Rapid City Area

2030 Long Range

Transportation Plan

The Rapid City Area
Long Range Transportation Plan

Final Draft: September 15, 2005

LSA
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Rapid City Area
Metropolitan Planning Organization

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1. Context and Issues

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 though the regional transportation planning process carried out by the Rapid City Area Metropolitan Planning Organization (MPO). This document is a product of that process.

The *Rapid City Area 2030 Long Range Transportation Plan* covers the areas in and around Rapid City that are expected to become urbanized by the year 2030. This 413 square mile area includes the central portion of Pennington County and the southern portion of Meade County. Rapid City, Box Elder, and the newly formed town of Summerset are included in the Metropolitan Planning Organization Planning Area along with Ellsworth Air Force Base.

The *Long Range Transportation Plan* identifies future transportation investments for all modes of transportation. Although the region's mobility continues to be dominated by

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.

the automobile, other modes such as public transit, pedestrian, and bicycle transportation are becoming increasingly important means of travel and are addressed by the *Long Range Transportation Plan*. Aviation travel, railroads, trucks, and freight movement are also included in the planning process, but to a lesser extent.

As such, the *Rapid City Area Long Range Transportation Plan* identifies specific services and projects for each mode of travel that will be necessary to meet the transportation needs of the region through 2030. Financial resources available to implement the *Long Range Transportation Plan* 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 the *Rapid City Area Long Range Transportation Plan* represents a financially constrained implementation plan as required by law.

What are the important transportation issues?

As a growing community, the Rapid City region faces land use, transportation, and environmental issues. Through the *Long Range Transportation Plan's* community involvement process, many concerns, desires, ideas, and issues were brought forth for consideration in the planning process. Among these are:

- increasing bicycle travel opportunities by constructing more bike trail, path, and lane facilities, providing missing connections in the system, and elevating the status of cyclists to gain parity with automobile travelers;
- enhancing transit options by adjusting route and fare structures to reflect the needs of a mature city, improving bus stop amenities such as shelters and pedestrian connections, and fleet modernization;
- adding multimodal connections across major arterial streets like Omaha and Catron;
- serving the needs of travelers through the region;
- providing a pedestrian-friendly community by constructing missing segments in the sidewalk network, increasing pedestrian safety at crosswalks and intersections, and implementing amenities and facilities in activity areas consistent with walkable community objectives;
- constructing sensible and effective roadway improvements that maintain the character of the community, address congestion problems, provide for multi-modal travel, and are environmentally sensitive; and
- balancing land use, transportation, and environmental objectives to enhance quality of life, minimize the effects of sprawl, and promote the economic competitiveness of the region.

Planning Process and Context

Related Plans and Studies

The *Rapid City Area 2030 Long Range Transportation Plan* is the most recent 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 2025 *Long Range Transportation Plan* Update in 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 City, Metropolitan Planning Organization, South Dakota Department of Transportation South Dakota Department of Transportation, and other jurisdictions and agencies contribute to the body of knowledge that supports the development of the *Rapid City Area 2030 Long Range Transportation Plan*. Plans and studies related to the development and implementation of the *Long Range Transportation Plan* include the following:

Land Use and Transportation Plans

- *Rapid City Area Future Land Use Plan*
- *Rapid City Area Long Range Transportation Plan* (August 2000)
- *2006-2010 Rapid City Area Transportation Improvement Program* (draft, June 2005)

Modal Plans and Corridor Studies

- *2004-2008 Rapid City Transit Development Plan* (June 2004)
- *Rapid City Bikeway/Walkway Plan* (draft 2004)
- *Jackson Blvd. Extension Study* (February 2004)
- *US16 Corridor Study* (March 2004)

Planning Area

MPO's 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 1.1. 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 jurisdiction 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,
- Town of Summerset,
- Pennington County,
- Meade County,
- Ellsworth Air Force Base, and
- South Dakota Department of Transportation.

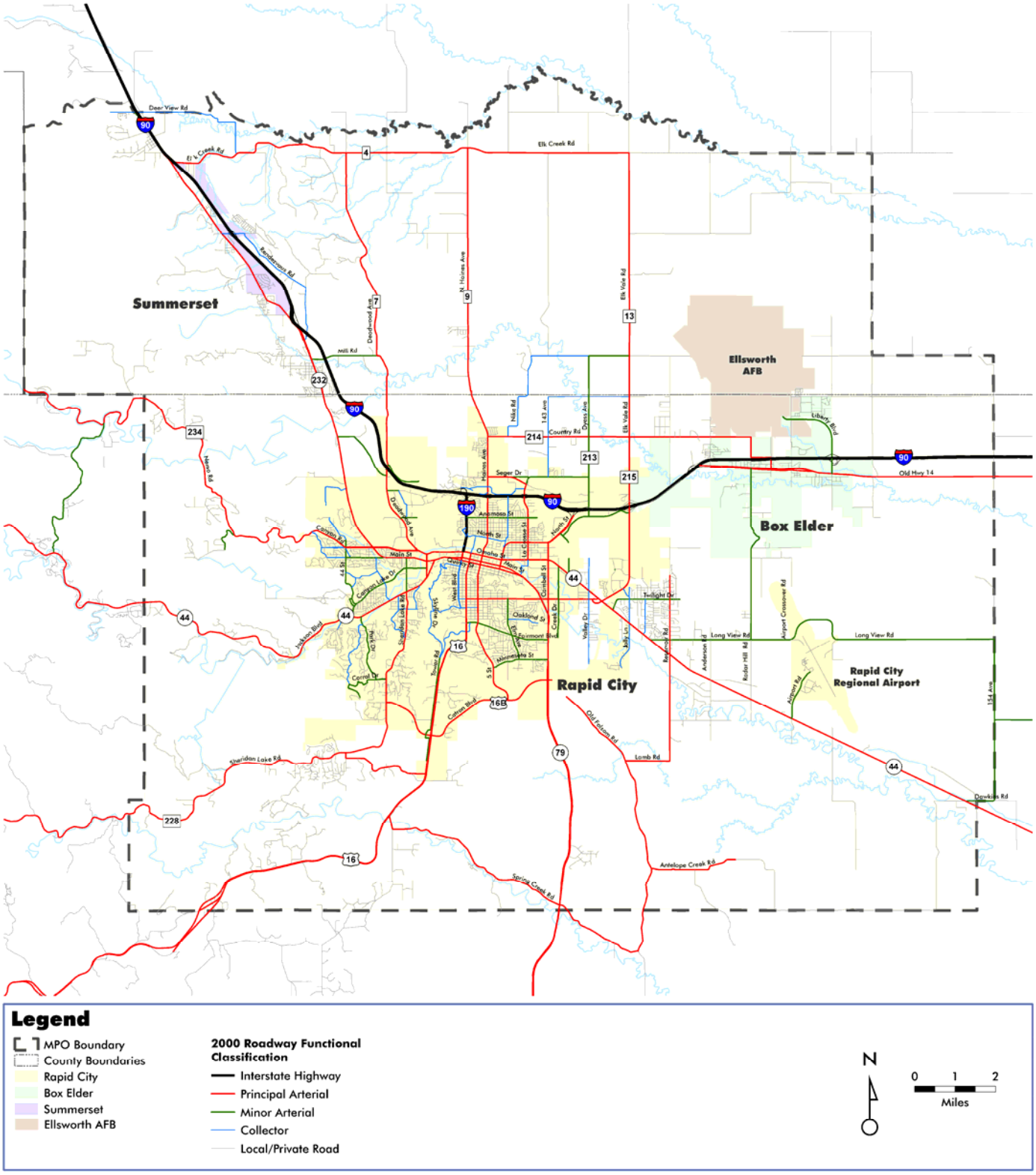
What is the Metropolitan Planning Organization?

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 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.

The *Rapid City Area 2030 Long Range Transportation Plan* 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 transportation improvement program and annual work program.

Figure 1.1
Metropolitan Planning Organization Planning Area



Plan Approval Process

The *Rapid City Area 2030 Long Range Transportation Plan* was developed through an open and deliberative planning process, complying with all appropriate government regulations. The Metropolitan Planning Organization's approved *Public Participation Plan* provided the direction through which local public outreach and involvement occurred.

The *Long Range Transportation Plan* 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 the *Long Range Transportation Plan*. Subsequently, the South Dakota Department of Transportation, Federal Highway Administration, and Federal Transit Administration will review the *Long Range Transportation Plan*.

Transportation Goals and Objectives

The Rapid City Area Metropolitan Planning Organization Citizens Advisory Committee has developed the following four goals and corresponding objectives to guide the transportation planning process for the region.

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.

Plan Elements: Required and Desired

Several laws, regulations, statutes, codes and other documents at the local, state, and federal levels affect the development of the *2030 Long Range Transportation Plan* by specifying requirements to be considered in the planning process or to be contained in the *Long Range Transportation Plan*. These include the Transportation Equity Act for the 21st Century, metropolitan planning regulations, management and monitoring system regulations, Executive Order 12898 on Environmental Justice, the Americans with Disabilities Act, and others.

Of these, the Transportation Equity Act for the 21st Century provides the primary authoritative direction on the development of the *Long Range Transportation Plan*. On June 9, 1998, Congress enacted the Transportation Equity Act for the 21st Century as Public Law 105-178. The Transportation Equity Act for the 21st Century continues and enhances the

federal programs and priorities established in the previous Intermodal Surface Transportation Efficiency Act of 1991. The Transportation Equity Act for the 21st Century authorizes the federal surface transportation programs for highway and transit systems for the six-year period from 1998 to 2003. Through Congressional actions, the Transportation Equity Act for the 21st Century has been extended into 2005.

On August 10, 2005, President Bush signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. This new federal law continues the legacy of the previous landmark transportation legislation.

Among the many environmental, funding, infrastructure, modal, safety, and other transportation-related provisions of the legislation, Transportation Equity Act for the 21st Century specifies that Metropolitan Planning Organization's develop transportation plans in cooperation with the State and public transit operators that "provide for the development and integrated management and operation of transportation systems and facilities...that will function as an intermodal transportation system for the metropolitan area." With this language, Congress has continued its priorities of intermodalism, intergovernmental and pubic/private partnerships, and system development and management that originated in Intermodal Surface Transportation Efficiency Act of 1991. Further, the process for developing transportation plans shall provide for consideration of all modes and shall be continuing, cooperative, and comprehensive to the degree appropriate.

Some of the more significant planning elements are summarized below.

TEA-21 Planning Factors

The Transportation Equity Act for the 21st Century federal legislation recognizes that transportation investments impact a community's economy, environment, and quality of life. As such, it states that the planning process "shall provide for

consideration of projects and strategies that will:

- support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- increase the safety and security of the transportation system for motorized and non-motorized users;
- increase the accessibility and mobility options available to people and freight;
- protect and enhance the environment, promote energy conservation, and improve quality of life;
- enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- promote efficient system management and operation; and
- emphasize the preservation of the existing transportation system."

These strategies are known as Transportation Equity Act for the 21st Century's planning factors and should be considered and incorporated into the planning process to the extent practical.

Project Listings

TEA-21 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

TEA-21 specifies that available revenues for implementation of transportation improvements over the life of the *Rapid City Area 2030 Long Range Transportation 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 the *Long Range Transportation Plan* must be constrained to the forecasts of available revenues.

When this requirement was enacted over 14 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 *Long Range Transportation 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 *2030 Long Range Transportation Plan*, similar to other progressive communities.

Public Involvement Process

Public involvement is a high priority in the transportation planning process and in the development of the *Rapid City Area 2030 Long Range Transportation Plan*. 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 the *2030 Long Range Transportation Plan.* These requirements are addressed in the Impacts of the Plan chapter.

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2. COMMUNITY INVOLVEMENT

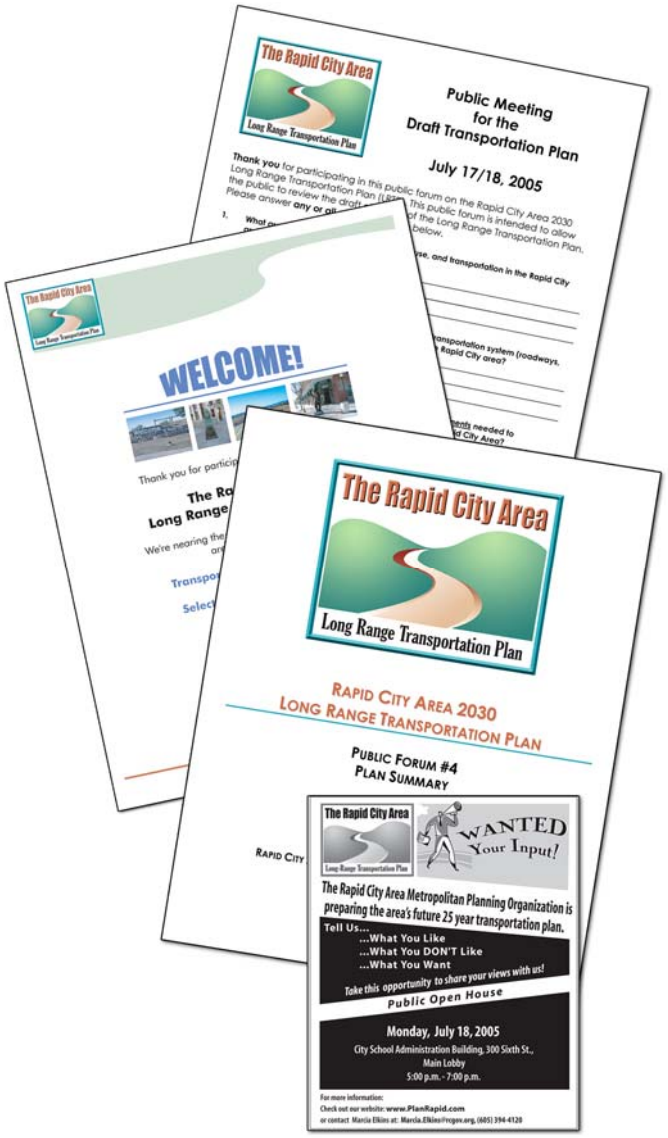
Public Meetings

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. The *2030 Long Range Transportation Plan* provides the vision for transportation in the community. In this manner it should reflect the needs and desires of the people in the community.

Throughout the development of the *2030 Long Range Transportation Plan*, public meetings were the primary means of involving the community in the process. Five public meetings were conducted:

Meeting Date	Location	Topics
May 3, 2005	City School Administration Building, Rapid City	• What is the Long Range Transportation Plan? • Schedule • Goals and Issues
June 1, 2005	Black Hawk Fire Station	• Existing Conditions • Transportation Needs and Deficiencies • Transportation Alternatives
June 2, 2005	Rapid City Public Library	
June 27, 2005	City School Administration Building, Rapid City	• Transit Issues and Alternatives • Draft Pedestrian/Bicycle Facilities Plan • Roadway Alternatives and Evaluations
July 18, 2005	City School Administration Building, Rapid City	• Transit Services Plan • Draft Pedestrian/Bicycle Facilities Plan • Roadway Alternatives Analysis

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.



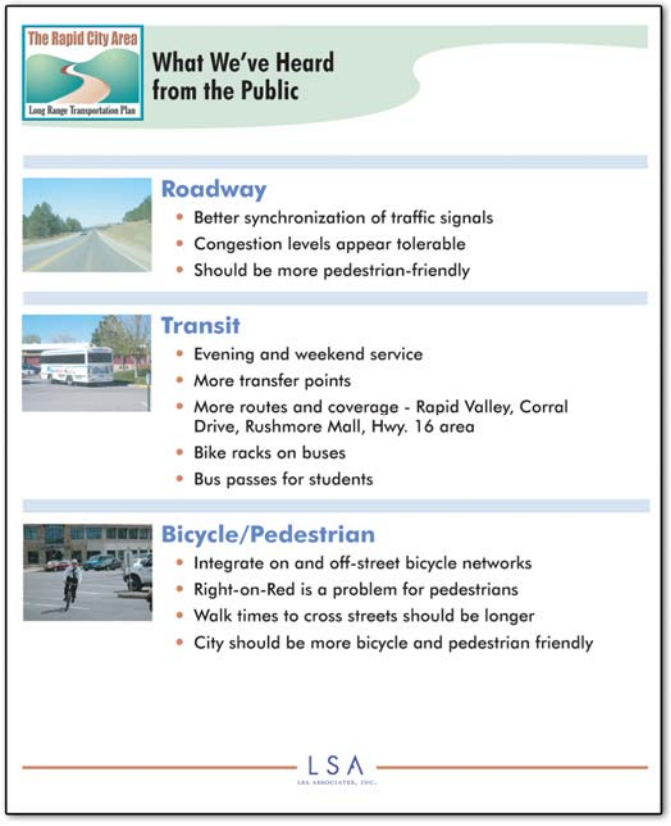
In addition to the public meetings, community involvement was pursued through information postings on the City's website and through the MPO's committee process that includes a Citizens Advisory Committee, Technical Coordinating Committee, and an Executive Policy Committee. Also, the studies and planning documents upon which much of the *2030 Long Range Transportation Plan* is based included public involvement and committee oversight as well. For example, the Pedestrian and Bicycle Facilities Plan described herein is an updated version of the plan developed by the Bike Walk Run Task Force.

