

Railroads

Rapid City is a key commercial center served by active rail lines of the Dakota, Minnesota & Eastern (DM&E) Railroad. Headquartered in Sioux Falls, the DM&E system includes over 2,500 miles of track and 200 locomotives. The Black Hills region is one of the westernmost points of the DM&E system that serves 200 communities in 8 states in the upper Midwest.

The DM&E Railroad has been in operation since 1986 and has become one of the largest Class II tracks in the US. Canadian Pacific acquired the DM&E in 2008, according to DM&E's website, and there is no decision on whether to proceed with the Wyoming Powder River Basin expansion project. It would not appear that the Rapid City area would be impacted by the possible expansion since the new lines would depart the main line near Wall, SD.

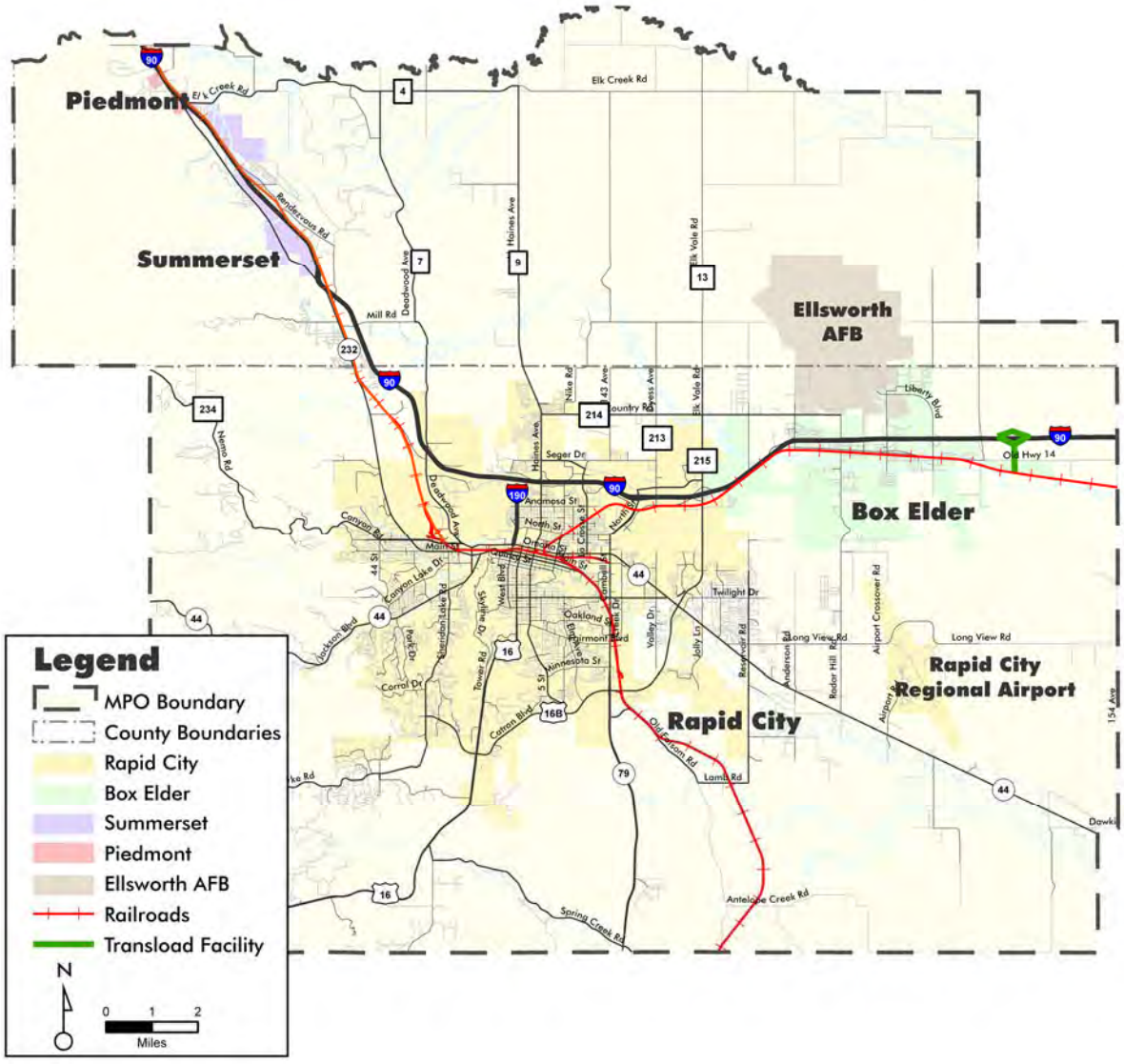
In addition to the DM&E carrying freight into, out of, and within the Rapid City area, the Black Hills Central Railroad operates a passenger railroad in the Black Hills region. The operation is known as the *1880 Train* and it operates on the former Keystone Branch of the Burlington Northern Railroad between Hill City and Keystone. Hill City and Keystone are approximately 26 and 22 miles from Rapid City, respectively, so this train does not operate within the Rapid City Planning Area.

In addition to the active lines, there is an abandoned 98.5 mile rail corridor owned by the State of South Dakota that connects Rapid City with Kadoka, SD. This section was acquired by the State as part of the bankruptcy and dissolution of the Chicago, Milwaukee, St. Paul, and Pacific Railroad, also known as the Milwaukee Road, in the late 1970's. As noted in the previous Pedestrian and Bicycle Facilities Plan, this abandoned corridor is planned as a recreational path along SD 44 between downtown Rapid City and the Rapid City Regional Airport.

The Black Hills Transload facility is a noteworthy development in the eastern portion of the region. This is an intermodal facility that is being constructed next to the DM&E's east-west track in Box Elder that will significantly improve the region's industrial and commercial capabilities, according to the City of Box Elder's August 2008 *Community Profile*.

During the development of *RapidTRIP 2035*, the railroad-related discussions included ongoing implementation of the Railroad Crossing Improvement and the Roadway Safety Improvement programs; concerns with increased truck traffic on local streets due to the Transload facility; and a possible new interchange to accommodate truck and other traffic accessing Transload. Railroads in the Rapid City area are shown in Figure 8-2.

Figure 8-2: Railroads in the Rapid City Area



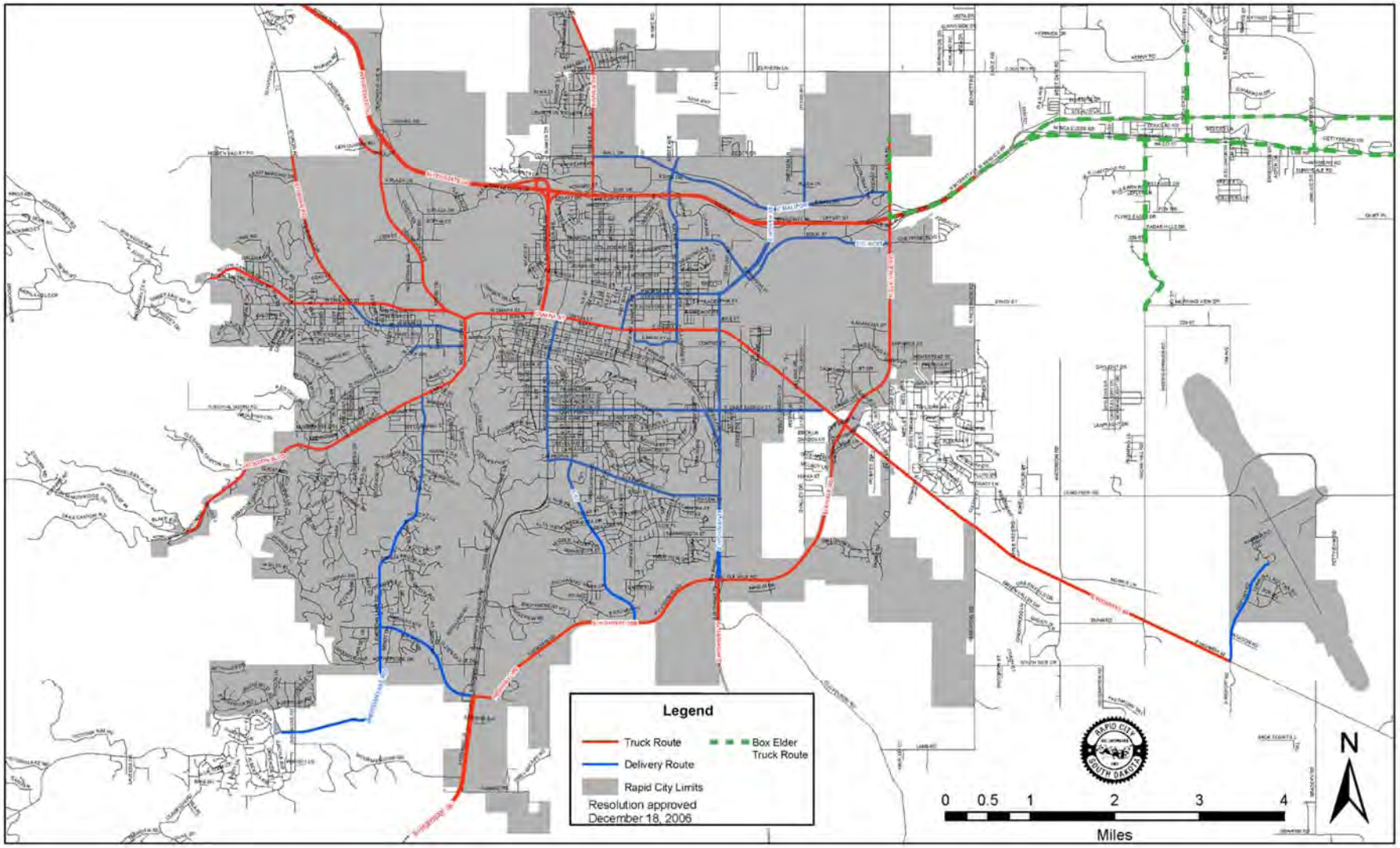
Freight and Truck Routes

Freight movements invariably impact land uses, especially along the corridors utilized by truck and rail traffic. The level of impact is often intensified when sensitive uses, such as neighborhoods, schools, parks, and so forth, occur along these high traffic routes. Proper long range planning and coordination with appropriate land use planners can serve to alleviate these impacts. This may include periodic designation and update of truck routes, implementation of additional limited-access roadway facilities, and other techniques.