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.

The 20 to 25 year planning horizon for the *2030 Long Range Transportation Plan* makes sense given the often lengthy development cycles for transportation projects and the desire to plan far enough in the future to establish and implement long-term visions and goals. However, the long-term nature of the planning process may cause indifference among the general public, especially when public meetings must compete with the deadlines and obligations of everyday life.

For these reasons, future efforts might include additional resources aimed at going to the public instead of assuming they will come to a public meeting. Public opinion surveys, meeting at the mall, festival booths, and other efforts might make it more convenient for the community to be involved in future efforts.

The Community Involvement efforts for the *2030 Long Range Transportation Plan* were conducted through the implementation of procedures described in the MPO's Public Participation Plan (October 2003).



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3. Growth in the Region

Population and employment growth are invariably expected to continue increasing both inside and outside of the Rapid City Metropolitan Planning Area as we move into the future. Since demographic activity forms the basis for travel demand, new growth will spur the need for additional transportation facilities and services. In effect, these internal and external demands for travel within the Rapid City region provide the impetus for developing the 2030 Long Range Transportation Plan (LRTP).

Existing Conditions

Population

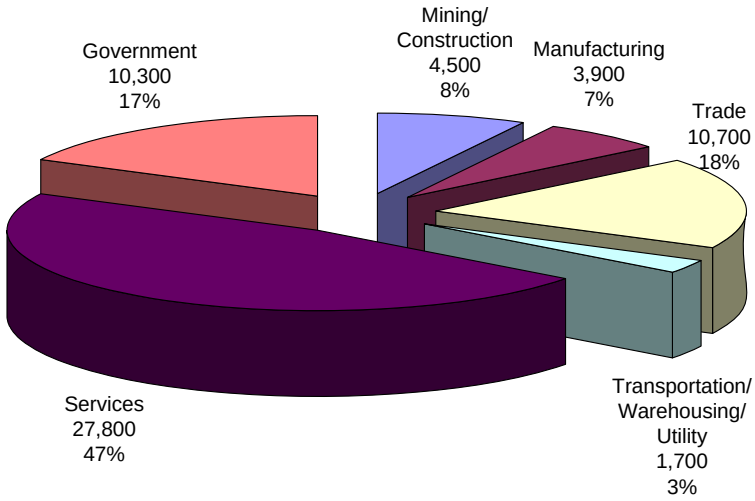
The Rapid City Metropolitan Planning Area includes 269 square miles within Pennington County and 144 square miles in the southern portion of Meade County. Neither county is entirely within the Metropolitan Planning Organization planning area.

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.

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

Figure 3.1
2005 Workers by Industry in the Rapid City Metropolitan Statistical Area



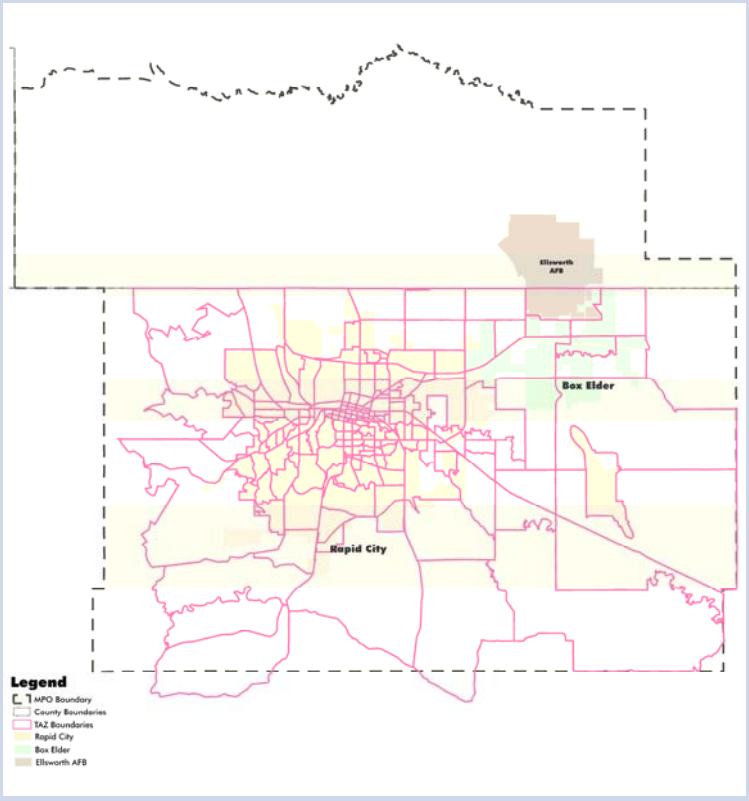
Employment

Employment estimates for the Rapid City area are more difficult to come by because this information is not collected as part of the U.S. Census. However, the South Dakota Department of Labor and the U.S. Bureau of Labor Statistics provide estimates of workers for the Rapid City Metropolitan Statistical Area, which includes all of Pennington and Meade Counties. These estimates are prepared to identify workers covered by unemployment insurance and to determine the number of workers and annual pay information. According to this data source, there are approximately 58,900 non-farm wage and salaried workers in the Rapid City Metropolitan Statistical Area as of April 1, 2005. Figure 3.1 shows the industries in which these workers are employed.

Analysis Tools – Rapid City Regional Traffic Model

The *Long Range Transportation Plan* 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.

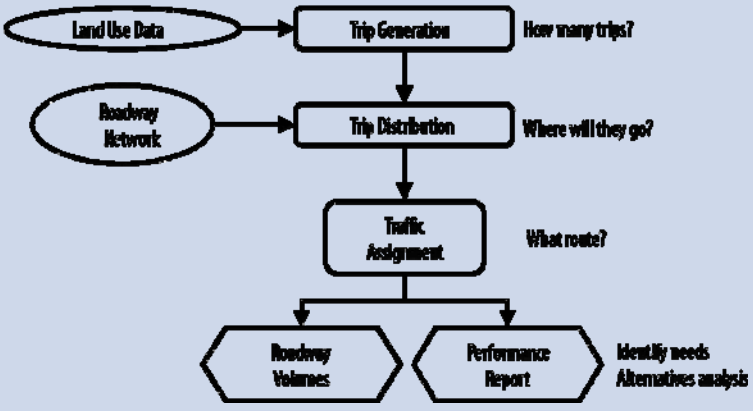
The model process, shown graphically below, uses estimates of household and employment data and the existing roadway network as input assumptions. Household and employment data is estimated and forecasted areas, called Traffic Analysis Zones (TAZ). The Trip Generation module calculates the amount of 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, distance, and toll costs.



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 aspects of the planning process. Forecasted model results are estimates of future conditions based on specific assumptions of socioeconomic activity, transportation system characteristics, and travel behavior. Generally, the model assumes that travel behavior in the future will be similar to 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.

Traffic Model



Future Growth

Demographic growth projections were developed by the Rapid City Area Metropolitan Planning Organization based on the *Rapid City Area Future Land Use Plan*, adopted Neighborhood Future Land Use Plans, and the South Dakota State Data Center. These growth plans consider historic trends, changing demographic characteristics such as the aging of the population, economic factors, land use and zoning designations, and other information related to growth planning.

Future Households

The *Rapid City Area Future Land Use Plan* defines sixteen Neighborhood Study Areas that comprise the Metropolitan Planning Area, as shown in Figure 3.2. Household data was estimated and forecasted for each of these study areas based on existing development, land use designations, infrastructure development costs, and other factors. Households, instead of population, are used in the regional travel model, so households have been forecasted. Table 3.2 identifies the year 2000 and projected 2030 household estimates for each neighborhood study area. Figure 3.3 maps the distribution of existing and forecasted households.

Ellsworth Air Force Base

The 2030 socioeconomic assumptions that drive the analysis for the *Long Range Transportation Plan's* development assume activity at Ellsworth Air Force Base (AFB) in the year 2030. The projections in the socioeconomic dataset are based on current and forecasted activity with the facility operating as a military base. If the base closes in the coming years, it is likely that redevelopment will occur and new activities will generate travel demand that will need to be served with improved transportation facilities and services.

It is not possible to determine if the 2030 assumptions for Ellsworth are realistic until the base closing process is resolved and, if applicable, a redevelopment plan is prepared. The regional long-range transportation planning process requires that the *Long Range Transportation Plan* be updated at least every five years, so it has a built-in mechanism to allow for updated socioeconomic assumptions and other changes. In addition, the process allows for amendments to the *Long Range Transportation Plan* during its five year life.

Figure 3.2
Neighborhood Study Areas in the Rapid City Metropolitan Planning Area

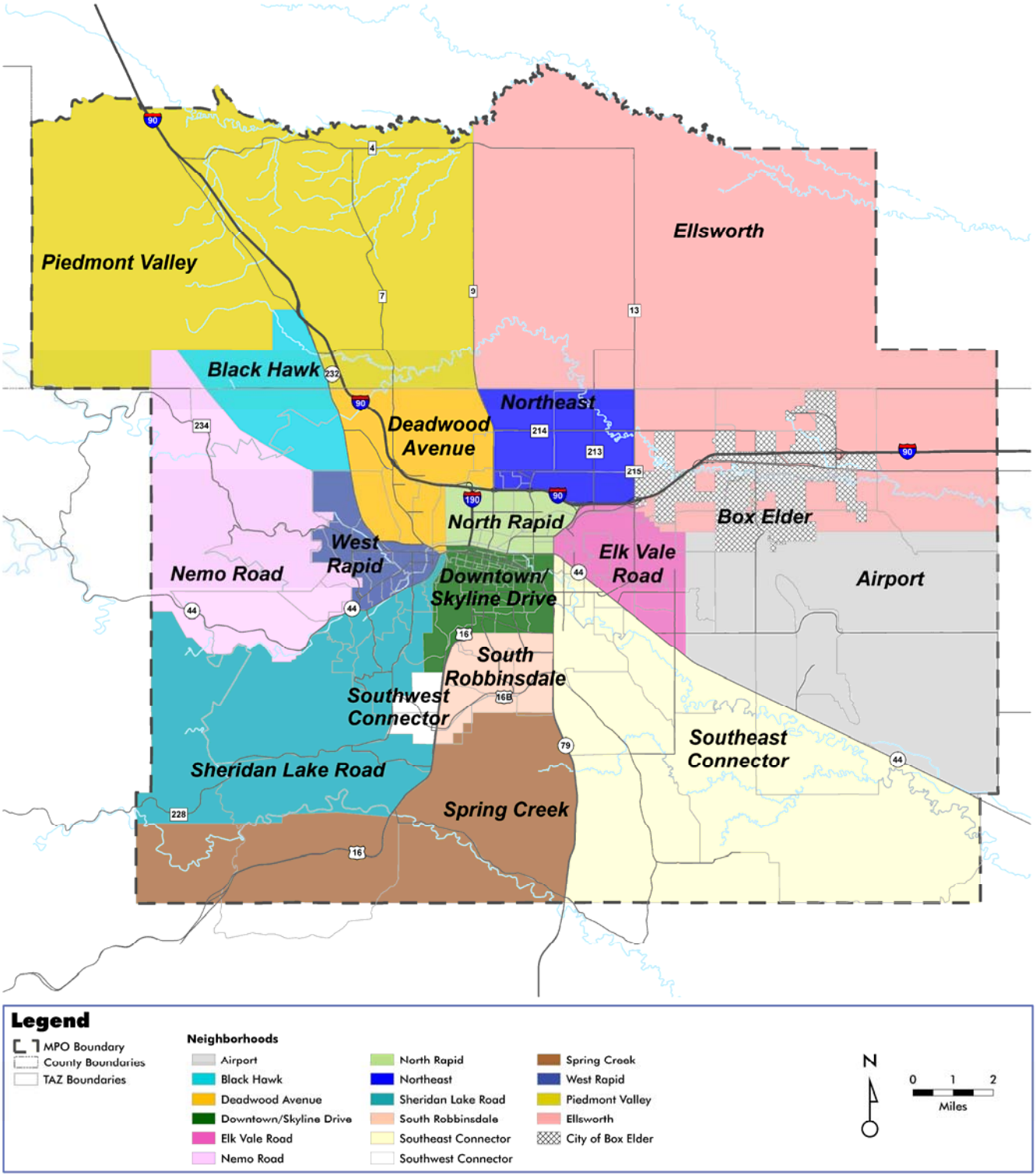
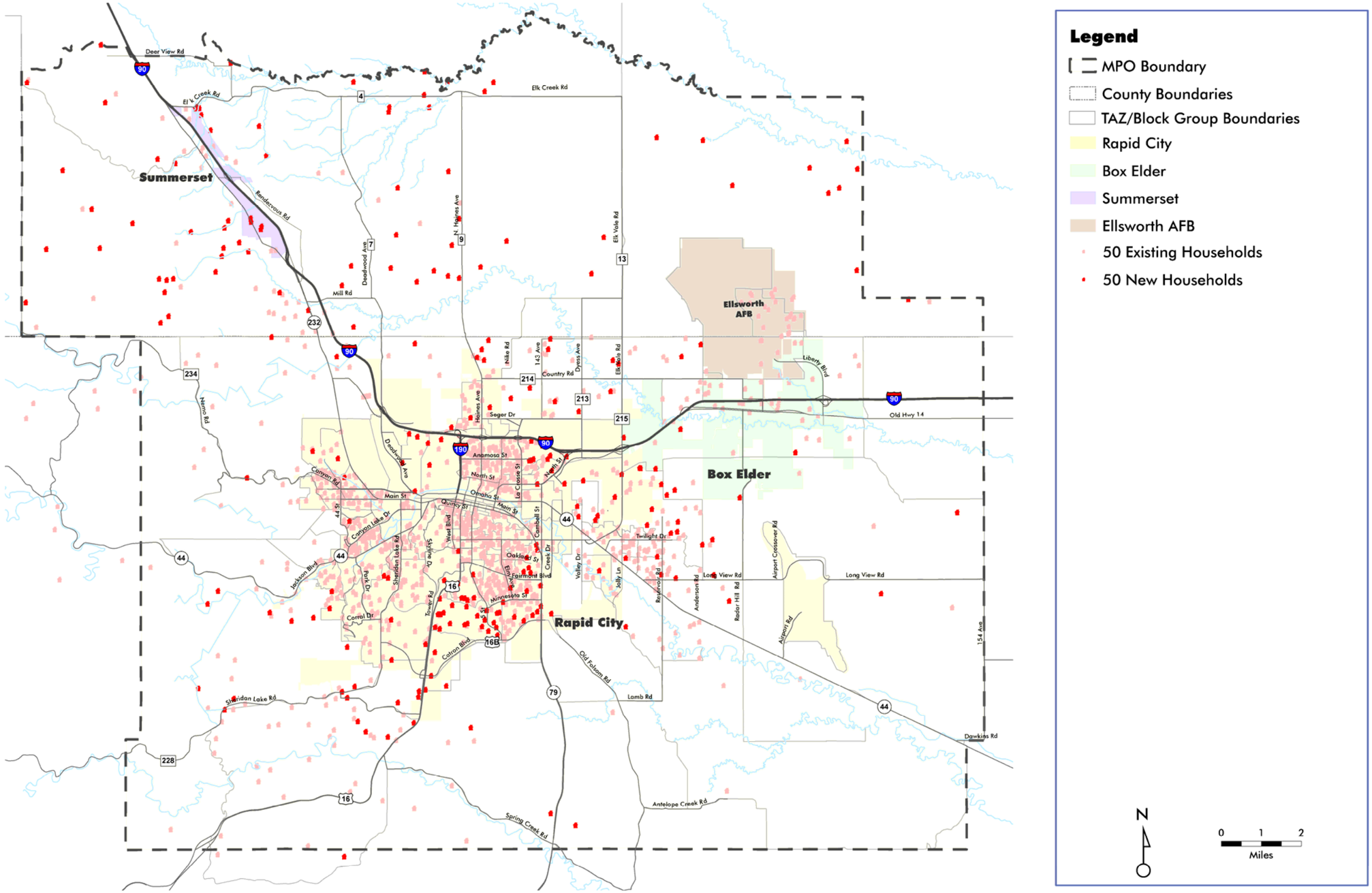


Table 3.2
Existing and Projected Households

Neighborhood	2000 Households	2030 Households	Average Annual Growth Rate
Airport	498	961	2.2%
Black Hawk	261	355	0.8%
Deadwood Avenue	948	1,501	1.5%
Downtown/Skyline	5,930	6,829	0.5%
Elk Vale	2,341	3,524	1.4%
Nemo Road	308	385	0.7%
Northeast	582	1,461	3.1%
North Rapid	5,257	6,086	0.5%
Sheridan Lake Road	4,603	5,919	0.8%
South Robbinsdale	2,821	5,050	2.0%
Southeast Connector	1,060	1,437	1.0%
Southwest Connector	340	794	2.9%
Spring Creek	66	198	3.7%
West Rapid	4,349	4,650	0.2%
Piedmont Valley	2,450	5,321	2.6%
Ellsworth	2,844	3,801	1.3%
Total	**35,047**	**49,116**	**1.1%**

Figure 3.3
Existing and Projected Households



Future Employment

Employment growth was similarly projected in the neighborhood study areas for four industry categories – retail, service, industrial, and public. The regional travel demand model assigns different trip generation rates to each industry. For example, retail jobs attract significantly higher amounts of trips than industrial or service jobs. Table 3.3 shows the current and future employment totals for each neighborhood study area; and 2030 employment is also displayed by industry.

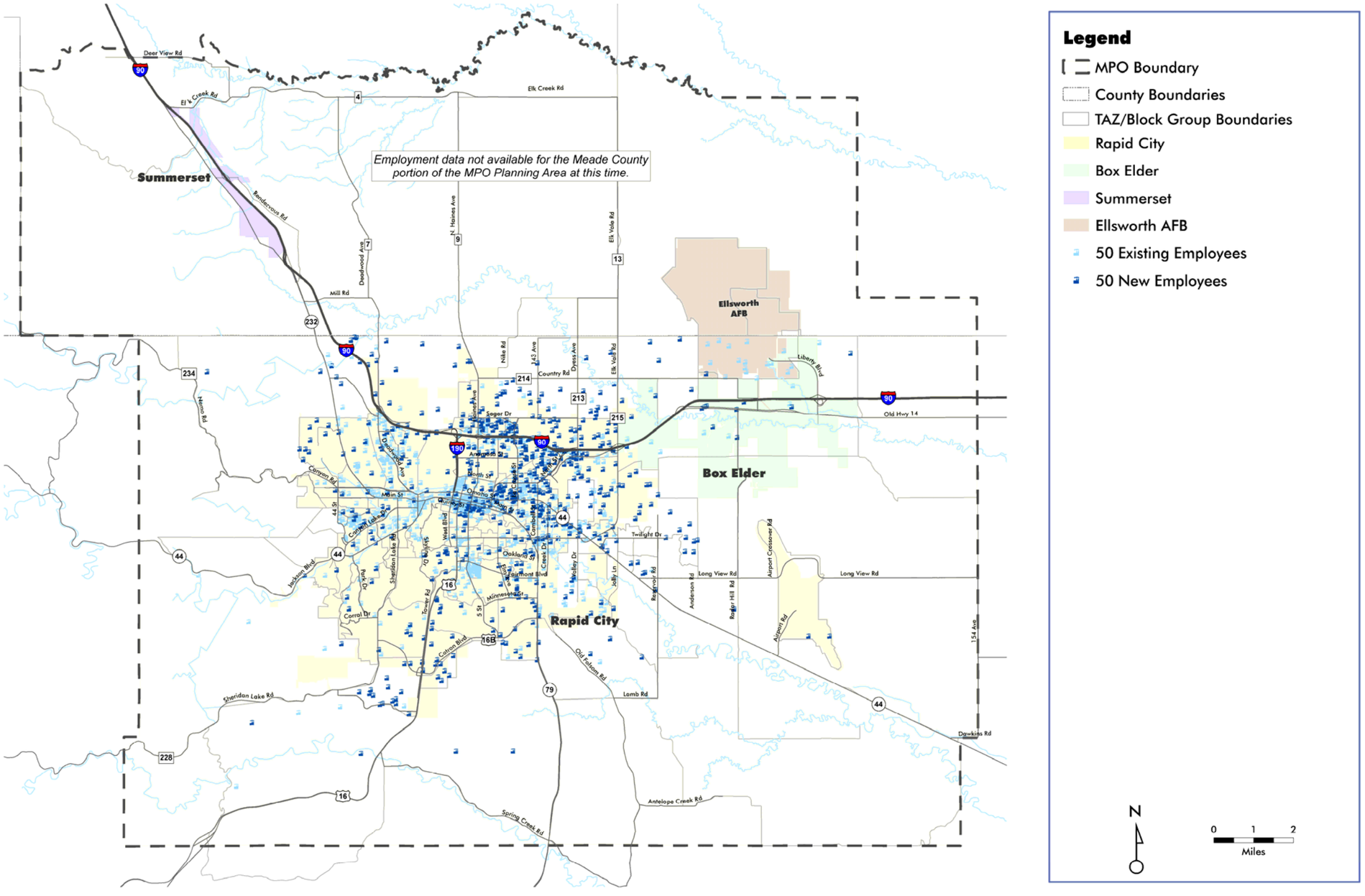
Figure 3.4 maps the distribution of existing and future employment. At the time the 2030 *Long Range Transportation Plan* was prepared, detailed employment data and land use plans did not exist for the Meade County portions of the Metropolitan Planning Area. As discussed in Chapter 9, developing this data is a high priority leading up to the development of the next *Long Range Transportation Plan.* The effort will require close coordination between the metropolitan planning organization and affected jurisdictions in determining land uses and socioeconomic forecasts.

Table 3.3
Existing and Projected Employment

Neighborhood*	2000 Total Employment	2030 Total Employment	Annual Growth Rate (2000 to 2030)	2030 Employment by Industry			
				Retail	Service	Industrial	Public
Airport	227	400	1.9%	34	89	66	211
Black Hawk*	6	84	9.2%	58	26	0	0
Deadwood Avenue	4,447	7,165	1.6%	2,449	1,777	2,891	48
Downtown/Skyline	10,895	13,512	0.7%	5,095	5,098	728	2,591
Elk Vale	2,093	6,023	3.6%	2,157	1,449	1,677	740
Nemo Road	46	105	2.8%	51	22	0	32
Northeast	1,340	5,757	5.0%	3,655	304	1,660	138
North Rapid	5,611	10,685	2.2%	5,913	1,381	1,238	2,153
Sheridan Lake Road	1,214	1,792	1.3%	838	516	9	429
South Robbinsdale	1,053	3,143	3.7%	1,068	1,264	433	378
Southeast Connector	3,237	5,286	1.6%	1,498	925	2,751	112
Southwest Connector	335	1,512	5.2%	636	384	364	128
Spring Creek	4	103	11.4%	40	26	37	0
West Rapid	4,796	5,939	0.7%	1,496	2,401	176	1,866
Piedmont Valley*	Not in Pennington County						
Ellsworth*	1,312	1,959	1.3%	628	374	377	580
Total	**36,423**	**63,276**	**1.9%**	**25,600**	**15,994**	**12,376**	**9,306**

** Figures in Table 3.3 represent Pennington County portion of the MPO only. Meade County figures are not available but the development of this data is a high priority as discussed in Chapter 9.*

Figure 3.4
Existing and Projected Employment



4. Pedestrian and Bicycle Facilities Plan

Bicycling and walking can be healthy alternatives to the automobile for many 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. As part of the development of the *2030 Long Range Transportation Plan*, the regional bikeway/walkway network was reviewed, updated, and analyzed. In the context of the *Long Range Transportation Plan*, bikeways and walkways include those facilities of a regional or communitywide nature for use by non-motorized travel modes. Individual sidewalk segments are considered a local issue and are not addressed in the *Long Range Transportation Plan*.

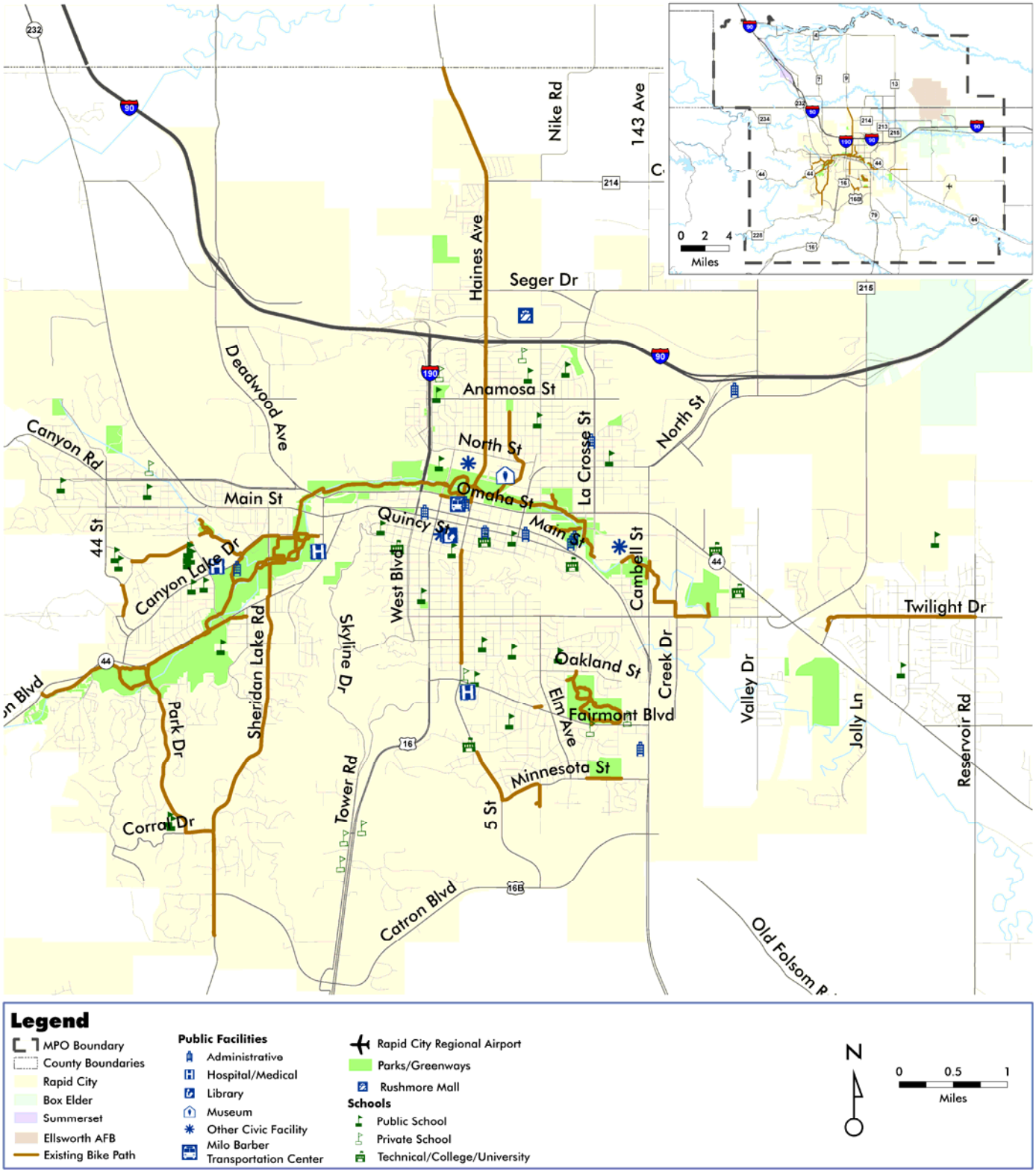
Existing Conditions

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 land uses and construction opportunities are limited.

The existing bicycle and pedestrian facilities in the region are shown in Figure 4.1. The Rapid Creek Path now in place represents a major component of the existing 31 miles of bicycle network. The path is an eight 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 4.1
Existing Pedestrian and Bicycle Facilities



Facilities 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 several years, the Bike Walk Run Task Force developed a comprehensive network of facilities for non-motorized travel, which became known as the *Bikeway/Walkway Plan*. This plan served as the starting point for the development of the bicycle component of the *Long Range Transportation Plan*. It was presented at public meetings, modified accordingly based on public comments and roadway alignment plans, and analyzed to identify priorities for implementation. The *Bikeway/Walkway Plan* is available from the Rapid City Growth Management Department.

As can be seen in Figures 4.2 and 4.3, the majority of proposed new facilities are bike routes. Figure 4.3 shows the Pedestrian and Bicycle Facilities Plan of the *2030 Long Range Transportation Plan*. The Pedestrian and Bicycle Facilities Plan encompasses 142 miles of lanes, paths, trails and routes in addition to existing facilities. Bike paths account for the next highest portion of proposed facilities (and the highest percentage of off-road facilities), followed by trails and bike lanes.

The Pedestrian and Bicycle Facilities Plan represents the network associated with buildout of the region's Future Land Use Plan. In other words, this plan will likely be fully functional after the year 2030 on which the *Long Range Transportation Plan* is based.

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 which has been designated by striping, signing, and/or pavement markings for the exclusive use of bicyclists.

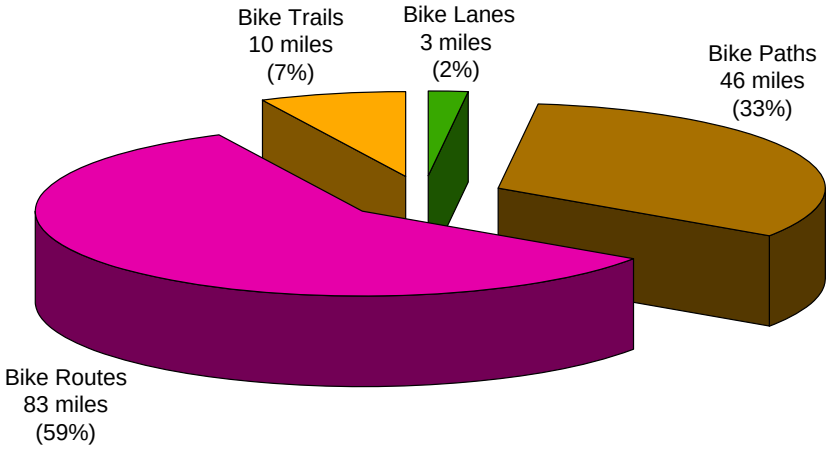
Path – A facility that is physically separated from motorized vehicle traffic by a parkway, open space, or barrier and is either within the road right-of-way or within an independent right-of-way. Paths have hard surfaces of concrete or asphalt.

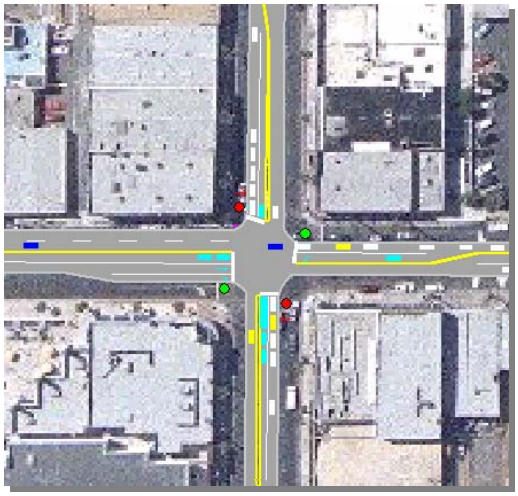
Trail – Similar to a path, except a trail has a soft and/or natural surface, such as compacted soil or small gravel.