Figure 8-3 identifies the Truck Routes and Delivery Routes approved by the City Council of Rapid City; and it shows the proposed locations of truck routes in Box Elder. Large trucks of more than three tons must use the approved Truck Routes when traveling in the Rapid City area. Delivery routes can only be used when trucks are making local deliveries and cannot be used as through routes.

Freight is an important topic that deserves additional planning and consideration in future Plan development efforts. Federal legislation stresses the need to integrate freight issues with other planning efforts. Freight planning can identify future economic development opportunities. During the development of *RapidTRIP 2035*, the study team met with freight interests as presented in Chapter 2, Community Involvement, to discuss their needs, issues, and concerns as they relate to the long range transportation planning process.

Figure 8-3: Truck Routes and Delivery Routes



Intelligent Transportation Systems

The implementation of intelligent transportation systems in the region improves the safety, efficiency, and cost effectiveness of the transportation system and the quality of the travel experience from a user perspective. Intelligent transportation systems include a wide variety of approaches to coordinate systems and communicate problems and solutions to planners, engineers, and the public. They rely primarily on technology to enhance the transportation system rather than costly infrastructure improvements.

In November 2003, the Rapid City Metropolitan Planning Organization approved the *Intelligent Transportation Systems Plan for Integration Strategies*. This plan coordinates the technology and systems between the various transportation provider agencies, local governments, and others. The wide array of transportation implementers in the region necessitates an enhanced coordination effort to achieve efficient and effective results.

9. IMPACTS OF THE PLAN

The community's investment in transportation infrastructure and services can provide significant benefits in terms of mobility, travel choice, and quality of life for the citizens of the Rapid City area. In many cases, these investments contribute to better air quality, energy conservation, and reduced traffic congestion. However, negative impacts to the natural and physical environments can result as well. Irreversible damage to environmental features, such as floodplains, wetlands, and biological research areas, can be produced by poorly planned transportation improvements. Investments that benefit parts of the community may have a negative effect on minority or low-income citizens. Finally, premature infrastructure improvements in undeveloped areas can often lead to growth characterized as sprawl, which can have a detrimental effect on some aspects of a community's quality of life.

To protect public's investments in community facilities and to protect and preserve natural areas and neighborhoods that can be sensitive to development, the impacts of traffic and potential new roadway construction have been examined against these community values to the extent practical. Transportation facilities and roadway expansions should be implemented in a manner that promotes the beneficial aspects and minimizes unwanted effects. It is important that the location, alignment, sizing, right-of-way needs, and design details of arterial streets and highways be identified well ahead of actual development so that proper planning of residential and commercial areas can occur to minimize negative impacts.

Environmental Justice – Potential Impacts to Low Income and Minority Populations

Title VI of the 1964 Civil Rights Act requires that no person, because of race, color, religion, national origin, sex, age, or handicap, be excluded from participation in, denied benefits of, or be subjected to discrimination by any federal aid activity. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, issued on February 11, 1994, broadens this requirement to mandate that disproportionately high and adverse health or environmental impacts to minority and low-income populations be avoided or minimized to the extent feasible. Projects that include actions that are proposed, funded, authorized or permitted by federal agencies are subject to this Executive Order. The federal nexus for the proposed action is FHWA and FTA funding for the development and implementation of *RapidTRIP 2035*.

Guidance for evaluating environmental justice in planning and impact assessments is provided in several sources. The most relevant sources for *RapidTRIP 2035* are:

- Order 6640.23, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued by FHWA on December 2, 1998, and
- USDOT's Memorandum, Implementing Title VI Requirements in Metropolitan and Statewide Planning, dated October 7, 1999.

These documents explain how FHWA and FTA-project proponents should identify relevant populations, integrate environmental justice principles in project planning, avoid disproportionately high and adverse effects, and determine actions that can be taken to address or mitigate potential impacts.

Incorporating environmental justice into the planning process involves three steps: identification of relevant groups, reaching out to relevant groups, and considering effects of the proposed actions on relevant groups. Project proponents can more effectively demonstrate their compliance with the Executive Order when they document their investigations of the presence of minority or low-income neighborhoods and take appropriate actions during project planning to ensure opportunities for participation and to avoid disproportionate and adverse impacts to these groups.

FHWA and FTA encourage metropolitan planning organizations to incorporate environmental justice requirements in the process for developing transportation plans. That way, concerns or issues can be address long before construction begins.

Rapid City Area Demographics

An overview of the ethnic and income characteristics of the City of Rapid City is presented in Figure 9-1 and Table 9-1. The table also provides data for the state and nation as a context for comparison to larger geographic areas. The 2000 Census, the most recent detailed data available, indicates that while the population of Rapid City is predominantly white (85%), minority populations comprise at least 20% of the residents in sixteen census block groups. The 2000 Census also indicates that nearly 13% of area residents live in poverty, similar to the statewide and national averages. Seventeen census block groups in the MPO area have more than 20% of the population living in poverty. Twelve of those census block groups also have high minority populations (20% or greater). The 20% definition is often used to identify locations of significant minority and low income populations.

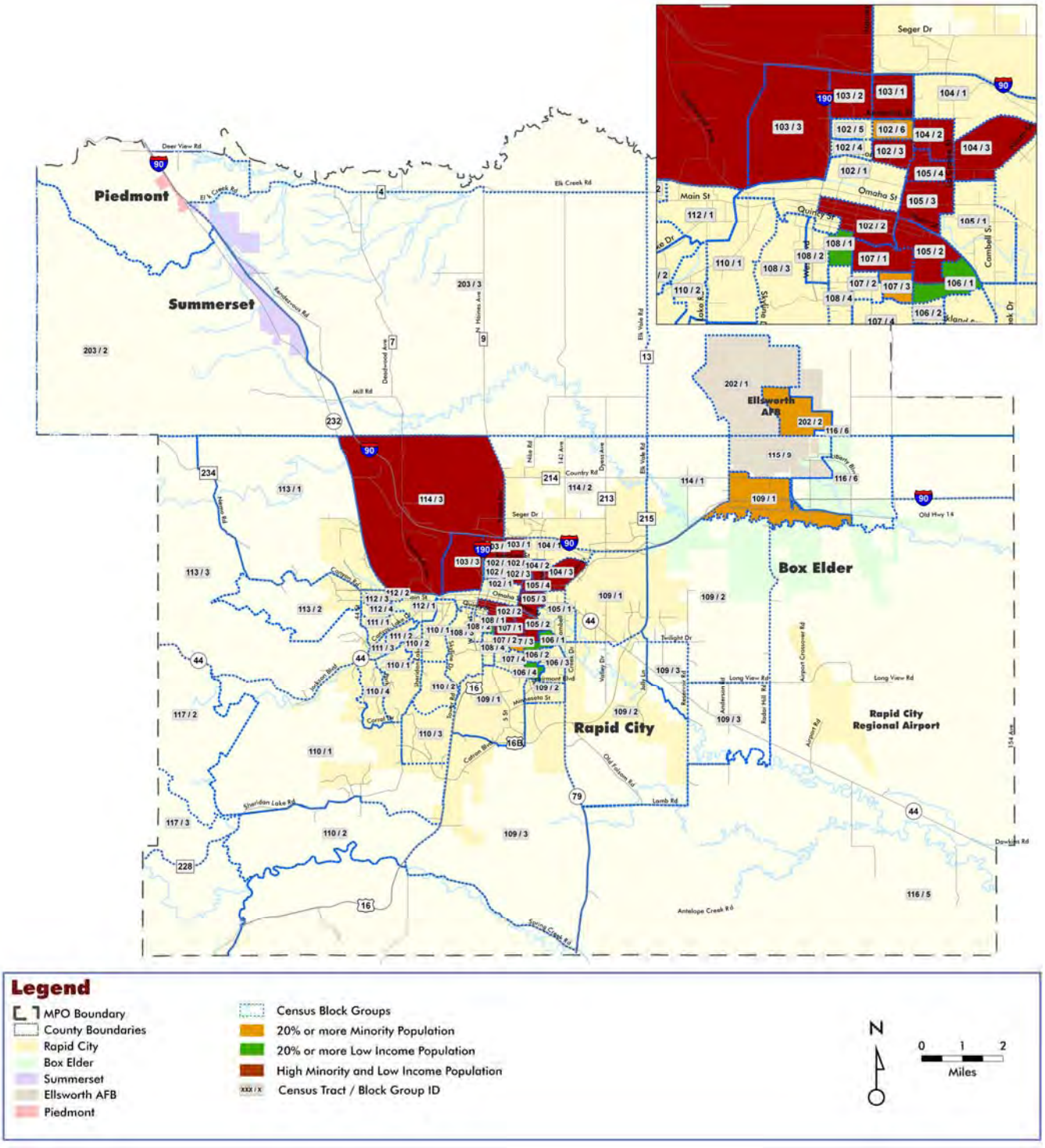
Table 9-1: Socioeconomic Characteristics – Region, State, Nation

Racial Composition (Percent of Population)	Rapid City	South Dakota	United States
White	84.5%	88.7%	75.1%
Black or African American	0.8%	0.6%	12.2%
American Indian and Alaska Native	9.3%	8.2%	0.9%
Asian	1.3%	0.6%	3.6%
Other	4.2%	1.9%	8.2%
Hispanic or Latino[1]	2.7%	1.4%	12.5%
Low Income Statistics (2000)			
Persons in Poverty [2]	12.7%	13.2%	12.4%
Median Household Income	$35,978	$35,282	$41,994

[1] Hispanic/Latino ethnicity is not treated as a separate racial group, so the column total exceeds 100%.