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 4.2
Facility Types





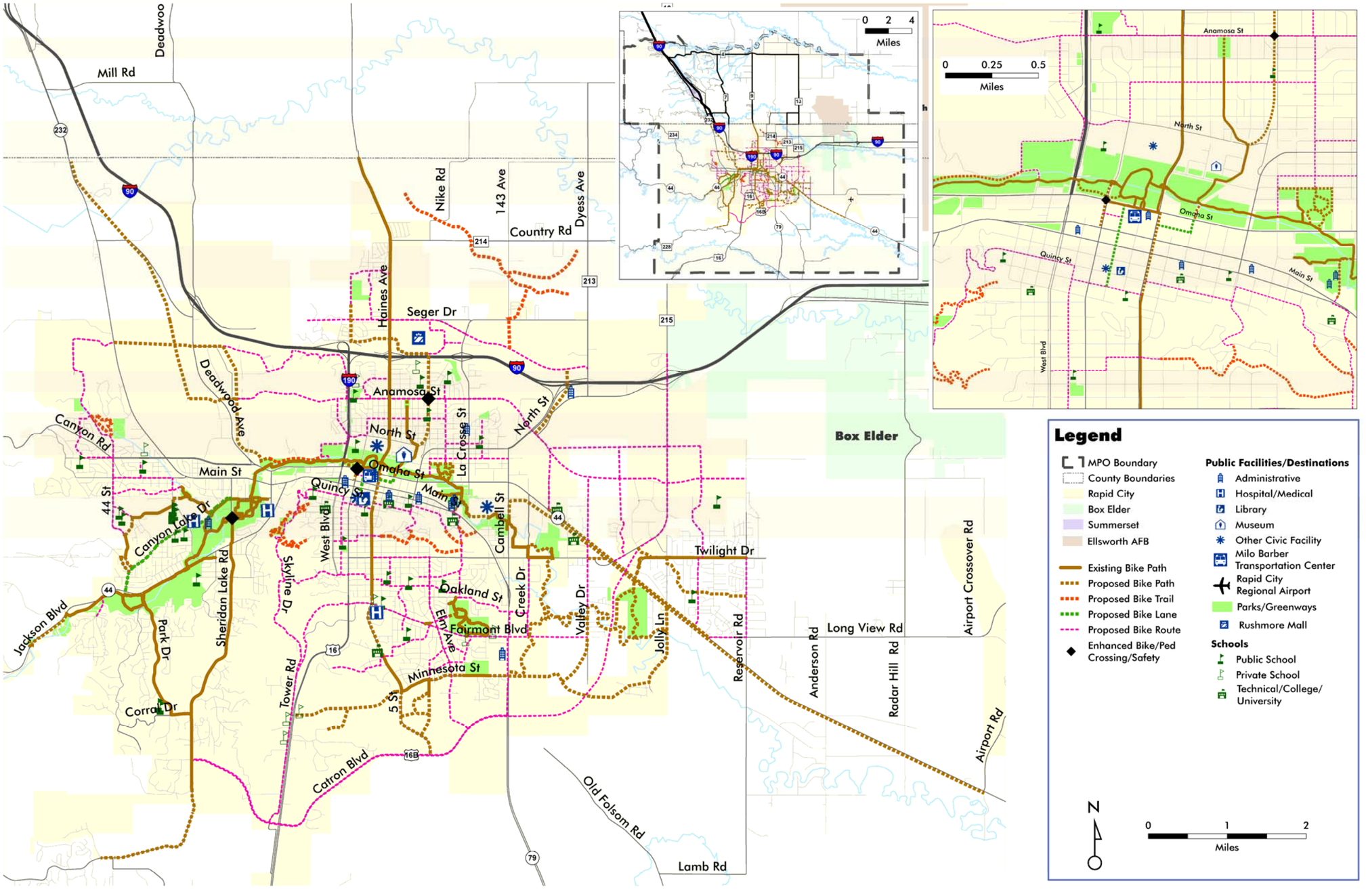
Enhanced Bicycle/Pedestrian Crossings

Arterial streets can be difficult to cross on foot or bike, especially when the facility is six lanes across with higher travel speeds. Drivers on these streets expect a high degree of mobility associated with as little delay as possible. Therefore, pedestrian signal crossing times are often minimized. Combined with the prospect of crossing multiple through-travel and turning lanes, these facilities can be difficult for pedestrians and bicyclists and virtually impossible for some with disabilities to cross.

Three locations are identified in the recommended Pedestrian and Bicycle Facilities Plan for enhanced bicycle/pedestrian crossing improvements. Options include grade separations (i.e., underpass, overpass), mid-block pedestrian actuated signals, safety improvements, and enhanced intersection crossing improvements and signal timing.

Mid-block pedestrian actuated signals should be carefully studied and applied sparingly because they are often not respected by drivers, which can lead to a dangerous safety and liability situation.

Figure 4.3
Pedestrian and Bicycle Facilities Plan



Strategic grade separations are often the best option but are costly. These should be strongly considered for major six-lane arterial street crossings at locations with specific destinations for bike or pedestrian activity. Crossings near schools should also consider grade separations.

Priorities for the Recommended Pedestrian and Bicycle Facilities Plan

Based on the analysis described above, each segment of the proposed Pedestrian and Bicycle Facilities Plan has been reviewed and prioritized for implementation. High priority projects include those recommended for implementation in approximately the first five to ten years of the *Long Range Transportation Plan*. Medium and long-term priority projects may take longer to implement and possibly beyond 2030.

Using the regional travel demand model, trips of five miles or less (a reasonable and typical trip made by bicycle) were analyzed on roads within the Metropolitan Planning Organization. Pedestrian and Bicycle Facilities Plan segments which could provide an alternate means of transportation for those trips were identified. The facilities were then prioritized based on the expected number of these "short trips." Short trips for both the year 2000 and 2030 were examined, with areas of high numbers of short trips in the year 2000 receiving the highest priority. Critical "missing links," or gaps, in the current system were also given a higher priority.

Figure 4.4 identifies the recommended priorities for the proposed Pedestrian and Bicycle Facilities Plan. Bike routes are not prioritized.

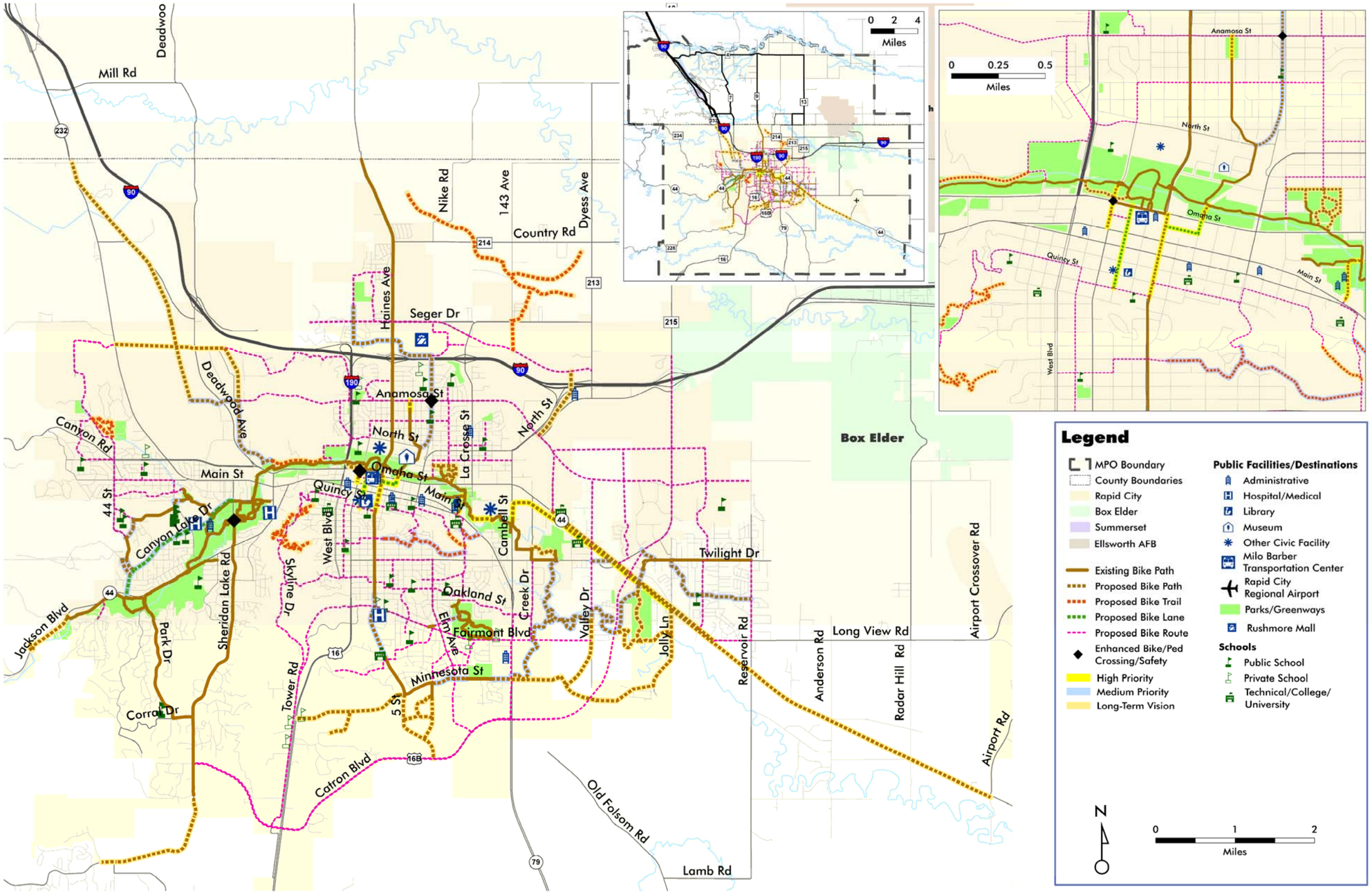
Currently there is not a dedicated funding program for bicycle facilities, so they tend to be implemented as general funds or specific grants become available or as part of roadway improvements.The high priority (short-term) projects identified on Figure 4.2 are expected to be implemented in

the timeframe of the 2030 *Long Range Transportation Plan*. Other high priority objectives include:

- prioritize and develop cost estimates for the high priority projects on Figure 4.2;
- pursue Transportation Enhancements and Recreational Trails funding for high priority and other projects;
- establish a dedicated, long-term funding program to implement the Pedestrian and Bicycle Facilities Plan;
- update the *Bikeway/Walkway Plan* periodically;
- consider the issue of signing bike routes; and
- consider expanding the use of on-street bicycle lanes as part of new, widened, or reconstructed roadways.

Medium and long-term projects will take longer to implement and are considered illustrative projects to be implemented as funding is identified or a dedicated funding program is established.

Figure 4.4
Recommended Pedestrian and Bicycle Plan Priorities



5. Transit Services 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 which driving is not an option, or a poor one due to disability, income limitations, or other factors. As part of the *2030 Long Range Transportation Plan's* (LRTP) development, various transit issues were considered and discussed with the public to develop a list of recommendations and service priorities for the Transit Services Plan.

Existing Conditions

Rapid City provides two types of transit services – a fixed bus route system known as RapidRide and a curb-to-curb service called Dial-a-Ride, both of which are operated by Rapid Transit System.

The fixed route system, shown in Figure 5.1, consists of four routes that serve the north, south, west, and central parts of the community. These routes operate on a 70 minute frequency (headway) and reverse every 35 minutes with small variations in the actual routes. The four routes are augmented by two connector routes that do not reverse but rather are run consecutively. The fixed routes operate roughly from 6:30 am to 6:00 pm weekdays and converge at the downtown Milo

Barber Transportation Center to facilitate transfers. RapidRide serves approximately 658 riders each day or about 165,800 riders annually.

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 (ADA) provisions. ADA certified passengers have disabilities that prevent them from using the regular fixed route service. The Dial-a-Ride paratransit service carries approximately 81,400 riders annually.

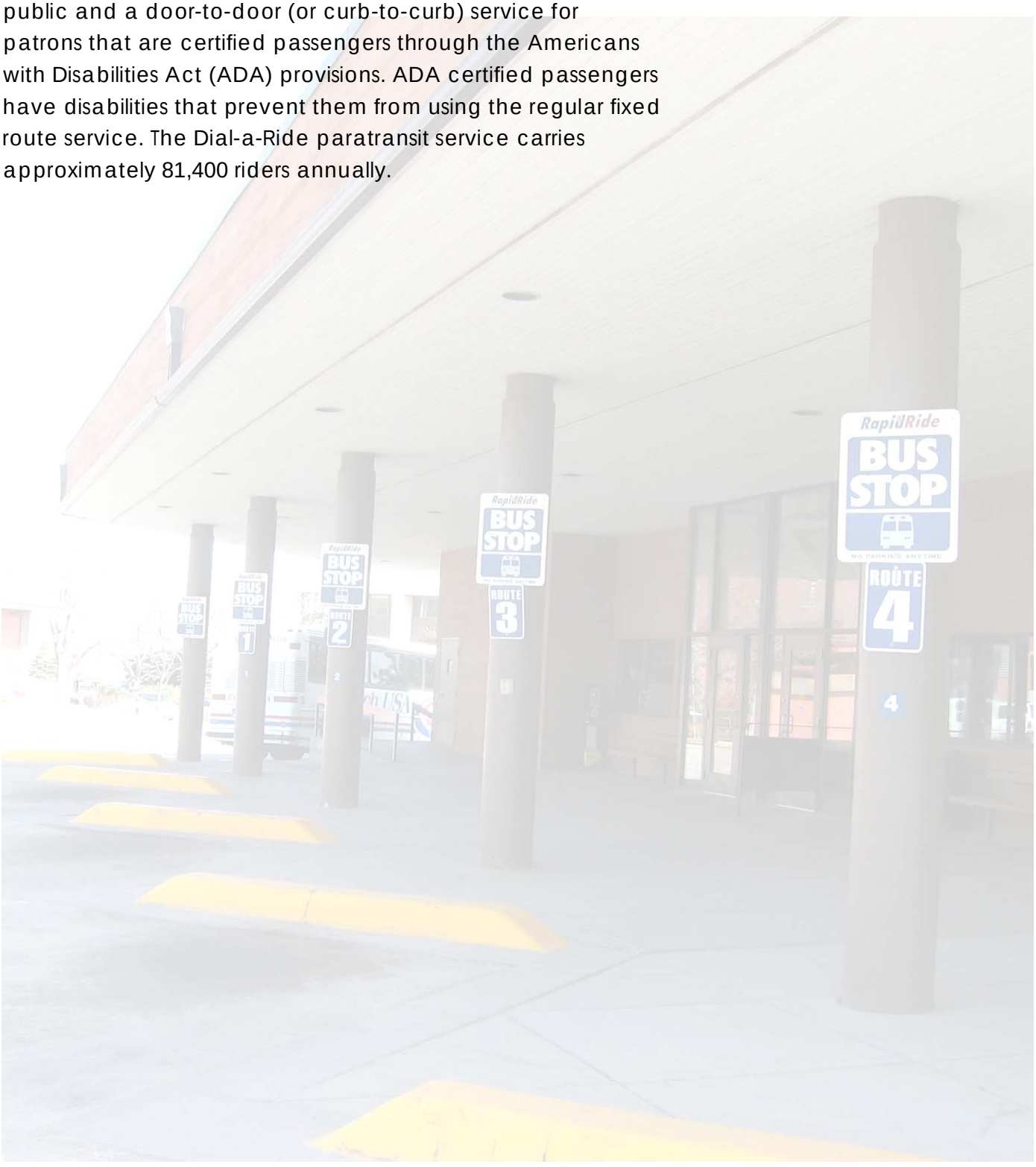
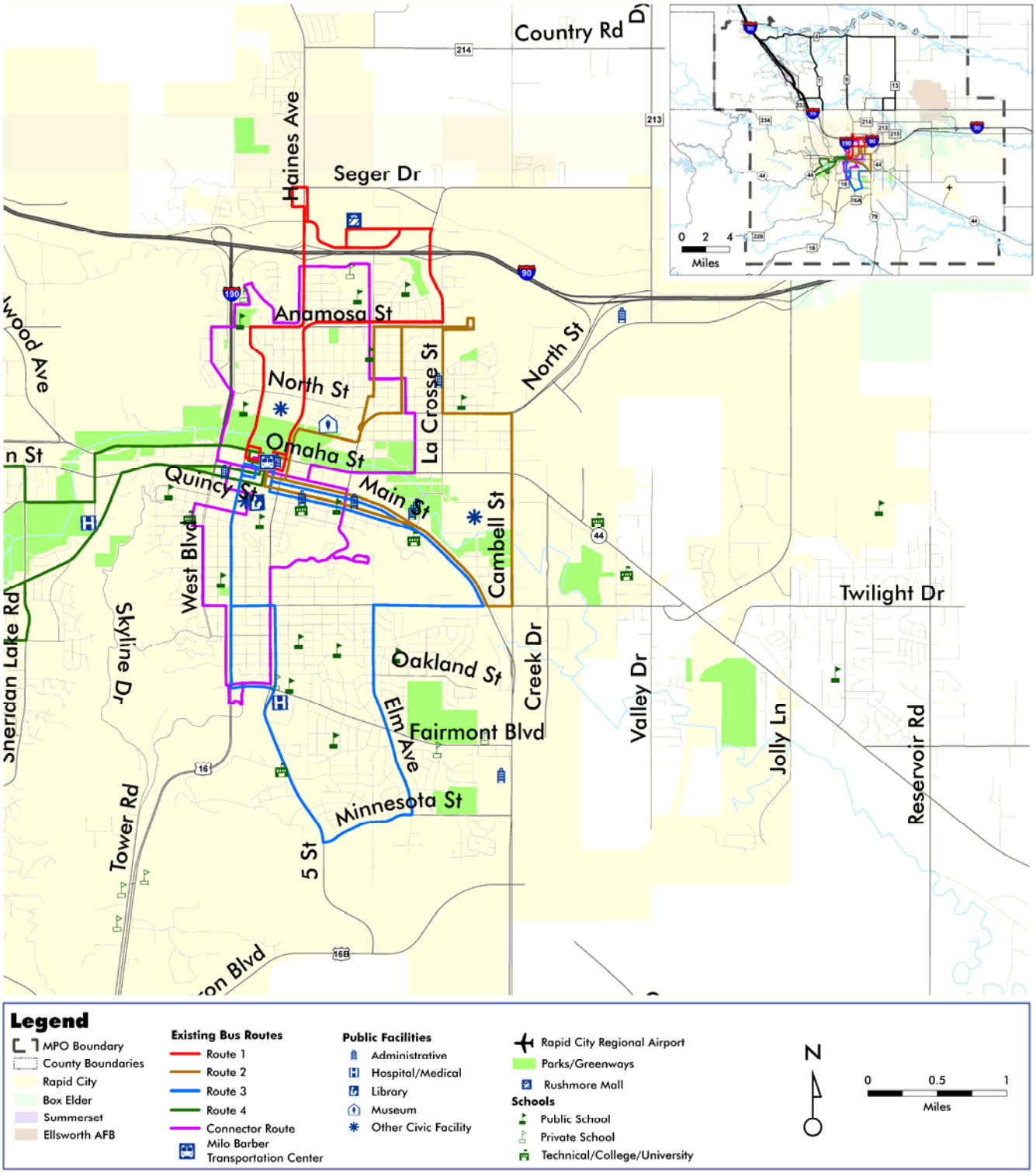


Figure 5.1
Existing Fixed Bus Routes



The general public can utilize the Dial-a-Ride service if space is available and the patron lives more than ¾ of a mile from the nearest point on an established fixed route. Currently, very few paratransit trips are requested by the general public. 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. Rapid Transit has not denied a paratransit Dial-a-Ride trip request from an ADA certified rider in its almost 15 years of operation.

Rapid Transit's annual operating expenses were approximately $990,000 in 2003. Capital expenses are relatively steady since 1998 at about $200,000, with the exception of 2003 when capital costs dipped to about $100,000.

Rapid Transit receives revenues from a variety of sources including state, federal, and local governments; transit fares and pass sales; and advertising. Table 5.1 shows the breakdown of revenues for 2004. An eighteen percent fare box recovery rate is among the top performing transit systems in a peer group comparison conducted as part of the development of the *2004-2008 Transit Development Plan*. If additional local funding was available for transit in the Rapid City area, they could be leveraged against additional federal dollars that are available to the region.

Table 5.1
Rapid Transit System Revenues (2004)

Source	Amount	Percent
Federal	$598,000	47%
State	$28,000	2%
Local	$422,000	33%
Fares/Advertising	$230,000	18%
Total	**$1,278,000**	

Annual operating expenses for Rapid Transit are shown in Table 5.2 for 2004.

Table 5.2
Rapid Transit System Capital and Operating Expenses (2004)

Category	Amount	Percent
Salaries, Wages, Benefits	$847,000	67%
Maintenance	$81,000	6%
Fuel and Supplies	$73,000	6%
Professional Services	$82,000	6%
Other (Insurance, Rentals)	$90,000	7%
Capital Purchases (Buses)	$105,000	8%
Total	**$1,278,000**	

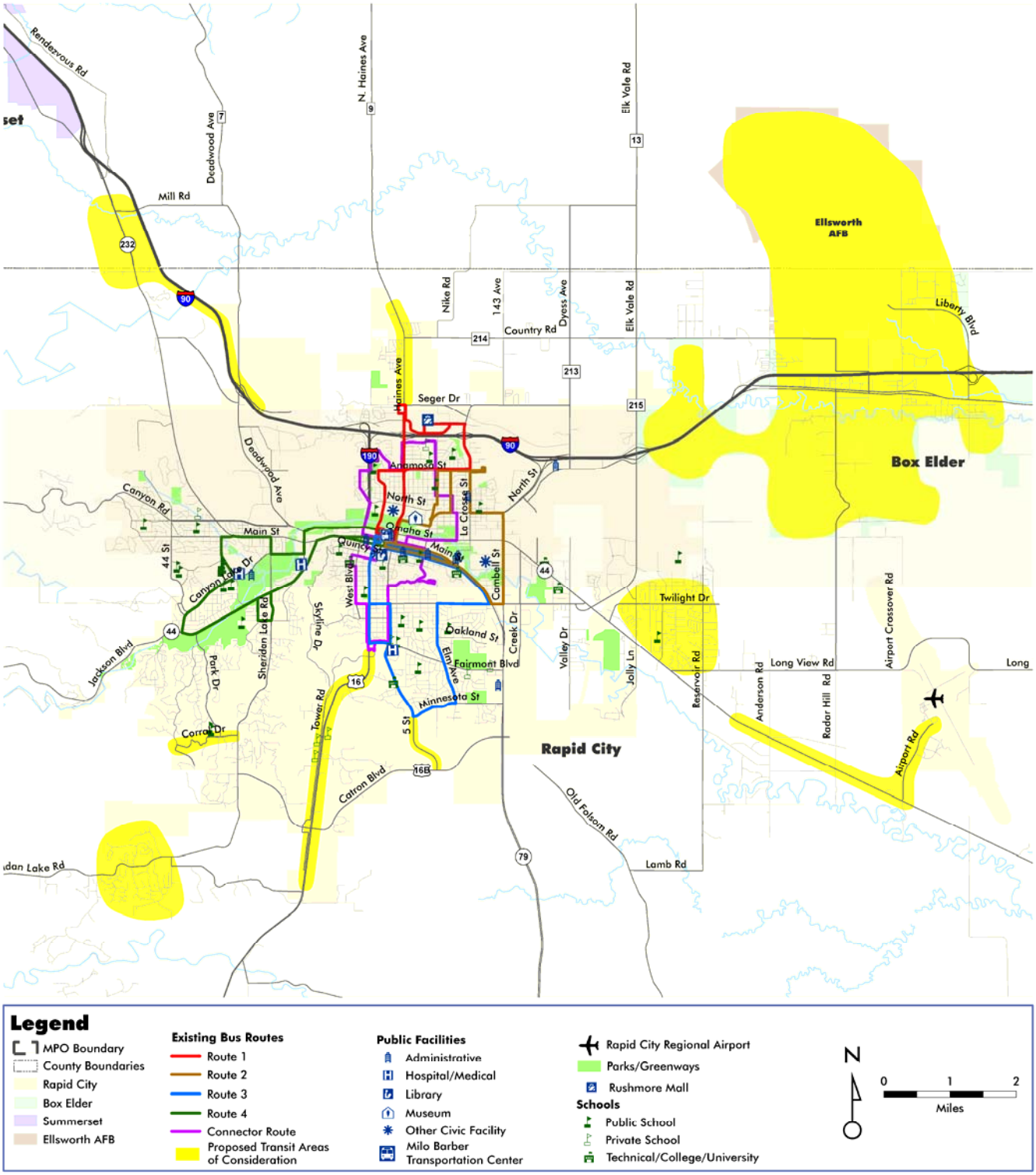
Transit Alternatives Analysis

As part of the public involvement process for developing the 2030 *Long Range Transportation Plan*, 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 evening and weekend service. Of course, this would require more funding to operate an expanded system, which will be difficult to secure with today's limited resources.

The public also suggested several areas in the community that should be considered for bus service in the future. Figure 5.2 identifies these locations, which were subsequently evaluated for current and future ridership potential.

The transit service areas suggested by the public were compared with existing routes and assigned a "high," "medium," or "low" designation based on the household and employment density within the geographic area or within ¼ mile from the potential transit corridor. Areas were evaluated based on their relative household density and employment density.

Figure 5.2
Fixed Route Transit Service Alternatives



Areas with less than 2 units per gross TAZ acre received a "low" ranking for household density. Areas with 2 to 4 units per gross TAZ acre were assigned a "medium" household density and areas with greater than 4 units were ranked as "high." Employment density was calculated as well, with less than 4 employees per gross TAZ acre receiving a "low" ranking for employment density, 4 to 8 employees per gross acre received a "medium" ranking, and areas with more than 8 employees per gross TAZ acre received a "high" ranking. It is important to note that these density calculations are based on the area of the entire TAZ, so actual household and employment densities will be higher than those calculated here. TAZs were assigned the higher of the two rankings, so that areas that were high in either category received a "high" ranking, those areas that were not "high" in either but "medium" in one category received a "medium" and so forth. As can be seen in Figure 5.3, the vast majority of medium and higher density areas within the Metropolitan Planning Organization area are already served by transit.

The prioritization process was based on the household and employment densities, but also considered the relative household income of the potential area and any nearby activity centers. The results of the service potential analysis of the citizen suggested transit service areas is presented in Figure 5.4.

Figure 5.3
Household/Employment Density

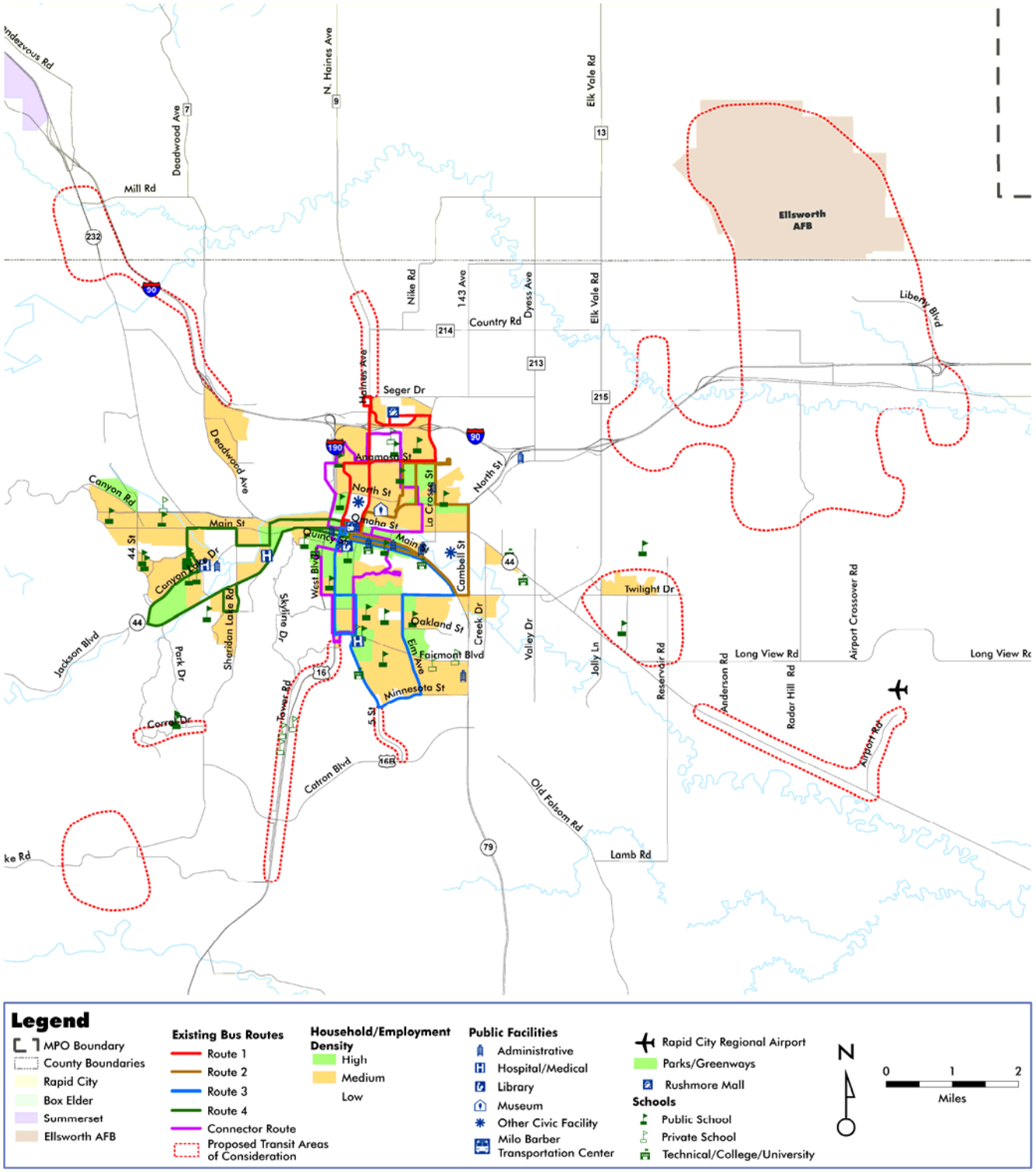
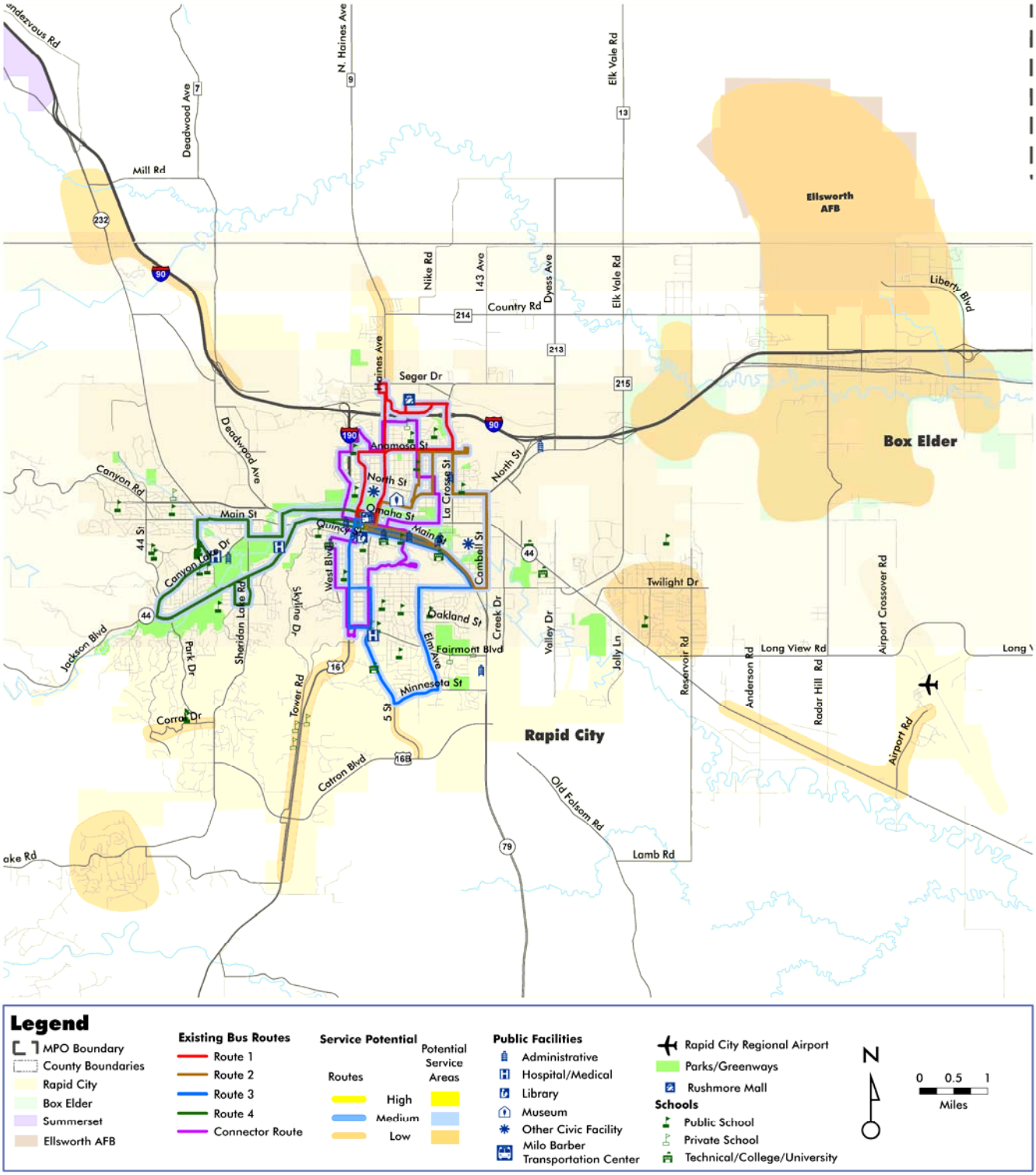


Figure 5.4
Transit Service Potential Analysis Results



Transit Issues

The provision of transit services is difficult in an area like Rapid City due to the low development densities, diverse geographic locations of activity centers, and limited funding. Rapid Transit continually attempts to enhance the transit services in the region by seeking additional funding opportunities, identifying new transit markets, and examining issues raised through the public process and other means.