Source: U.S. Census (2000)

Figure 9-1: Minority and Low Income Concentrations



Potential Environmental Justice Effects of the Recommended Plan

In general, the Environmental Justice analysis for *RapidTRIP 2035* focused on the potentially adverse impacts caused by roadway construction. In this study, the construction of new roadways along new rights-of-way received special attention due to their potential to split or isolate parts of the community. Widening of existing roadways was deemed not as critical, but was still scrutinized for potential impacts. Many of the new and widened roadways will feature enhanced alternative mode facilities, so their impacts may be positive in terms of new transportation services and access.

Alternative mode investments in transit service and bicycle and pedestrian facilities were considered to provide positive impacts to the minority and low-income populations of the MPO area, particularly in terms of accessibility. For those locations that do not currently have multimodal transportation facilities, alternative mode services and facilities would provide additional, lower-cost transportation options to increase access to the community and to jobs.

The potential effects of the proposed projects have been identified and evaluated with respect to the impacts that the minority and low-income populations may experience. Several figures are presented to demonstrate graphically where these changes may occur. The concept of environmental justice is to ensure that adverse effects are not borne unduly by certain groups, and this analysis revealed both positive and potentially negative influences from the implementation of *RapidTRIP 2035*. These impacts are summarized in Tables 9-2 and 9-3, and illustrated in Figures 9-2, 9-3, and 9-4.

The criteria used for the minority population impact study was based on Census 2000 census block group data with 20% or greater minority resident population per block group. Sixteen minority block groups may be affected. Table 9-2 lists the census tracts that are affected, the improvements that are proposed, and the potential impacts. The affected tracts are located primarily in the central and northwest Rapid City area and also in the Box Elder/Ellsworth Air Force Base area.

The criteria used for the low-income population impact study was based on census block group data with 20% or greater of the tract population living in poverty. The study area has seventeen low-income block groups. These are all located in central and northwest Rapid City.

In all, 21 census block groups include minority and/or low-income population concentrations that may be affected by the implementation of *RapidTRIP 2035*. The transportation categories that have been analyzed are roadways, bicycle and pedestrian facilities, and transit services; although the focus of the exercise was on the roadway improvements since they have the most potential for negative impacts.

Table 9-2: Environmental Justice Analysis (Pennington County)

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
102.00	2	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.	Implementation of new roadways increases the opportunity for new transit service routes. Transit improvements and changes should be analyzed to insure that minority and "transit-captive" users are serviced to the extent possible. Increased transit service is considered to have positive benefits in terms of additional transportation options and increased access to the community for target populations.	Bicycle and pedestrian facilities should be incorporated into new and widened roadways to increase options for citizens without cars or driver's licenses. New bicycle facilities and pedestrian improvements are considered to have positive benefits in terms of additional transportation options and increased access to the community for target populations.
102.00	3	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
102.00	6	✓		*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
103.00	1	✓	✓	Haines Avenue borders this block group. The widening of Haines Avenue to 6 lanes may impact the people and environment in this block group. This improvement will increase the capacity of the road and will be constructed to increase multimodal facilities and services and the most recent safety standard will be applied. Possible relocation may occur to residents/businesses adjacent to the roadway widening.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
103.00	2	✓	✓	Haines Avenue borders this block group. The widening of Haines Avenue to 6 lanes may impact the people and environment in this block group. This improvement will increase the capacity of the road and will be constructed to increase multimodal facilities and services and the most recent safety standard will be applied. Possible relocation may occur to residents/businesses adjacent to the roadway widening.		
103.00	3	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
104.00	2	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
104.00	3	✓	✓	The East Anamosa Street extension, Campbell extension and Century Road will be introduced as new arterials. While some environmental effects are possible, the proposed alignments are generally undeveloped so impacts to target populations will be minimal. The new roadways will be constructed according to updated urban street design standards, updated safety requirements, and increased service provision for multimodal transportation.		
105.00	2	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
105.00	3	✓	✓	Omaha Street passes through this block. Omaha Street will be widened to 6 lanes. This improvement will increase the capacity of the road and will be constructed to increase multimodal facilities and services and the most recent safety standard will be applied. Possible relocation may occur to residents/businesses adjacent to the roadway widening. Right-of-way needs should be closely scrutinized to minimize impacts to minority and low-income areas.		
105.00	4	✓	✓	*RapidTRIP 2035* not recommend any roadway improvements in this block group, so no impacts are anticipated.		
106.00	1		✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
106.00	4		✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
107.00	1	✓	✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
107.00	3	✓		*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
108.00	1		✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
109.03	1	✓		*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
114.00	3	✓	✓	Sheridan Lake Road Extension will be introduced as a new arterial. While some environmental effects are possible, the proposed alignments are generally undeveloped so impacts to target populations will be minimal. The new roadway will be constructed according to updated urban street design standards, updated safety requirements, and increased service provision for multimodal transportation. The widening of I-90 to 6 lanes may impact the people and environment in this block group. However, since the highway already exists and right-of-way is already owned by the state, impacts to target populations will be minimal.		

Table 9-3: Environmental Justice Analysis (Meade County)

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
202.00	2	✓		*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.	Implementation of new roadways increases the opportunity for new transit service routes. Transit improvements and changes should be analyzed to insure that minority and "transit-captive" users are serviced to the extent possible. Increased transit service is considered to have positive benefits in terms of additional transportation options and increased access to the community for target populations.	Bicycle and pedestrian facilities should be incorporated into new and widened roadways to increase options for citizens without cars or driver's licenses. New bicycle facilities and pedestrian improvements are considered to have positive benefits in terms of additional transportation options and increased access to the community for target populations.
204.00	1		✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
204.00	4		✓	*RapidTRIP 2035* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Figure 9-2: Roadway Improvements