In June *2004, the 2004-2008 Rapid City Transit Development Plan* was developed to examine current transit operations and plan for the next five years. Several recommendations were made in the *Transit Development Plan*, although not all were implemented. Additional discussion is provided in the following sections on several transit-related issues that build on the recommendations of the *Transit Development Plan*, which is available from the Rapid City Growth Management Department.

Bus Frequencies

The existing fixed route bus system operates on a 35 minute frequency such that either the A or B bus on each route leaves the Milo Barber Transportation Center every 35 minutes. This frequency evolved from a previously desired 30 minute frequency but delays in the system caused the switch. The 30 minute frequency scheme is much easier to remember whereas the 35 minute frequencies cause confusion to the potential rider.

Since the buses currently reverse direction after each run (hence, the A and B designations), the headways are effectively 70 minutes. This is more confusing than a 60 minute headway that would result from a 30 minute bus frequency. It is much easier for the rider to remember 30 and 60 minute frequencies because of the hourly repetition of the schedule.

Adjusting the routes by a minor amount could allow Rapid Transit to operate on the more desirable 30/60 minute schedule. Furthermore, the number of laps or runs made by

each bus would increase from 20 to 23 per day, resulting in increased service for roughly the same hours of operation. With strategic adjustments, service coverage would only be affected to a minor degree.

Recommendation – Adjust the bus frequency schedule from 35/70 minutes to 30/60 minutes.

Route Orientation - Loop vs. Corridor

The current route design resulted from a desire to provide fixed route bus service to as much of Rapid City as possible given limited funding for equipment and operations. As a result, about 60% of the population in the City is within ¼ mile walking distance to a bus route even though only 26% of the geographic area of the City is covered. The A/B reverse runs on each route can seemingly cause indirect travel for riders. However, the A/B configuration of the bus operation alleviates indirect travel at the expense of frequency.

Orienting the bus routes to corridors may provide for more productive routes but would significantly reduce the population coverage of the system. In communities where transit is funded at levels that would attract "choice" riders, the corridor approach might make more sense. In communities that are considered particularly transit friendly, a gridded system might be used in which parallel and perpendicular corridors all have bus routes with higher frequencies.

Corridor or gridded configurations are not as practical for smaller transit operations like Rapid Transit in which basic transit service is provided to support the travel needs of "captive" transit riders with very limited travel options. Captive riders are not nearly as sensitive to travel time and convenience as choice riders when it comes to using transit. Adjustments to the fixed route system will invariably be necessary over time, but the switch from a loop configuration to a corridor or gridded system is not recommended at this time.

Recommendation – Retain the current bus route structure with relatively minor adjustments as necessary.

A/B Configuration

The current fixed bus operations include four routes in which the direction of bus travel is switched after each run. This effectively reduces the 35 minute bus frequencies to 70 minute headways in a particular direction of travel on the route. Switching bus directions results in the A/B configuration – each bus runs in the "A" direction, then the "B" direction, repeating the process throughout the day.

This operation raises some concerns about the reduced headways limiting ridership. This concern must be balanced with the desire to provide as much coverage of the Rapid City population as possible. Because of similar reasons as cited in the previous issue (loop vs. corridor), the A/B configuration is recommended to remain.

Recommendation – Retain the current A/B configuration and naming convention for switching bus direction after each loop/run.

Tripper Routes

Rapid Transit in the past has operated special "tripper" routes for specific transit markets in the community. This is done by identifying a potential transit market, such as a student population at a school or employees of a major employer in the community. The tripper route is established subsequent to sign up and prepaid by the potential transit users.

Tripper routes might only operate at specific times during the day. They have the benefit of providing increased transit coverage in the community since the general public would be able to utilize the tripper routes as well. On the other hand, these special routes can be resource consuming to operate and maintain; and the potential transit market might not materialize or might diminish over time.

Recommendation – Continue to pursue opportunities for tripper routes to support special transit markets in the community.

Citywide Paratransit

When the Dial-a-Ride service was established in 1984, the City Council specified citywide coverage. The service provides rides to ADA certified passengers and the general public on a space available basis and provided the person lives more than ¾ mile from a fixed route or has a destination more than ¾ mile from a fixed route. Fares are double the fixed route bus fares as allowed by law.

These are very expensive trips to provide. Fortunately, patronage has been almost entirely ADA trips and very few trips for the general public. However, this could become a problem in the event more requests for rides are made by the general public. Rapid Transit is monitoring the situation to balance the Council's objective for citywide coverage against very costly trips for the general public.

Recommendation – Continue to monitor requests for Dial-a-Ride service to ensure availability for ADA passengers and cost efficiency for rides by the general public.

Increased Coverage/Evening and Weekend Service

Through the public involvement efforts for the *Long Range Transportation Plan*, several comments were received from transit patrons regarding their desire for increased bus route coverage and evening and weekend service.

Based on the alternatives analysis presented previously, the current fixed route service covers 60% of the City's population and very few areas in the City have household and employment densities to support bus service. The current system covers the core of the City and provides access to medical services, retail locations, community services and facilities, downtown, and other activity centers. In addition,

the Dial-a-Ride service is available to both ADA certified riders and the general public, essentially providing full transit coverage for the entire City of Rapid City.

Regarding weekend transit service, the issue boils down to cost effectiveness. The current Rapid Transit bus system carries an acceptable although not exceptional number of riders on several fixed routes. Rapid City's transit system offered weekend service in the early 1990's. Experience has shown that ridership on the weekends falls off to about half of the weekday ridership.

There may be some merit however to increasing the number of hours the bus system runs into the evening. One or two more hours of evening service past the current stop time of 6:30 pm would provide transit patrons using the service for work purposes some additional flexibility to conduct personal business before departing for home. Rapid Transit may wish to consider offering additional evening service on a trial basis.

> Recommendation – Retain the current weekday operation of the bus system and consider additional evening service.

Transit Funding

Funding for transit in Rapid City 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 Metropolitan Planning Organization area through formula allocations and must be matched with local funds. Federal 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 leveraged against available federal funds to provide increased transit service in Rapid City.

The fares for the fixed route bus service at $1.00 per ride ($0.50 for elderly/disabled/Medicare) are low compared to other transit services in similar sized cities. Rapid Ride might consider

raising fares by 25 or 50 cents to keep better pace with inflationary trends and prices for fuel, spare parts, and tires. Ridership impacts should be relatively low but should be studied.

Dial-a-Ride fares for ADA trips can be as high as double the regular fixed route bus fare. This requirement does not apply however to the paratransit service offered to the general public. Since the provision of these rides costs significantly more than the fare, raising the Dial-a-Ride fare for general public seems reasonable. This type of service could be compared to taxi service, so the existing $2.00 fare for the general public seems extremely low.

Raising transit fares for both ADA passengers and the general public is necessary to simply keep pace with rising costs of fuel, tires, and other items. Additional revenues streams would be necessary to expand service hours or geographic coverage. According to the *Transit Development Plan*, the current fares in Rapid City are low in comparison to fares on similar systems in similar sized cities.

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 the *Long Range Transportation Plan* are to:

- Pursue additional local funding to leverage against available federal formula funds
- Consider raising fixed route bus system fares
- Consider raising Dial-a-Ride fares in conjunction with fixed route fares
- Consider raising Dial-a-Ride fares for trips requested by the general public
- Solicit additional transit funding from the South Dakota Department of Transportation

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 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. Funding has been steady at about $28,000 for several years.

Recommended Transit Plan

The areas currently covered by the fixed route RapidRide bus service should continue into the foreseeable future based on the analysis of routes, areas, and densities. Additional geographic coverage is not recommended at this time because the analysis does not indicate sufficient ridership potential.

On the other hand, the comments received through the *Long Range Transportation Plan*'s public involvement efforts have indicated a desire for more service hours and coverage. In response to these requests, additional funding through several possible sources could be pursued. In particular, the identification of new local funding sources could leverage additional federal dollars for transit, which typically require local matching funds. As identified in the *2004-2008 Rapid City Transit Development Plan*, several potential local funding sources exist.

The Transit Development Plan also recommends several changes to improve the efficiency and effectiveness of the current transit operations. Because buses operate on the roadway system, there is a great deal of flexibility in route locations and other aspects of transit service.

Specific *Long Range Transportation Plan* recommendations with regard to transit service operations and funding include:

- Adjust the bus frequency schedule from the current 35/70 minutes to 30/60 minutes.
- Retain the current bus route structure with relatively minor adjustments as necessary.

- Retain the current A/B configuration and naming convention for switching bus direction after each loop/run.
- Continue to pursue opportunities for tripper routes to support special transit markets in the community.
- Continue to monitor requests for Dial-a-Ride service to ensure availability for ADA passengers and cost efficiency for rides by the general public
- Retain the current weekday operation of the bus system and consider additional evening service.
- Pursue additional local funding to leverage against available federal formula funds.
- Consider raising fixed route bus system fares.
- Consider raising Dial-a-Ride fares in conjunction with fixed route fares.
- Solicit additional transit funding from the South Dakota Department of Transportation.

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6. ROADWAY PLAN

The roadway network forms the backbone of the entire multi-modal transportation system in the Rapid City region. In addition to automobiles, roads accommodate transit buses, bicycles, and pedestrians. Commercial vehicles moving freight travel on roads. Streets and highways are an important part of the local and national economy, and they provide mobility for most ground transportation users.

Historically, the automobile and roadway construction have dominated transportation investments in the region. Roadway improvements will continue to be an issues as the transportation system is stressed due to demographic growth and land development. For the foreseeable future, the automobile is expected to be the primary mode of transportation in the area. The roadway network must continue to be maintained and improved to keep pace with growth.

In the development of the *2030 Long Range Transportation Plan* (LRTP), a careful balance was sought between four interrelated elements – land use, transportation improvements, level of service, and available resources. 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, a number of roadway alternatives were developed to test and evaluate. A prioritization process provided the necessary rankings of the alternative projects so that improvements could be selected based on financial capacity and values important to the community.

Existing Conditions

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. 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 Omaha and Main Streets crossing the gap in the north-south ridgeline that separates west Rapid City from the rest of the City. Figure 6.1 shows congestion levels for the year 2000.

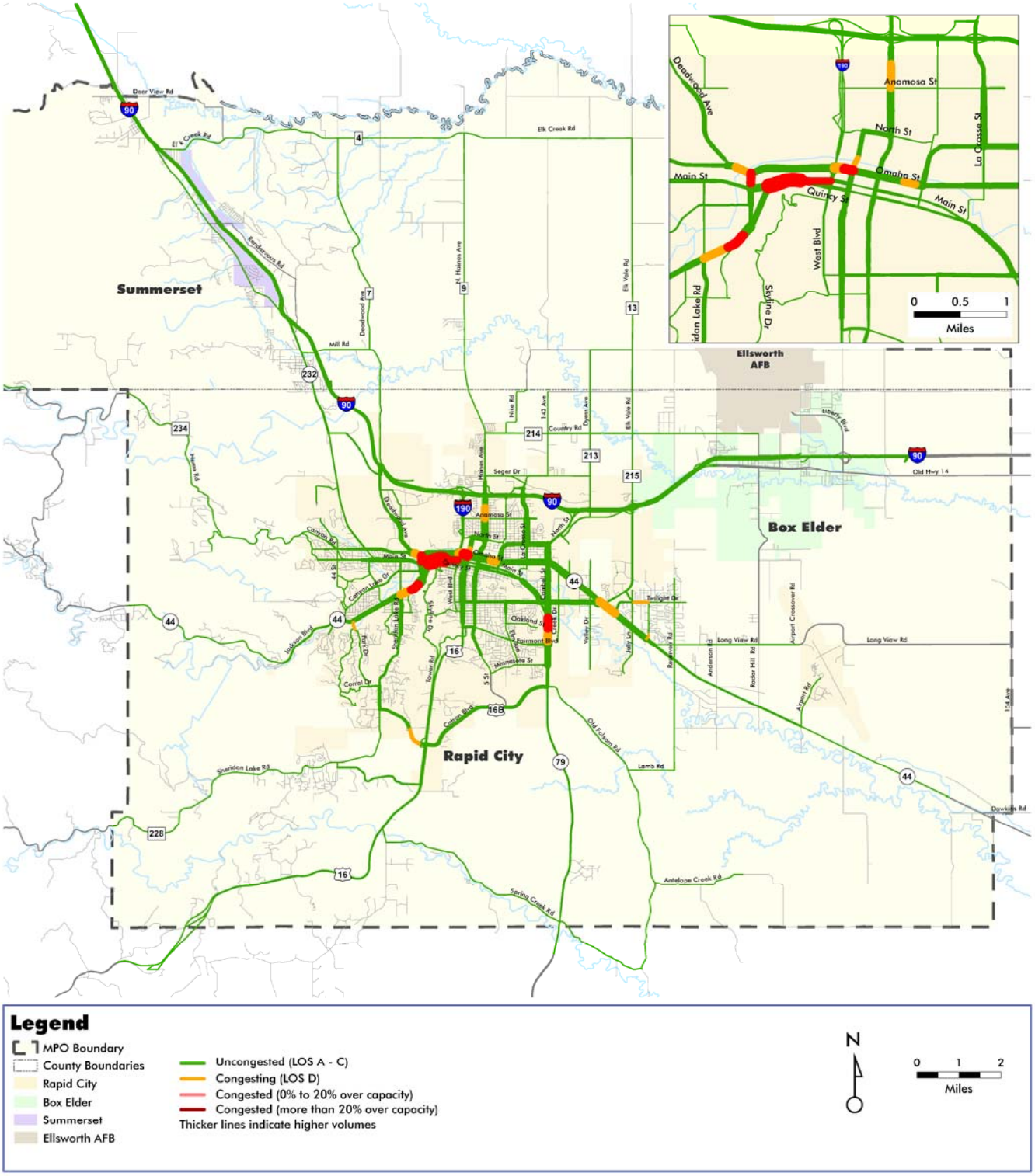
Roadway Level of Service

A common measurement of operational performance for an intersection or corridor is level of service (LOS). 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 and "F" indicates failure. Level of service takes into account vehicular delay, maneuverability, driver comfort, congestion delay, and travel speed. It 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 LOS C the roadway system and LOS D for intersection operations, similar to other medium sized cities nationwide. As congestion reaches very high levels at specific corridor or intersection locations, the LOS 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 6.1
Congestion Levels in the Year 2000