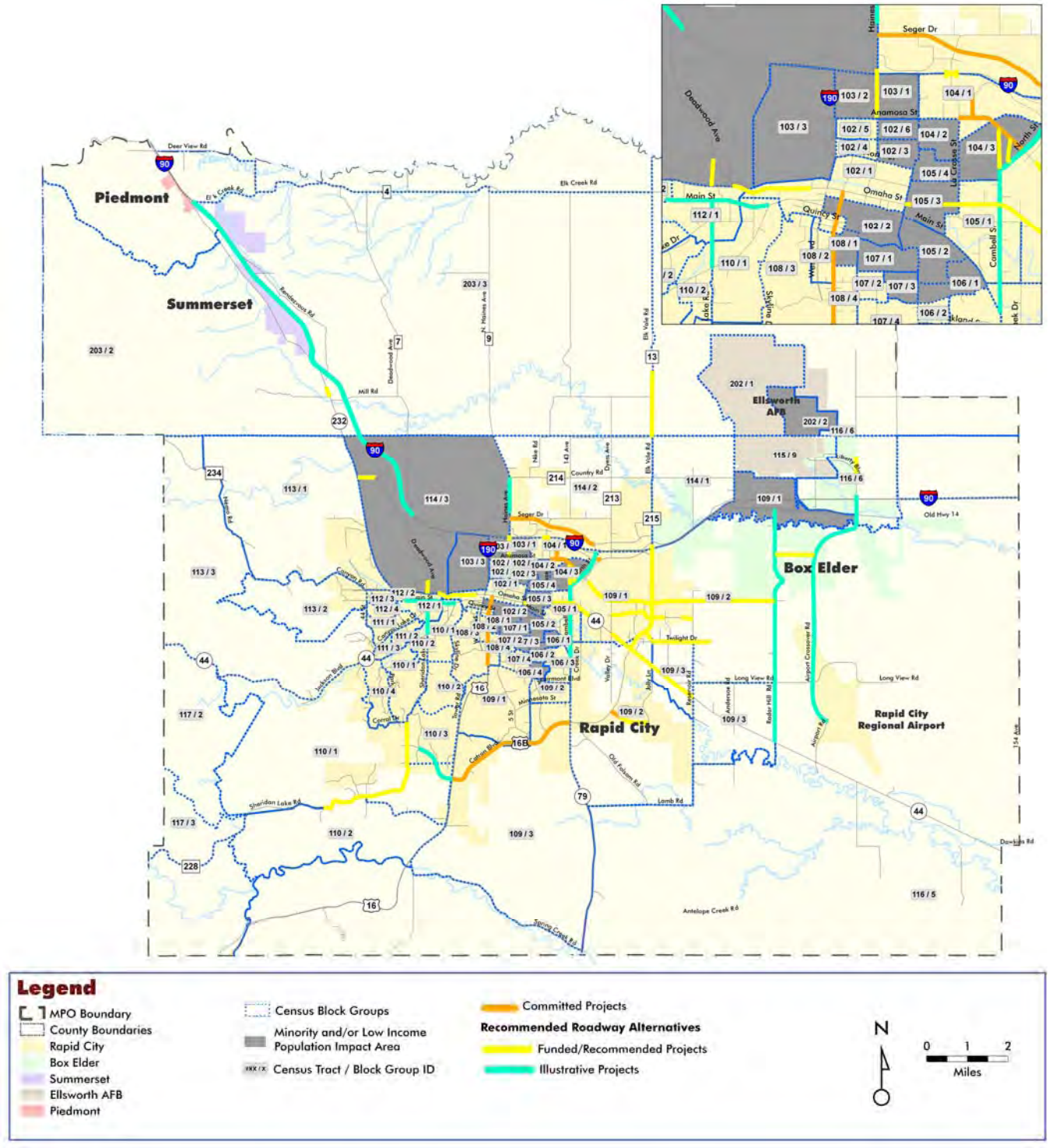


Figure 9-3: Pedestrian and Bicycle Improvements

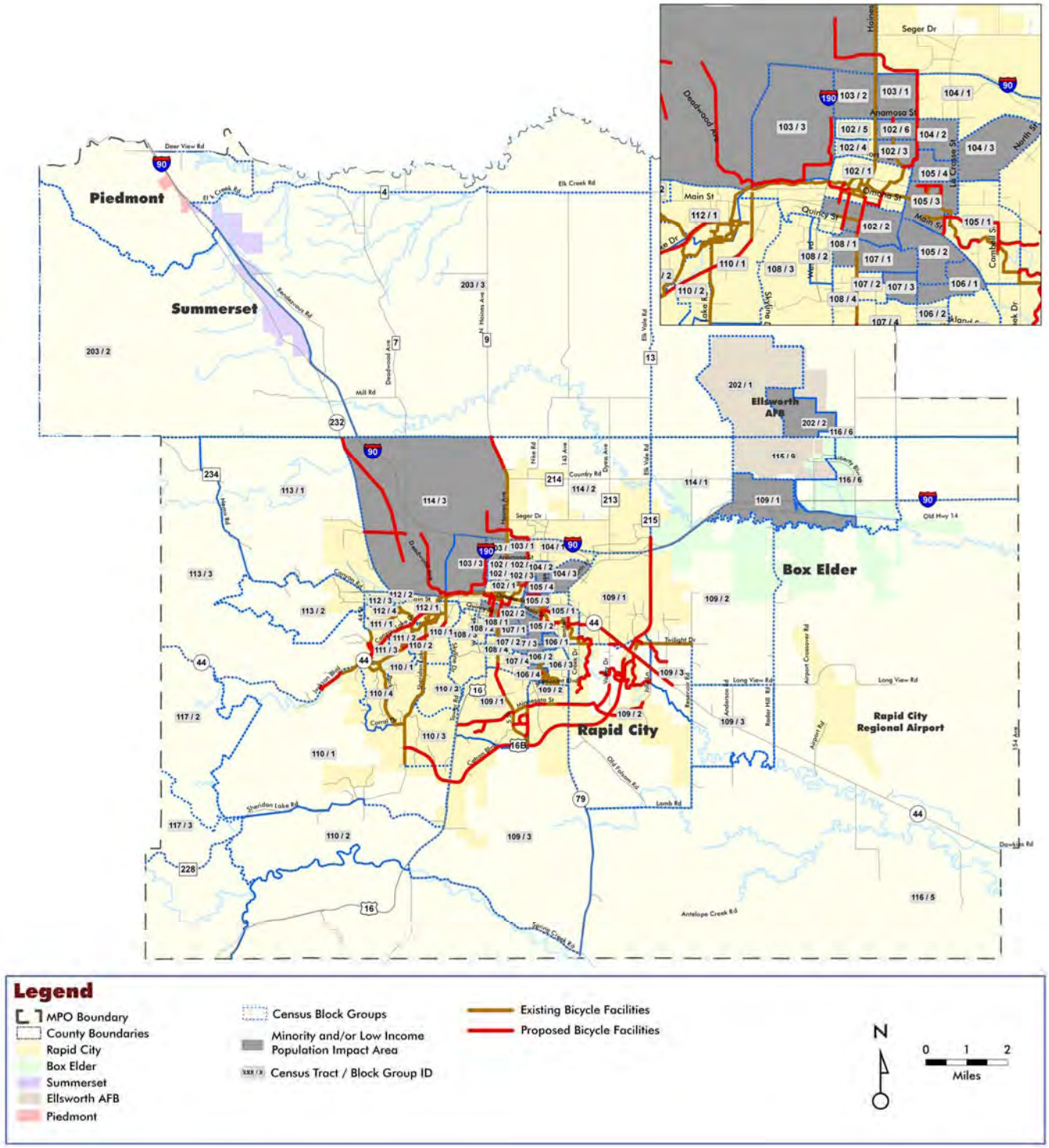
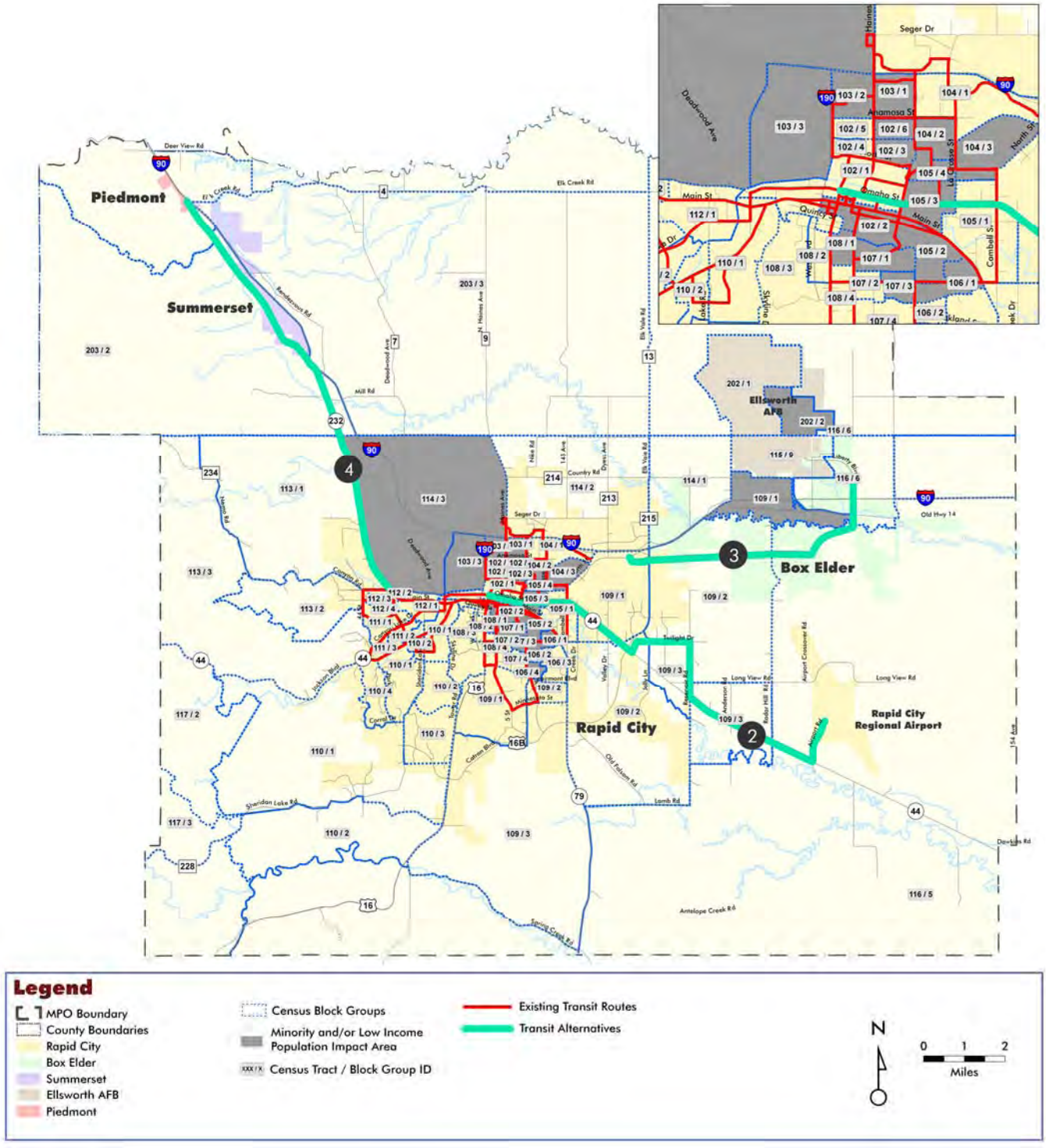


Figure 9-4: Transit System Bus Routes



In conclusion, none of the transportation improvements recommended by *RapidTRIP 2035* appear to have any adverse impacts to the identified minority or low-income populations, at least in the context of long-range transportation planning. In fact, many of the improvements will have positive impacts to populations of interest in terms of increased access to the community and employment opportunities through additional transportation options.

Proactive efforts should be made to ensure meaningful opportunities for public participation including specific activities to increase outreach for low-income and minority participation during the project development process for each of *RapidTRIP 2035's* recommendations. This participation will be important to the decision-making process and will help to ensure that transportation needs of the target populations are met to the greatest extent possible.

Potential Environmental Impacts

RapidTRIP 2035 is required to identify and address potential environmental impacts that may result from transportation improvements implemented through the Plan. As the Plan is developed, consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies is also required.

On October 28, 2009, a meeting with state and local resource agencies was held via teleconference to discuss the process and schedule for developing *RapidTRIP 2035*, specific coordination needs of the agencies, and potential impacts. The following agencies participated:

- South Dakota Department of Transportation
- South Dakota Historical Society
- Corps of Engineers
- Department of Environmental and Natural Resources
- Federal Highway Administration

In addition to these participants, the *RapidTRIP 2035* study team regularly coordinated with state and local representatives of the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the South Dakota Department of Transportation (SDDOT). As part of the draft Plan review, the Rapid City Area Metropolitan Planning Organization sent draft copies of *RapidTRIP 2035* to the agencies listed above as well as to the following:

- US Department of Agriculture Forest Service,
- US Fish and Wildlife Service,
- South Dakota State Historic Preservation Office,
- Department of Game, Fish, and Parks

Consultation with these resource agencies is an important part of the process to develop *RapidTRIP 2035*. The Rapid City area has many environmentally sensitive areas that contribute to the natural beauty and quality of life in the region. For example, a portion of the Black Hills National Forest is within the planning area boundary of the Rapid City Metropolitan Planning Organization. While there are currently no projects recommended in *RapidTRIP 2035* that impact the national forest, continued coordination with this and other resource agencies will ensure that they have adequate opportunity to review potential impacts and recommend mitigation opportunities.

Consultation throughout the *RapidTRIP 2035* development process did not yield any project-specific comments or concerns due in part to the planning-level nature of the Plan document. Exact alignments and other details are not determined at this stage. As projects move closer to implementation when alignments and design features are developed, it will be important to consult with resource agencies. On federally-funded projects and project that need permitting or other environmental clearances, this consultation is required. It is the Rapid City Area Metropolitan Planning Organization's policy that all federally funded projects comply with applicable environmental statutes as a condition to receiving funding.

Wetlands, Rivers, Streams, and Floodplains

The South Dakota Department of Transportation requires avoidance of all wetland impacts or, where avoidance is not practicable, minimization to the greatest extent practicable. Special emphasis is placed on avoiding impacts to high-quality wetlands; including those wetlands with known or potential endangered species support functions. When the objectives of a transportation project cannot be met without adverse impacts to wetlands, wetland mitigation involves the preparation of a wetland mitigation plan detailing how lost wetland functions will be compensated. Subsequently, wetland mitigation plans are submitted to one or more regulatory agencies, typically the US Corps of Engineers, Omaha District; USFWS Pierre Ecological Field Services Office; SD Game, Fish & Parks; and SD Department of Environment and Natural Resources, for their review and permit approval. Even when the impacts are so small as to fall below regulatory thresholds, the department follows a "no-net-loss" directive requiring compensatory mitigation for any wetland loss.

Figures 9-5 to 9-7 show an overlay of *RapidTRIP 2035's* recommended roadway, transit, and bicycle/pedestrian projects on the wetlands, rivers, and streams and the Rapid City Area Metropolitan Planning Organization's long range transportation projects. Possible mitigation activities associated with wetlands, rivers, and streams have been identified below:

Possible Mitigation Activities

- Avoid transportation improvements that cross or otherwise affect wetlands.
- Take steps to minimize harm and compensate for impacts.
- Retain open spaces, vegetated natural buffers, and riparian areas around wetlands.
- Reduce and/or prevent highway stormwater runoff from entering wetlands.
- Employ low-impact development and construction activities.

Possible Mitigation Activities for project that may impact a known fishery

- In-stream work should not be undertaken during fish spawning periods.
- Stream bottoms and wetlands impacted by construction activities should be restored to pre-project elevations.
- Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.
- Grading operations and reseeding of native species should begin immediately following construction.
- If trees or brush will be impacted by the project, a ratio of at least 2:1 planted vs. impacted should be incorporated into mitigation plans for the project."

Figure 9-5: Recommended Roadway Improvements Relative to Wetlands, Rivers, and Streams