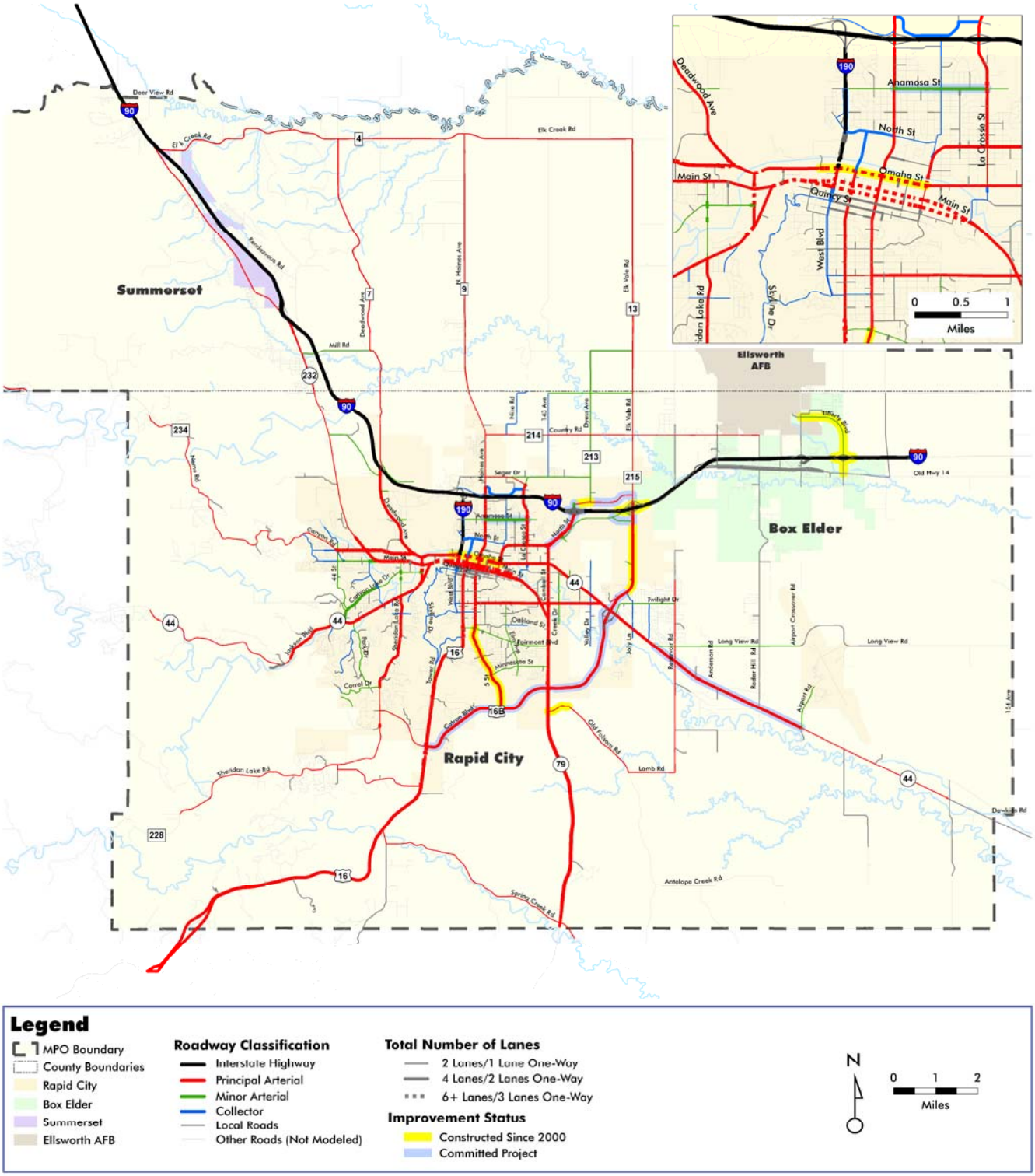


Committed Projects

The year 2000 is used to show existing conditions in the previous section because the information is readily available from the regional traffic model that is calibrated to year 2000 conditions. Since that time, several roadway improvements have been constructed, are under construction, or have committee funds and will be constructed in the near future. These projects are important because they help in establishing a baseline roadway network upon which to evaluate alternatives.

Committee projects include those with committed funding in the region's Transportation Improvement Program (TIP). The current TIP programs projects for implementation through the year 2010. Therefore, the Existing and Committed (E+C) network, shown in Figure 6.2, represents approximately the year 2010. Beyond that, additional improvements will be necessary to accommodate future growth and traffic demands.

Figure 6.2
Existing and Committed Roadway Network



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. Roadway function tends to vary to some degree depending on the amount of urbanization in a particular corridor. The differences in the nature and intensity of development in rural and urban areas warrant corresponding differences in urban system characteristics relative to the rural systems.

The roadway functions of the facilities in the recommended Roadway Plan represent a desired function for the year 2030. 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. The Southeast Connector facility will function similar to an expressway.

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 recommend 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 serve secondary traffic generators such as community business centers, neighborhood shopping centers, multifamily 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 widely 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 nonresidential development.

Subcollector (Residential Collector Street)

A special category of collector streets, the residential collector or 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. All collectors should be limited to two lanes, but this standard is especially important for residential collector streets with adjacent single family and multifamily land uses.

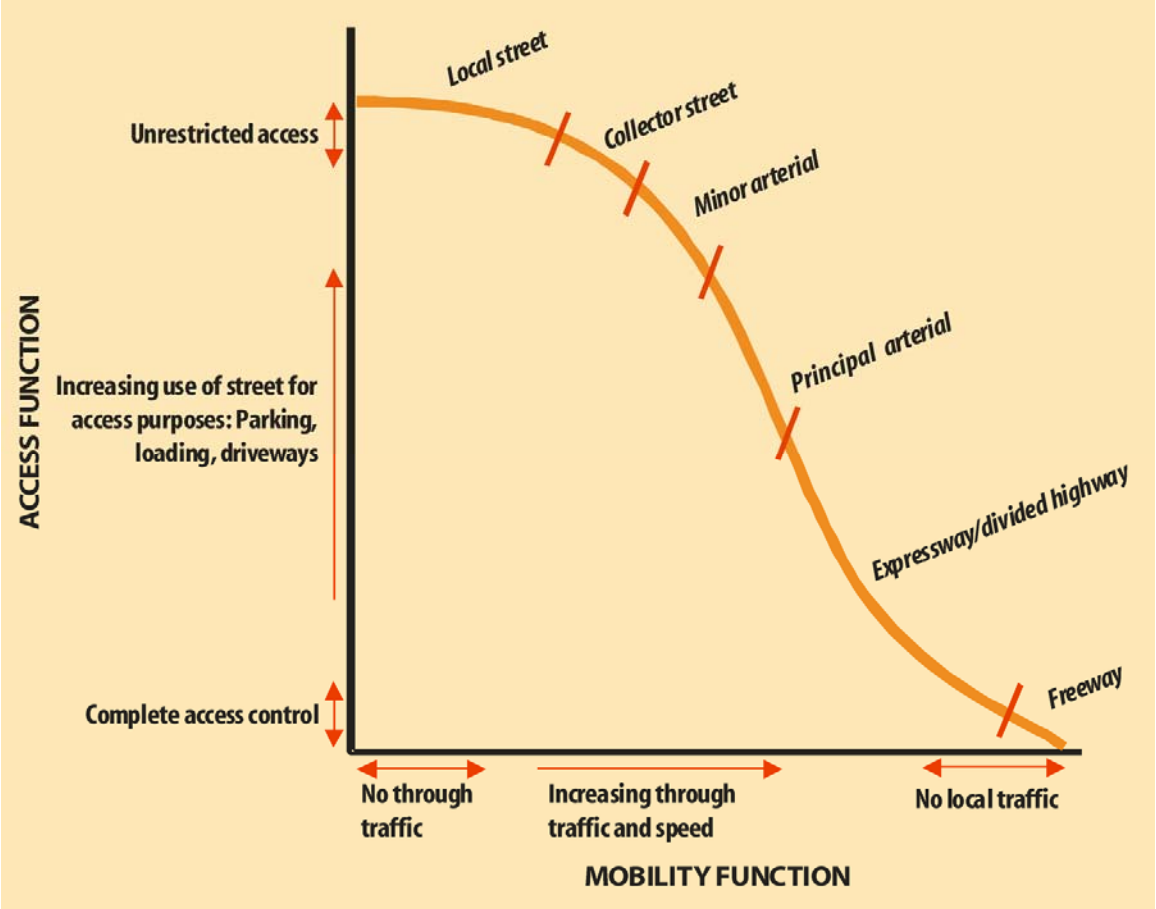
Industrial Collector

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 site.

Lane/Place/Local Street

Local streets provide direct access to adjacent land uses and serve up to twenty dwellings. Direct access from a local street to an arterial street should be 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.

Roadway Function – Access vs. Mobility



Needs Assessment

As discussed previously, the existing roadway network and committed improvements make up the Existing and Committed (E+C) network that serves as a baseline from which to text alternatives. To begin the analysis, the traffic demands that result from household and employment activity in the year 2030 were modeled on the E+C network. Since the E+C network represents the roadway system in about the year 2010, congestion increases in this test as expected. Results are shown in Figure 6.3. As the map shows, several roadways such as I-90, parts of Catron, and others are experiencing congestion under the needs assessment test.

Alternatives Analysis

In response to the needs assessment, a number of potential roadway improvements were identified for testing and evaluation to develop the roadway plan. The current 2025 *Long Range Transportation Plan*, which lapses in August 2005, identifies several additional alternatives to test. Other sources that provided input in developing the list of alternatives includes the general public, Rapid City's Major Streets Plan, Metropolitan Planning Organization staff, Metropolitan Planning Organization committees and elected officials, and others.

Figure 6.4 shows graphically all of the roadway alternatives that were considered for the 2030 *Long Range Transportation Plan*. Each project was evaluated for its ability to alleviate future congestion delay (60 points), reduce future vehicular miles of travel (10 points), and provide congestion benefits in a cost effective manner (30 points) for a maximum score of 100 points. Projects were then scored, ranked, and reviewed by the Metropolitan Planning Organization Committees and the general public for comments and input before being developed into the roadway plan.

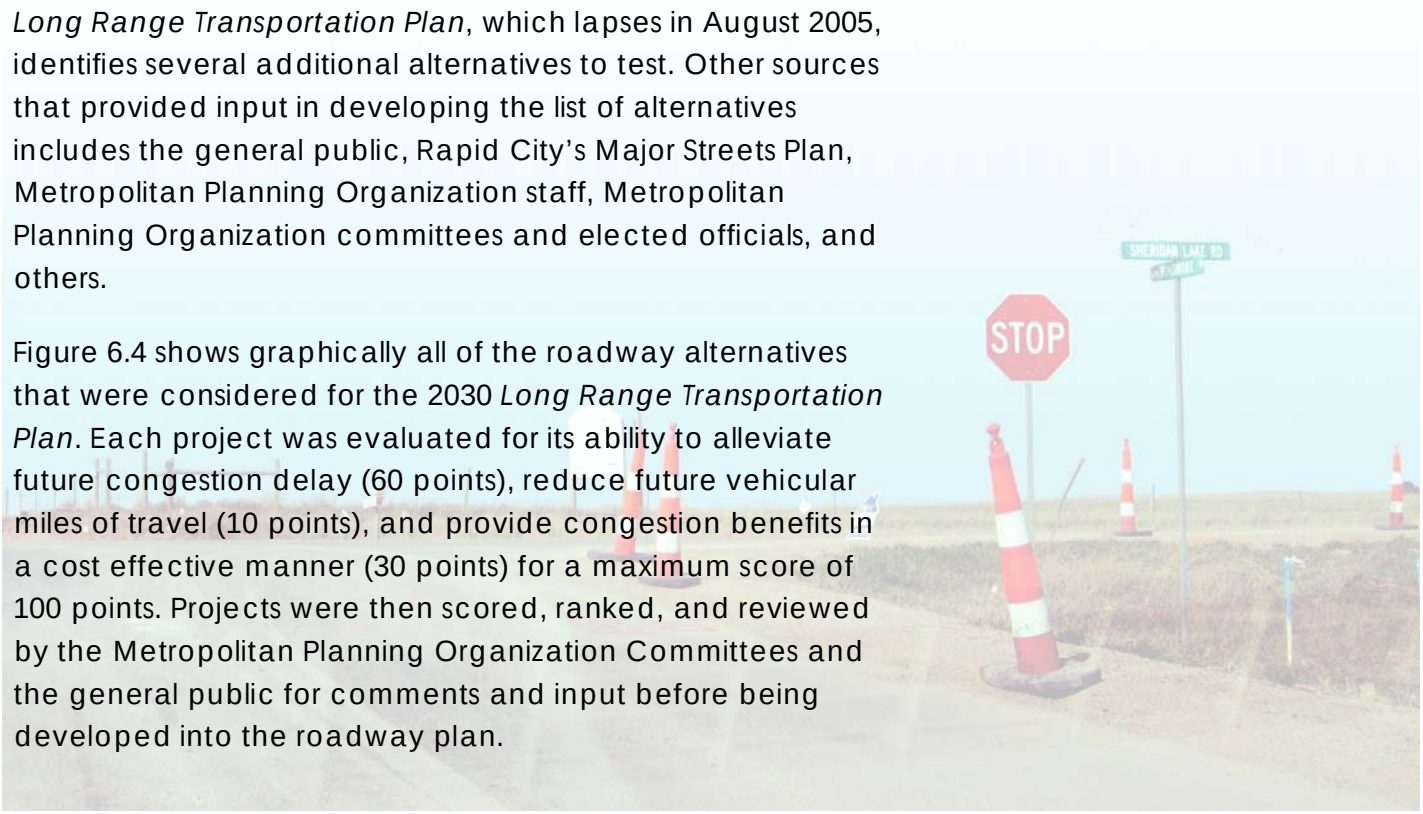


Figure 6.3
Needs Assessment –
Roadway Congestion with 2030 Traffic on the E+C Network