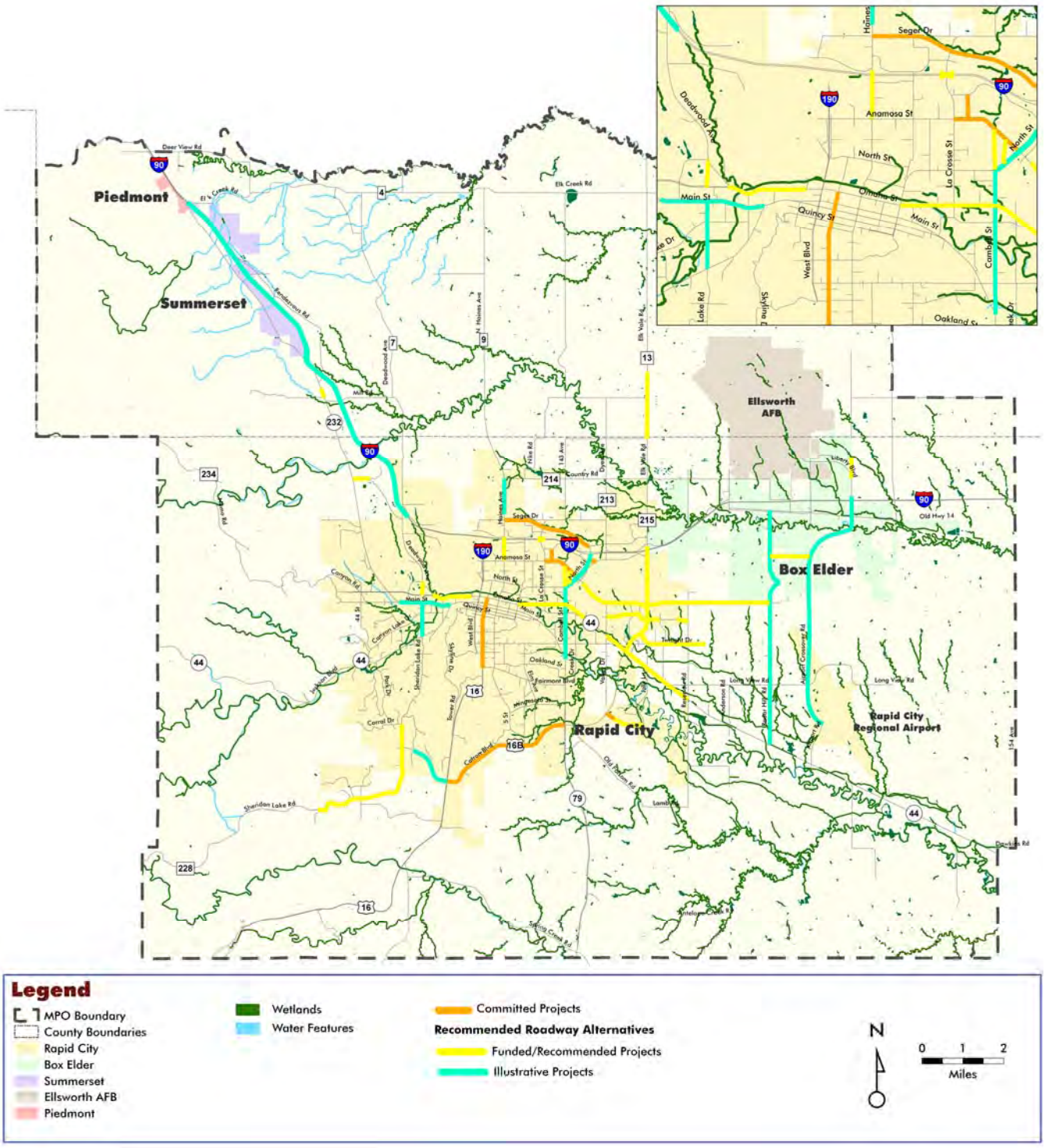


Figure 9-6: Recommended Transit System Relative to Wetlands, Rivers, and Streams

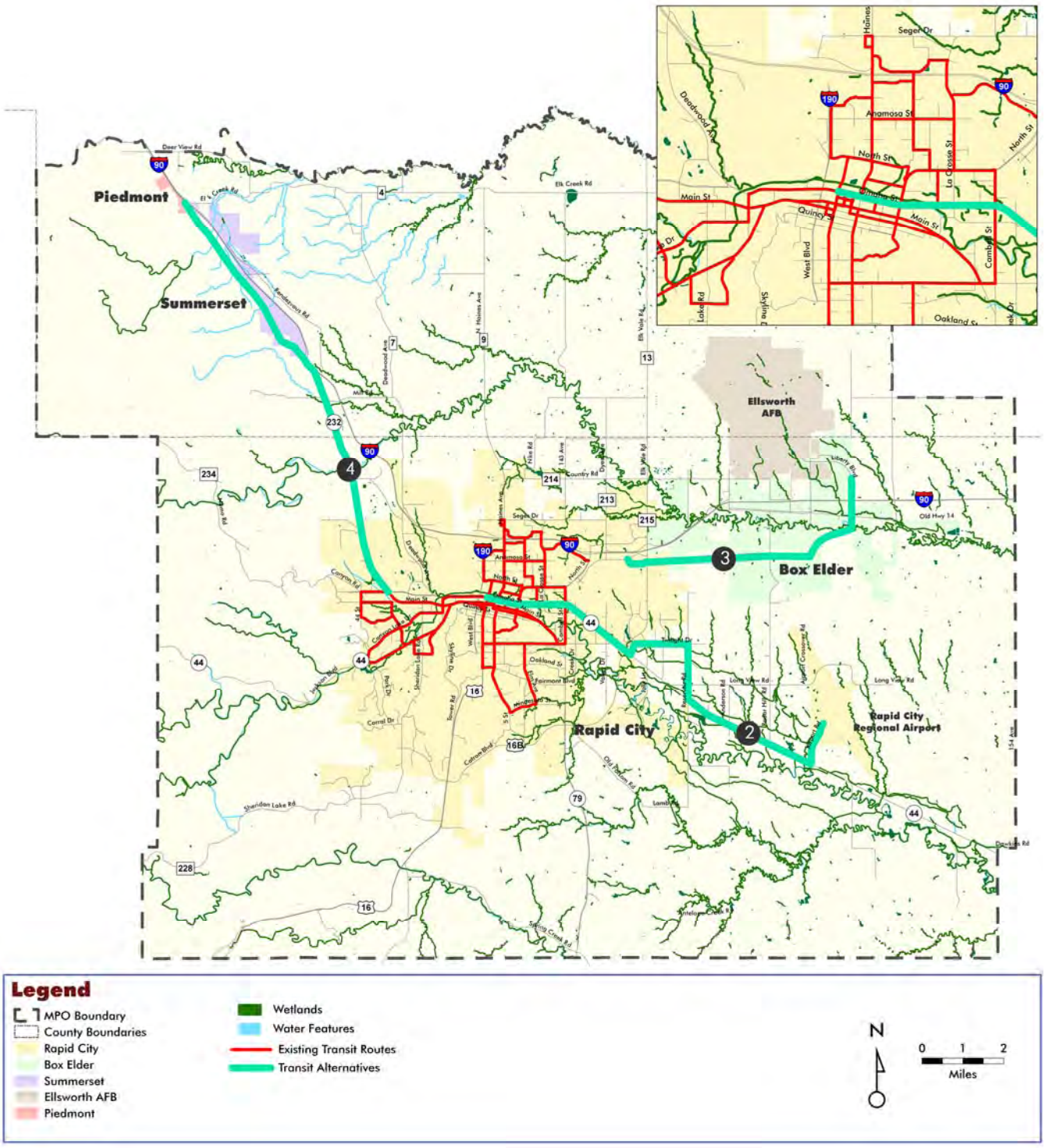
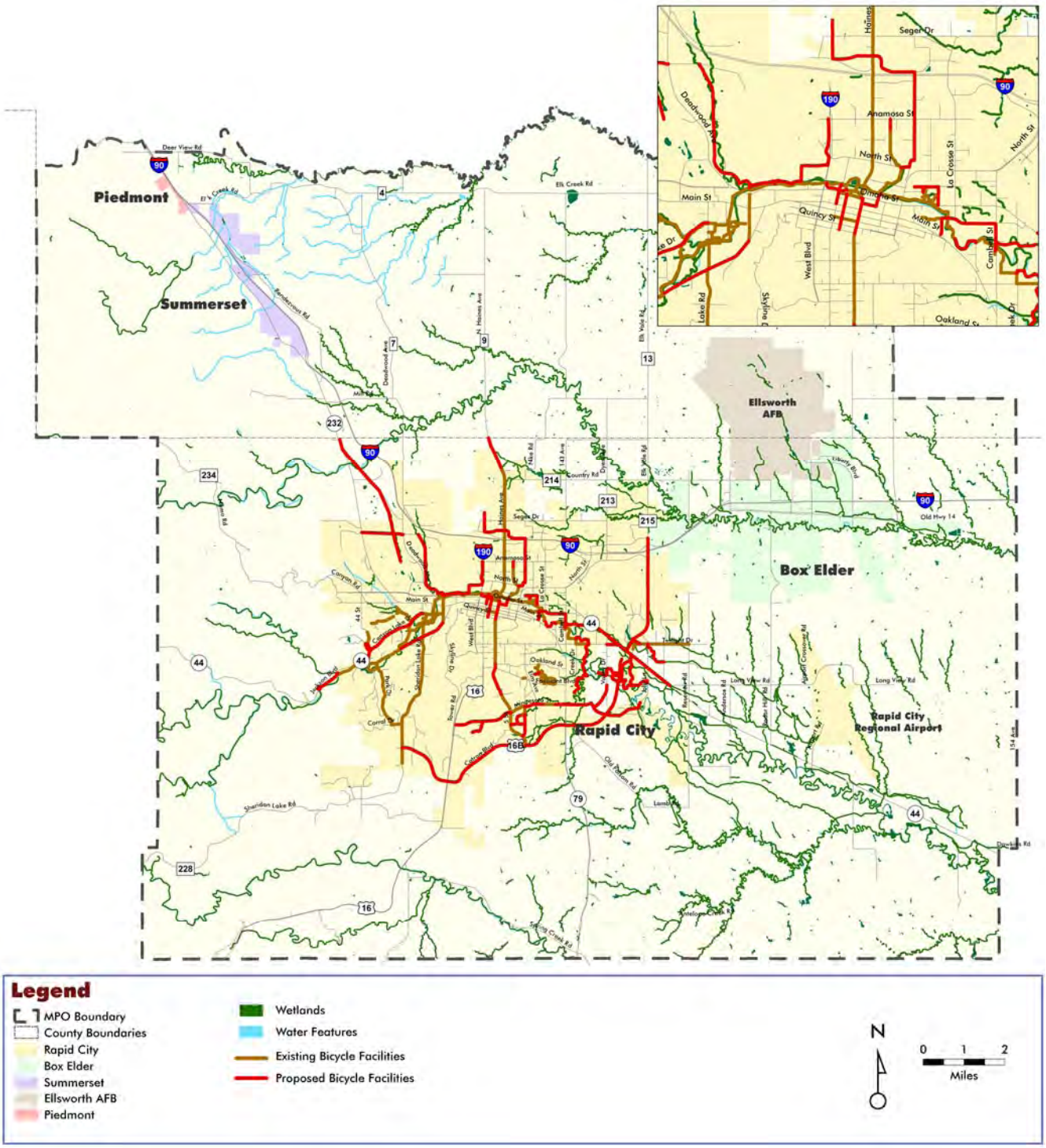


Figure 9-7: Recommended Bicycle/Pedestrian Improvements Relative to Wetlands, Rivers, and Streams



The development of roadways in or through floodplains, wetlands, or other environmentally sensitive areas is discouraged by *RapidTRIP 2035*. When it has been determined that no other choice is feasible and a roadway expansion is necessary, the expansion will be undertaken if it can be demonstrated that the improvement will have no negative impacts upon the environment or that negative impacts that are created will be mitigated.

If impacts will occur in floodplains, the project sponsor must consult as early as possible with the floodplain administrator or the Federal Emergency Management Agency, as appropriate, to evaluate potential impacts, and identify avoidance actions or mitigation measures to reduce potential impacts to floodplains.

If wetlands will be affected, the project sponsor must consult as early as possible with the U.S. Army Corps of Engineers to evaluate potential impacts, and identify avoidance actions or mitigation measures to reduce potential impacts to these sensitive resources.

Threatened and Endangered Species/Fish and Wildlife

Endangered Species Act

Section 7(a) of the Endangered Species Act (ESA) of 1973 as amended requires Federal agencies to evaluate the impact of their actions on threatened or endangered species, and ensure such actions are "not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of (its) habitat". Furthermore, actions resulting in the "take" of an endangered species habitat are required to minimize the impact of that take thru the implementation of reasonable and prudent measures. Because many transportation projects are partially funded by the Federal Highway Administration (FHWA) and require the obtaining of a federal 404 permit for dredge and fill activities within waterways of the United States, compliance with Section of the Endangered Species Act is required. A Programmatic Biological Opinion was issued to the FHWA and SDDOT by the United State Fish and Wildlife Service in 2004. This document provides guidance for the construction activities impacting endangered species, also mandatory Terms and Conditions are given which are to be implemented at stream crossing projects impacting the Topeka shiner.

The Endangered Species found in South Dakota are the Topeka shiner, the bald eagle, and the American burying beetle. The Topeka shiner and the American burying beetle are not found within the planning area of the Rapid City Area Metropolitan Planning Organization. Bald eagles are in Meade County; however there are no known nests within the planning area. Possible mitigation activities associated with endangered species habitat have been identified below:

Possible Mitigation Activities

- Avoid new construction in and around these areas.
- Take steps to minimize harm and compensate for impacts.
- Provide proper maintenance of wildlife fencing.
- Keep the roadway free of trash.
- Use minimal amounts of deicing agents (salts).
- Alert drivers to possible presence of wildlife.

- Provide buffer strips along streams and rivers.
- Maintain natural lighting to the extent possible along the roadway
- Construct under-road passages

Historic, Cultural, and Archaeological Resources

Historic and pre-settlement land use patterns relied heavily on water resources, such as rivers and streams. As such, potentially significant archaeological and pre-historic/historical resources are possible along Rapid Creek and other creeks within the planning area. Historic resources can include bridges, mills, farmsteads, quarries, levees, and railroads among others in the Rapid City area. Historic properties are sites, buildings, districts, structures, or objects listed in or eligible for listing in the National Register of Historic Places.

The National Register is used as the standard for defining those historic places worthy of preservation and protection. These historic places might include archeological sites, bridges and roads, buildings, designed landscapes such as parks, and places of religious and cultural significance to Native American tribes and other traditional communities.

If it is determined that a project will have an adverse effect on a historic property, efforts should be made to redesign the project in order to eliminate or minimize its adverse effects. If an adverse effect cannot be avoided, a Memorandum of Agreement would be negotiated outlining specific measures that should be undertaken to mitigate the project's effects. Mitigation measures may include: site excavation and recordation; archival photography; detailed floor plan and site plan drawings, which show the relationship of the building with its associated features; archival documentation of the property's history; and/or a detailed written description of the property.

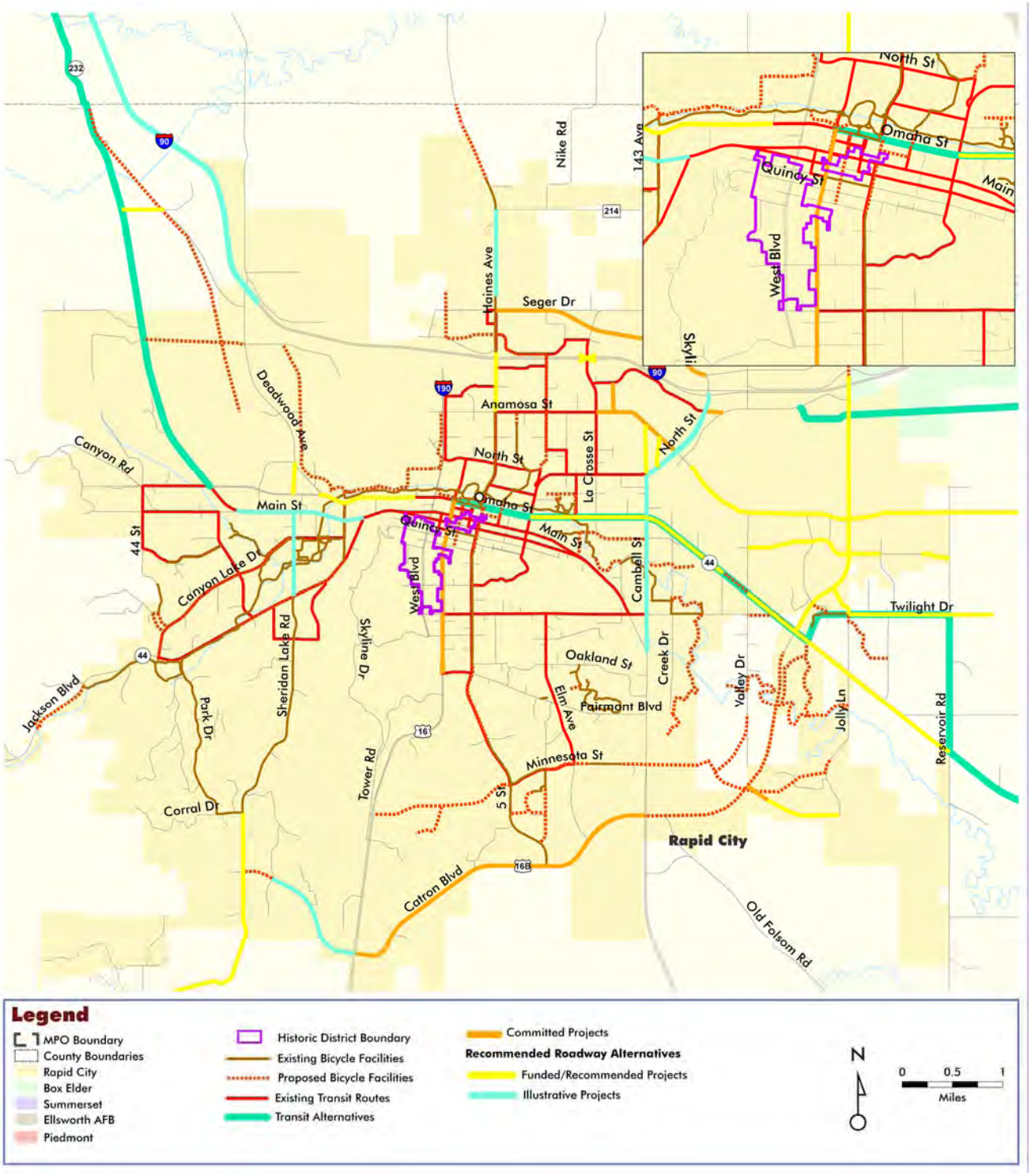
Consultation with various entities, including the Federal Highway Administration, the State Historic Preservation Office, the Advisory Council on Historic Preservation, City Historic Preservation Offices, local public officials, local organizations, and the public, is required during the project development process.

Figure 9-8 shows an overlay of the historic districts and the recommended roadway, transit, and bicycle/pedestrian systems recommended in *RapidTRIP 2035*. Possible mitigation activities associated with historic, cultural, and archaeological resources have been identified below:

Possible Mitigation Activities

- Avoid new construction around these areas.
- Take steps to minimize harm and compensate for impacts.
- Develop Memorandum of Agreement with State Historic Preservation Office and possibly Advisory Council on Historic Preservation documenting steps to be taken to minimize harm and compensate for impacts.
- Include buffers and/or berms in project plans.
- Conduct archeological surveys if unable to avoid the area.

Figure 9-8: Recommended Transportation Improvements Relative to Historic Districts, Properties, and Structures



Parklands

Section 4(f) of the Department of Transportation Act requires that special effort be made to preserve public parks and recreational lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) specifies that federally-funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge or land of significant historic site can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.

Often times, transportation officials are aware of and account for Section 4(f) resources that are important for preservation and community cohesion. Other resources may not be as well known but are afforded the same protection under Section 4(f). Long range planning should account for well known Section 4(f) resources throughout the area that would pose a significant loss if impacted. It is however, premature to analyze individual projects' Section 4(f) impacts this early in the process.

Figure 9-9 shows an overlay of the parks in Rapid City with the transportation improvements identified in *RapidTRIP 2035*. Possible mitigation activities associated with parklands have been identified below:

Possible Mitigation Measures

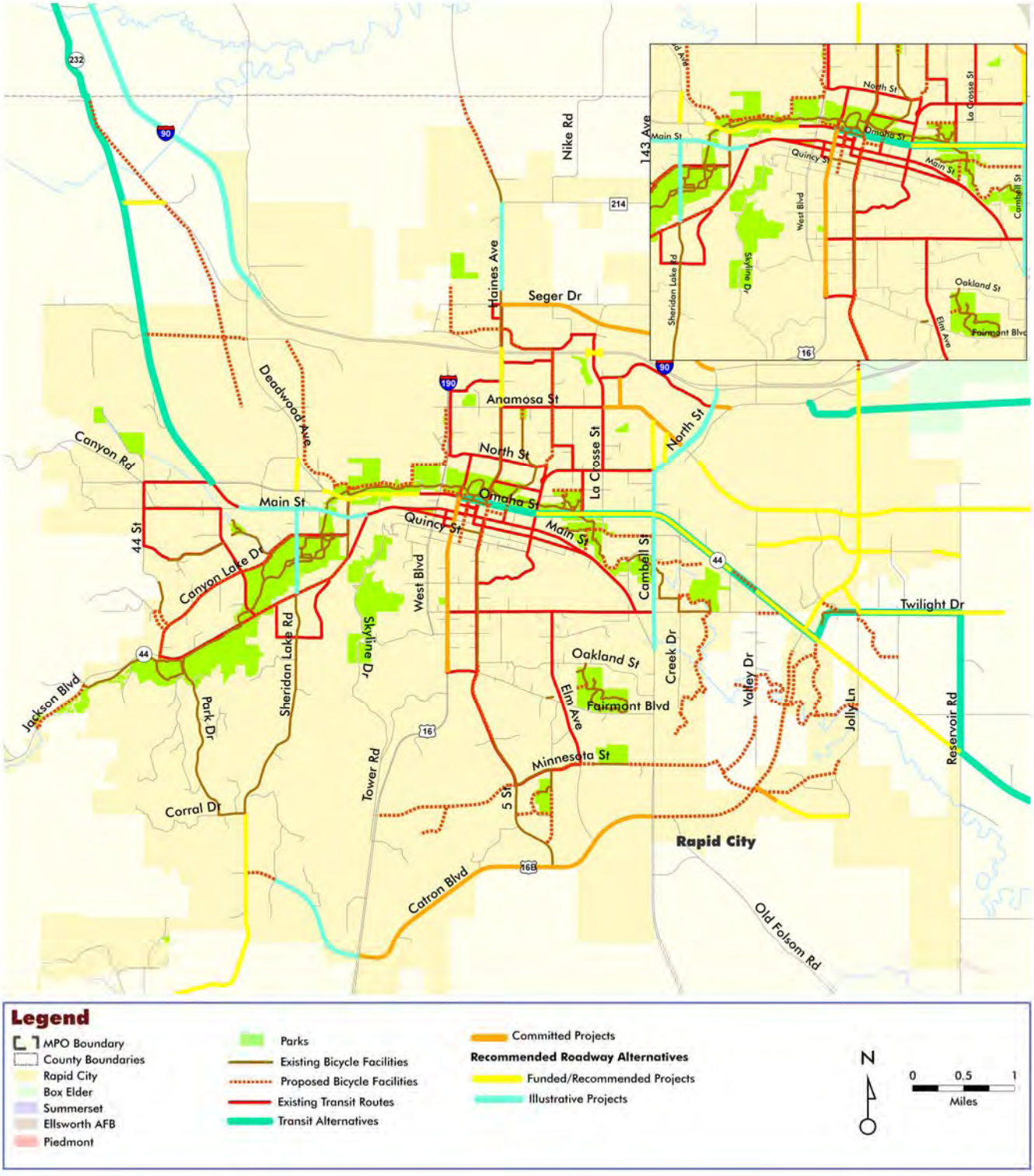
- Avoid new construction around these areas.
- Take steps to minimize harm and compensate for impacts.
- Provide enhancements to the properties including possible enhancements to the pedestrian/bicycle networks around these areas.
- Reduce vehicle speeds and volumes near parks and recreational areas.
- Replace park/open space acreage taken.

Hazardous Materials

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was passed in 1980. It established national policy and procedures for identifying and cleaning up sites that are found to be contaminated with hazardous substances. CERCLA was amended and expanded by the Superfund Amendments and Reauthorization Act (SARA) of 1986. CERCLA established a hazard ranking system. Sites with the highest ranking have been placed on the National Priorities List (NPL) and are eligible for money from the substantial fund established for the environmental cleanup under CERCLA.

The National Priorities List (NPL) is the list of hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program. Environmental Protection Agency (EPA) regulations outline a formal process for assessing hazardous waste sites and placing them on the NPL. At non-NPL sites, Environmental Protection Agency can also take shorter-term cleanup actions under the emergency removal program. CERCLA is important to the highway planning process primarily in the acquisition of right-of-way. Accepting financial liability for contaminated property may adversely affect the economic analysis of the project and therefore its financial feasibility. In addition, if significant cleanup must take place before highway construction can begin, substantial delays to the project can be anticipated. Careful evaluation of the nature and extent of the contamination as well as the cleanup alternatives, costs, schedule, and ongoing liability is warranted on all.

Figure 9-9: Recommended Transportation Improvements Relative to Parklands



Ellsworth Air Force Base in Meade County is the only site in the Rapid City Area Metropolitan Planning Organization on the National Priorities List. Construction of cleanup systems is complete and the systems are being monitored.

Ellsworth Air Force Base, Meade County

Stage of Clean-up: Construction Complete

The Air Force installed cleanup systems to address possible future health risks. Construction of cleanup systems is complete at all contaminated areas. The cleanup includes ground-water pump-and-treat systems, bio-dechlorination, landfill covers, soil treatment systems, excavation activities and natural attenuation (lessening). The systems are functioning properly.

Ground-water contamination has impacted the drinking water wells of some homes adjacent to the east and south of Ellsworth Air Force Base. The Air Force has provided potable water to these homes via water main extensions from the Ellsworth Air Force Base water supply system. Eventually, the mains will be transferred to the City of Box Elder for operation and maintenance.

The Air Force capped landfills and has enforced institutional controls to prevent unauthorized access to those landfills and to prevent the caps from being disturbed.

Contaminated ground water is pumped out of the ground and cleaned up to drinking water standards. The treated water is then either discharged to a local drainage, to Ellsworth Air Force Base wastewater treatment plant, or re-injected into the aquifer. A contaminated ground-water plume extends offsite to the east. However, the plume has been stopped at the site boundary and a gap in the plume is now evident. Natural attenuation of the remaining contamination will continue to be monitored.

These ground-water cleanup systems will be in operation for 20 to 30 years to complete the cleanup. However, treatability studies are being implemented to enhance and possibly replace current pump and treatment technologies. The relatively low levels of contamination in off-Base areas are expected to lessen within the same time frame.

Cleanup of the entire Ellsworth Air Force Base, including 20 years of ground-water treatment, is expected to cost approximately $30 million. All cleanup activities are being performed by the Air Force. Environmental Protection Agency and the State of South Dakota provide regulatory oversight.

Five-Year Review

In September 2005, the Air Force conducted a five-year review of all remedies constructed on EAFB. EPA and the State of South Dakota reviewed and commented on the results. The primary recommendations from the 2005 five-year review are: 1) Consolidate all groundwater management into one Operable Unit, OU11, base-wide groundwater, 2) Continue pursuit of alternative clean-up technologies for groundwater, and 3)

Pursue partial deletion of portions of the base from the National Priorities List (NPL). All three actions are underway or completed.

All existing remedial systems require monitoring and sometimes minor modifications. The EAFB Environmental Flight staff continues to conduct these efforts and ensure that the remedies remain protective of human health and the environment.

Energy Conservation, Air Quality, and Greenhouse Gases

Transportation is inextricably linked to energy consumption, but several measures can be planned and implemented to reduce the amount of energy consumed for transportation purposes. Some energy conservation occurs as older vehicles in the transit and private vehicle fleet are replaced with more fuel-efficient vehicles. Other measures take advantage of incentives or mandates developed through the planning process. For example, travel demand management (TDM) techniques such as carpooling, vanpools, flexible work hours, and alternative mode use can be utilized to reduce vehicular travel and the energy consumption associated with it. Transportation system management (TSM) can also assist with reduced energy consumption using techniques such as intersection improvements (e.g., turning lanes), signal timing and progression, roadway widenings, and others.

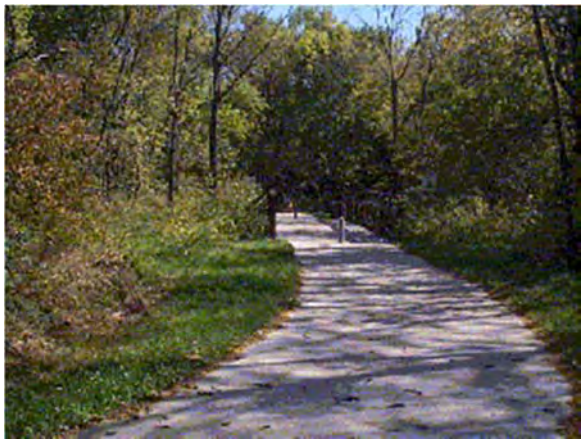
Technology often provides the greatest efficiency in reducing energy consumption and air quality, and recent trends in transportation are no different. In particular, President Obama's mandate to increase Corporate Average Fuel Efficiency (CAFÉ) standards to 35.5 miles per gallon (mpg) by 2016 with additional increases after that will significantly reduce energy consumption and air emissions in the timeframe of *RapidTRIP 2035*.

Fuel consumption curves are very similar to air emission curves in which the emissions (and energy consumption) generally decrease as speed increases up to 50 or 60 miles per hour. Energy consumption and air quality calculations both rely on vehicle miles of travel and congested speeds. For these reasons, it is reasonable to assume that future transportation scenarios with the lowest emission levels will also have the lowest fuel consumption.

Energy consumption will increase over time between now and 2035. However, when comparing the Existing and Committed network results with the Recommended Financially Constrained Roadway Plan, the vehicle miles of travel and congestion delay are lower with the plan's implementation. This indicates that implementation of the roadway improvements recommended in *RapidTRIP 2035* will serve to reduce energy consumption over the baseline no-build condition. Furthermore, additional investments in alternative modes consistent with *RapidTRIP 2035* may further reduce vehicle trips and their associated energy needs.

By encouraging alternative modes and supporting higher density development, RapidTRIP 2035 attempts to reduce increases in vehicle trips and/or vehicle miles traveled, thereby reducing air emissions that impact regional air quality and contribute to global climate change.

Sustainable and Livable Communities



When one thinks of the factors related to traffic that help create sustainable and livable communities, one might think of issues such as traffic calming, street design, scenic road preservation, bicycle facility parking and design, public transit, transportation policies for planning and people, land use planning, parking management, access control, zoning and design, innovative strategies for reducing traffic congestion, and private sector initiatives.

In terms of long range planning, transportation affects the livability of our neighborhoods and communities in both positive and negative ways. For example, six-lane arterial streets are difficult to cross for pedestrians, so their application should be context-sensitive. Areas of recreation such as parks and open space could be enhanced with a network of trails and sidewalks. Transportation is a key factor in safe routes to schools. These examples and many more demonstrate the potential impact of transportation on our surroundings.

In 2009, the US Department of Transportation, Department of Housing and Urban Development, and Environmental Protection Agency Interagency Partnership for Sustainable Communities established six livability principles:

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate policies and leverage investment
- Value communities and neighborhoods

Sustainability is generally defined as actions that meet current needs in an efficient and financially viable manner without compromising the ability to meet those needs in the future. In the context of transportation, sustainability can be defined based on four areas of function and responsibility:

- Mobility and accessibility,
- Environmental stewardship,
- Social equity / quality of life, and
- Economic robustness.

Conventional road widening proposals can threaten and irreversibly damage the scenery, environment, livability, and community character. Conventional road projects are designed to serve the "public" but primarily mean the "motoring public." For many decades, road projects have been treated primarily as

conduits for motor vehicles by state departments of transportation. The primary need was considered to be speed, or travel time. Safety in roadway design has been developed to serve this need. Elevating this need above all other needs of the community can have real-world implications for the quality of life in communities like Rapid City.

It is important to accommodate motor vehicles in our society because they are the dominant and prevailing mode used by the traveling public and are likely to continue that role long into the future. However, this is and should be only one function that streets and roads address. Transportation planners and engineers are reflecting back on the decisions of the last 50 years and are recognizing that it is equally as important to enhance rather than ignore blight areas of the community and neighborhoods that are within or adjacent to the major transportation corridors. Sharing the road or the transportation corridor with other, equally important users (e.g., bicycles, pedestrians, children at play, and disabled and wheelchair-bound individuals) is also an important goal to strive to achieve. Streets exist in conjunction with—not in isolation of—their surroundings. Streets pass through landscapes full of people who are somewhere rather than people who are going somewhere. This is an important distinction.

In 1994, a Boston Globe article posed the question, "Is the front yard obsolete?" According to John Stilgoe, Harvard Social historian, "It's getting so only the elderly can remember the days when people actually spent time sitting on the front porch greeting people or kissing good night after a date. Many homeowners have ignored this half of their lot. The main reason front yards have become more unlivable are a lot more cars going a lot faster."

Streets and roads are important public spaces. They determine whether a community looks scenic and inviting, or bleak and unappealing to drivers and others who are passing through. Cities that are attractive and appealing to people have streets that provide a variety of purposes, not just a driving surface. Places along these streets provide space for people to walk or jog, cyclists to ride, pet owners to walk their pets, children to play, and wheeled individuals to find independence in access to and from their neighborhoods to places for work or play.

The reality of a direct and dynamic link between roads and land uses has led to communities adopting policies that put overall community goals ahead of traffic considerations. The 1980 Federal Highway Administration (FHWA) report, *State of the Art: Residential Traffic Management*, states the primary goal of street improvements and traffic management is, "to significantly improve the environmental conditions of as many residents as possible, especially those most vulnerable to traffic impacts."

There are several sub-goals listed in this report, six of which are to reduce traffic accidents; provide for safety and convenience of pedestrians and other non-motorists; eliminate noise and pollution; provide a safe place for children's play, improve scenery, and revitalize and stabilize neighborhoods. Achieving these goals in the design of new streets or the redesign of older streets will result in a more livable community for residents of Rapid City and rural areas of Pennington and Meade Counties.

Improving traffic flow and safety in neighborhoods, when done on a project-by-project basis, can decrease the safety and increase traffic flow on streets in adjoining neighborhoods. Where traffic calming measures and other roadway design techniques are planned for and undertaken on a community-wide basis, everyone in the community can benefit from these improvements, not just those residents of a select few neighborhoods. Traffic calming, innovative street designs, the establishment of levels of service (LOS) standards, and implementation of access management standards to regulate the number and proximity of access points are all steps that, when taken together, will help build, develop, and maintain a more livable community.