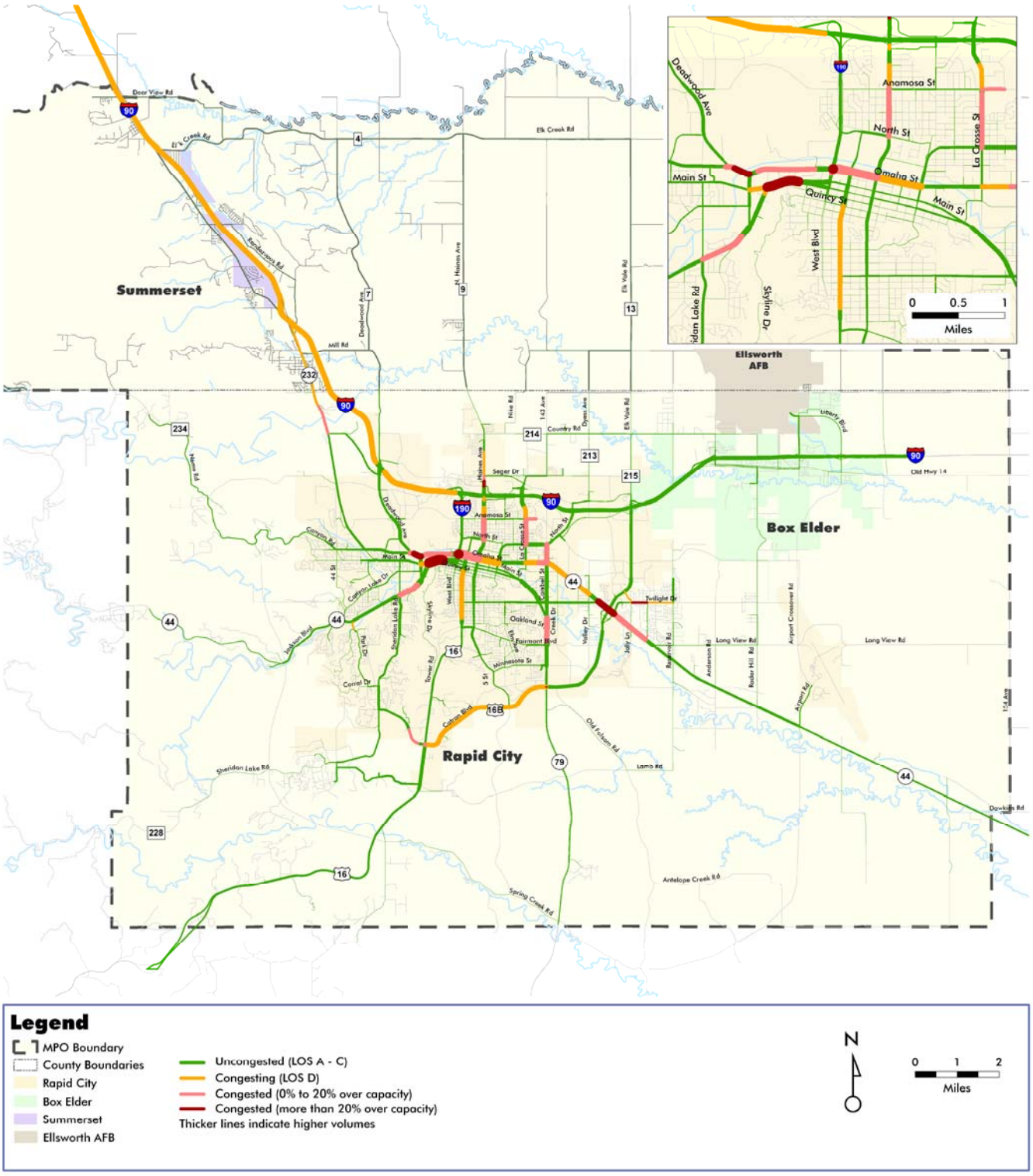
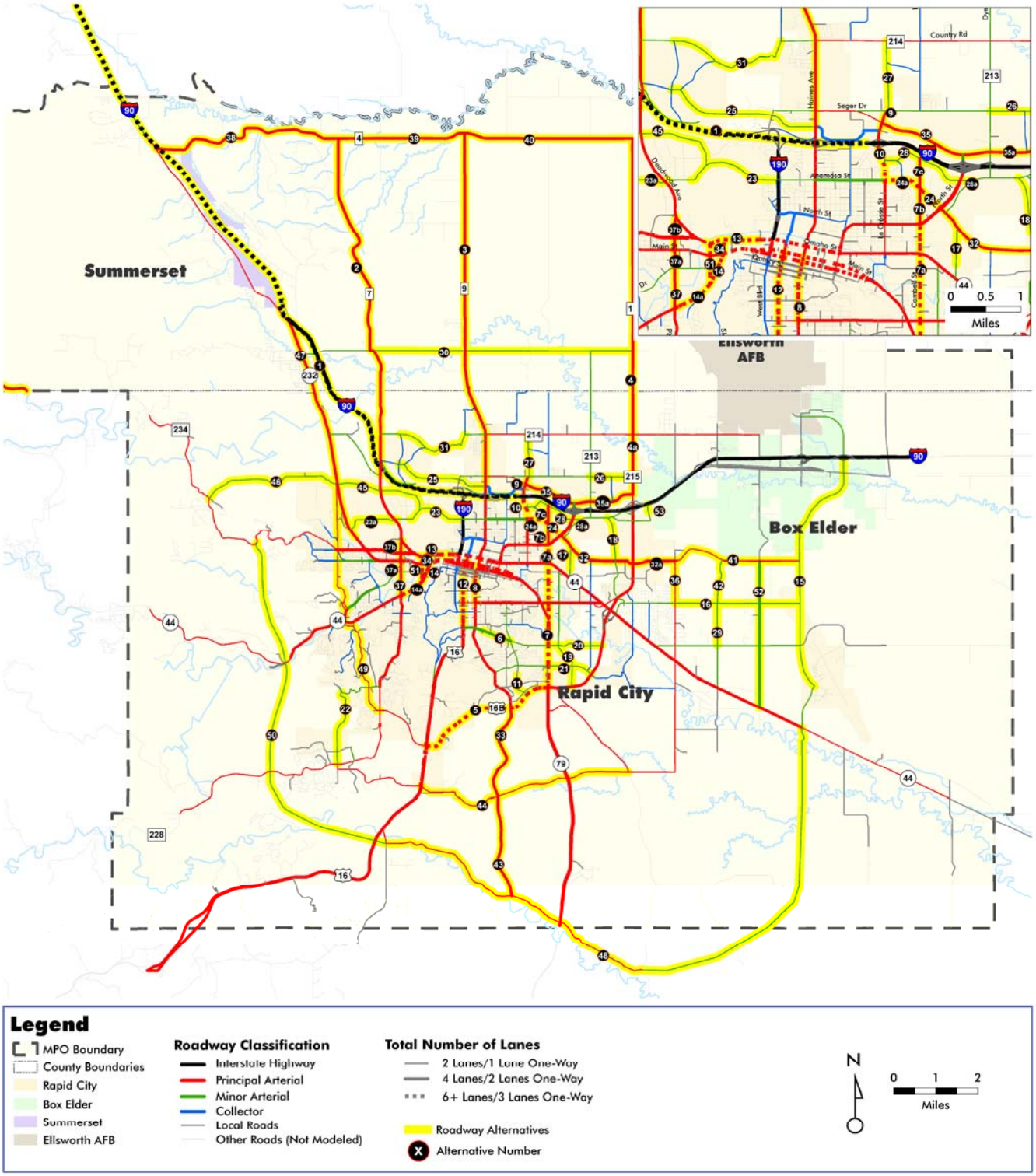


Figure 6.4
Roadway Alternatives for the 2030 *Long Range Transportation Plan*



Future Plan development efforts might consider expanding the evaluation criteria for projects to include air quality, safety, and other measures.

Project costs used in the alternatives analysis were based on previous estimates updated to year 2005 dollars. For some of the alternatives, unit costs from previous project construction cost figures were applied. 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 an early phase of project development.

Financial Analysis

The purpose of the financial analysis is to balance the transportation improvements recommended for implementation with the resources available to build and maintain transportation facilities and services. It is based on an analysis of past funding, expected funding, and projected needs.

Federal transportation legislation requires MPOs to include a financial constraint analysis in its long-range transportation plan. The financial component should indicate how the *2030 Long Range Transportation Plan* will be implemented with the resources that could reasonably be expected to be available.

Specific language from the Transportation Equity Act for the 21st Century (TEA-21) is provided below.

> "The long-range transportation plan shall include… a financial plan that demonstrates how the adopted long-range 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. The financial plan may include, for illustrative purposes,

additional projects that would be included in the adopted long-range transportation plan if reasonable additional resources beyond those identified in the financial plan were available. For the purpose of developing the long-range transportation plan, the metropolitan planning organization and State shall cooperatively develop estimates of funds that will be available to support plan implementation."

The estimates of revenues available for transportation improvements in the Rapid City area are based on current legislative policy. No effective change in these policies was assumed. All revenue and project cost estimates are in 2005 constant year dollars. They consider increased local revenues as a result of demographic growth in future years but were not adjusted for the impacts of inflation. Cost and revenue figures reported in this chapter are both in year 2005 constant dollars to facilitate comparison and analysis.

Revenue Estimation Methodology

Estimating revenues available over the life of the *2030 Long Range Transportation Plan* was done cooperatively between the MPO, the City of Rapid City, Pennington and Meade Counties, SDDOT, and Rapid Ride. Generally, historic expenditures of transportation funds invested on projects in the Rapid City area for the past several years were used to calculate average annual funding amounts for the duration of the plan. Due to a lack of data for some years as funding programs evolved, revenues from some local sources are based on averages over shorter periods.

Estimated average annual funding amounts for most state and federal programs were developed using each program's revenues over the past several years of ISTEA and TEA-21 implementation; allocation amounts supplied by SDDOT; and information from the *2006-2010 Transportation Improvement Program*. These average annual figures were then projected over the duration of the *2030 Long Range Transportation Plan* to arrive at total revenue estimates, assuming no growth in real dollars. This strategy represents a continuation of current

programs at levels similar to recent, historical revenues, rather than projecting at the rate of growth during the ISTEA and TEA-21 programs, which would be much more optimistic due to significant funding increases over the last 14 or so years of the federal legislation.

Routine maintenance and minor rehabilitation of the streets and highways are the responsibility of the various operating entities within the MPO area. Rapid City, Pennington and Meade Counties, and SDDOT provide maintenance and rehabilitation for streets and highways under their respective jurisdictions. For the purposes of financially constraining the *2030 Long Range Transportation Plan*, no assumptions were made concerning maintenance activities of the operating agencies, since routine maintenance activities are budgeted separately from capital programs. Although maintenance issues are not explicitly addressed herein, the transportation providers are keenly aware of the need (and federal requirements) to properly maintain the existing and future transportation systems. Future Plan development efforts should include an analysis of operations and maintenance needs and funding.

Anticipated Revenues

Through the cooperative process carried out among various funding and implementing agencies, it is anticipated there will be about $172 million dollars available over the life of the *2030 Long Range Transportation Plan* for roadway capacity improvements. Table 6.1 summarizes the available funding for capacity improvements. The estimated funding projections are based on year-2005 dollars and do not reflect inflation. Operations and maintenance (O&M) funds are not included in Table 6.1 but should be considered for future efforts.

Federal legislation requires the transportation projects and services recommended in the Plan to be financially constrained to available revenues. This means that expected financial resources must be sufficient to cover the projected costs of the total transportation system, including both existing and planned facilities and services, through the year 2030.

Reasonably expected revenues include existing local, state, and federal funding sources described in previous sections of this chapter. They do not include revenues for maintaining the system, as these funds are allocated by the individual agencies previous to programming future system improvements. In addition, the revenues and project costs do not reflect funds for planning, design, or right-of-way. Discretionary funding assumptions have been very conservative, but discretionary programs could provide significant revenues over and above the formula programs represented in Table 6.1.

Table 6.1
Available Resources for Roadway Capacity Improvements – 2006 to 2030
(2005 $$ in millions)

Funding Program	Federal	State	Local	Total
Rapid City Capital Improvement Program			$29.776	$29.776
Pennington County Road and Bridge Program and Unobligated Reserves			$3.507	$3.507
Meade County			$0.327	$0.327
Interstate Maintenance	$22.336	$2.664		$25.000
National Highway System	$33.111	$6.389		$37.500
Bridge Replacement Projects	$5.616	$1.884		$7.500
Roadway Safety Improvement Projects	$6.898	$0.560		$7.458
Urban Systems/Surface Transportation Program – Rapid City	$34.650	$7.623		$42.273
Urban Systems/Surface Transportation Program – Pennington County (MPO portion)	$8.438	$1.875		$10.313
Urban Systems/Surface Transportation Program – Meade County (MPO portion)	$6.875	$1.500		$8.375
Total	**$115.923**	**$22.495**	**$33.611**	**$172.029**
Percent of Total	**67%**	**13%**	**20%**	

Financially Constrained Roadway Plan

Federal legislation over the last 14 years (e.g., ISTEA and TEA-21) 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 Table 6.1, the total estimated transportation revenues are $172 million over the 25-year period of the 2030 Long Range Transportation Plan. This represents the federal, state, and local funding that is reasonably expected to be available. It does not include private sector funding from fees associated with land development projects.

Of the approximately $434 million of alternative transportation improvements evaluated as part of the plan's development, the recommended Financially Constrained Roadway Plan funds $147 million with federal, state, and local dollars. Specific projects are not identified for the Bridge Replacement and Roadway Safety Improvement Programs, which together make up an additional $15 million available for roadway capacity improvements. This leaves $10 million of the available $172 million in unprogrammed roadway capacity funds.

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 or off-system. Interstate Maintenance and National Highway System funding was matched to eligible projects for those programs as well.

In addition to public sector funding, other roadway capacity dollars are provided through private sector investments in land development projects. Generally, new streets in newly developing areas are the responsibility of the developer to connect the development to the arterial street system. Almost $80 million from developer sources is assumed over the 25-year life of the plan. 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 2030. Table 6.2 summarizes the financial constraint figures for the recommended Financially Constrained Roadway Plan.

The recommended Financially Constrained Roadway Plan is shown graphically in Figure 6.5 with resulting level of service shown in Figure 6.6. Tables 6.3, 6.4, 6.5, 6.6, and 6.7 contain the financially constrained roadway capacity improvements in the Rapid City, Pennington County, and Meade County portions of the MPO planning area, respectively.

Table 6.2
Financial Constraint Summary for Roadway Improvements – 2006 to 2030
(2005 $$ in millions)

Funding Program	Available Federal, State, and Local Resources	Recommended Financially Constrained Roadway Plan	Difference (Not Programmed)
Rapid City Capital Improvement Program	$29.776	$20.962	$8.814
Pennington County Road and Bridge Program and Unobligated Reserves	$3.507	$3.507	$0
Meade County	$0.327	$0.327	$0
Interstate Maintenance/National Highway System	$62.500	$61.000	$1.500
Bridge Replacement Projects	$7.500	$0	$7.500
Roadway Safety Improvement Projects	$7.458	$0	$7.458
Urban Systems/Surface Transportation Program – Rapid City	$42.273	$42.273	$0
Urban Systems/Surface Transportation Program – Pennington County (MPO portion)	$10.313	$10.313	$0
Urban Systems/Surface Transportation Program – Meade County (MPO portion)	$8.375	$8.375	$0
Subtotal – Public Funding	**$172.029**	**$146.757**	**$25.272**
Private/Developer Funding		**$79.594**	
Total		**$226.351**	

Figure 6.5
Recommended Financially Constrained Roadway Plan

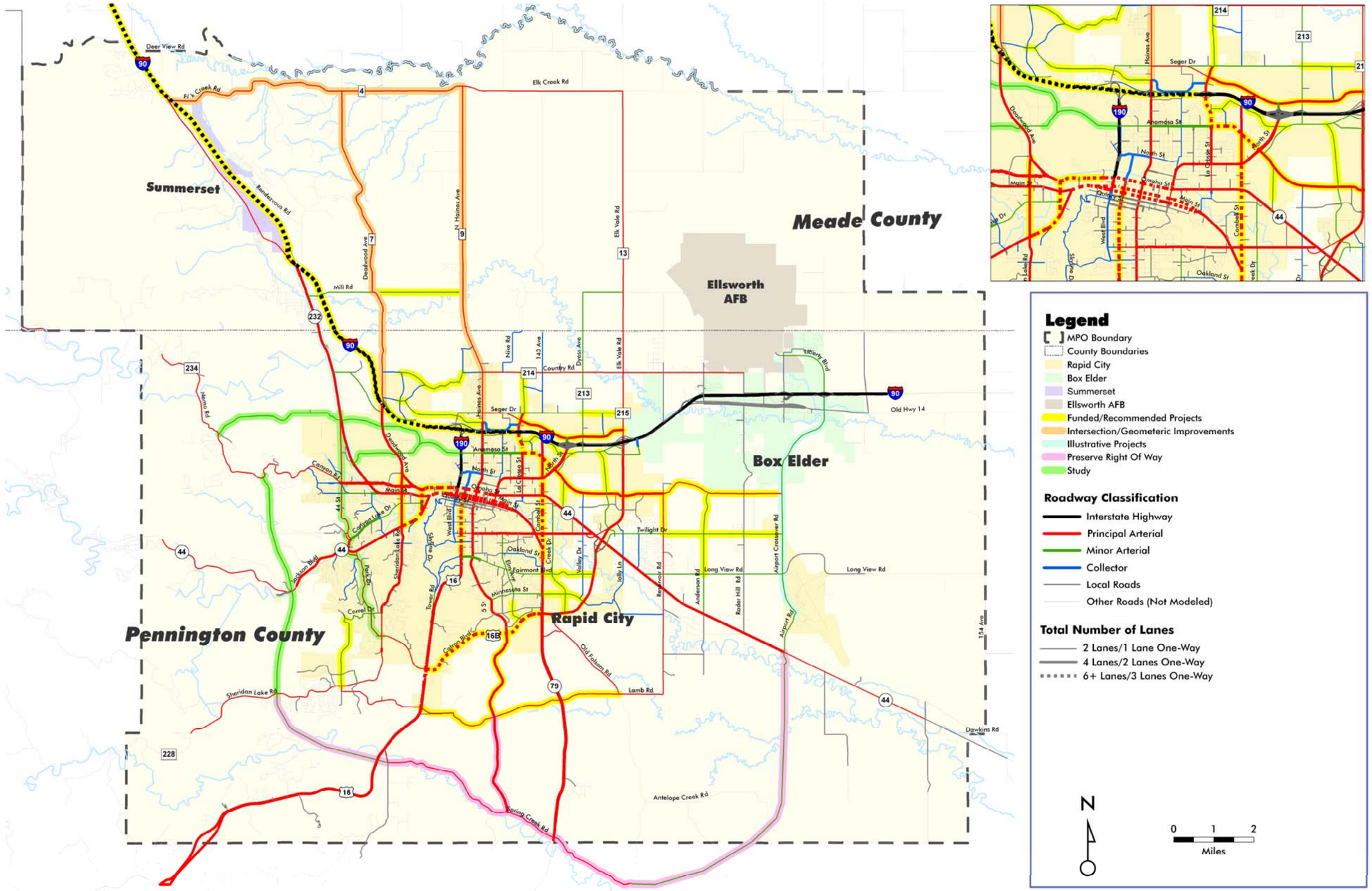


Figure 6.6
Level of Service for 2030 Financially Constrained Roadway Plan

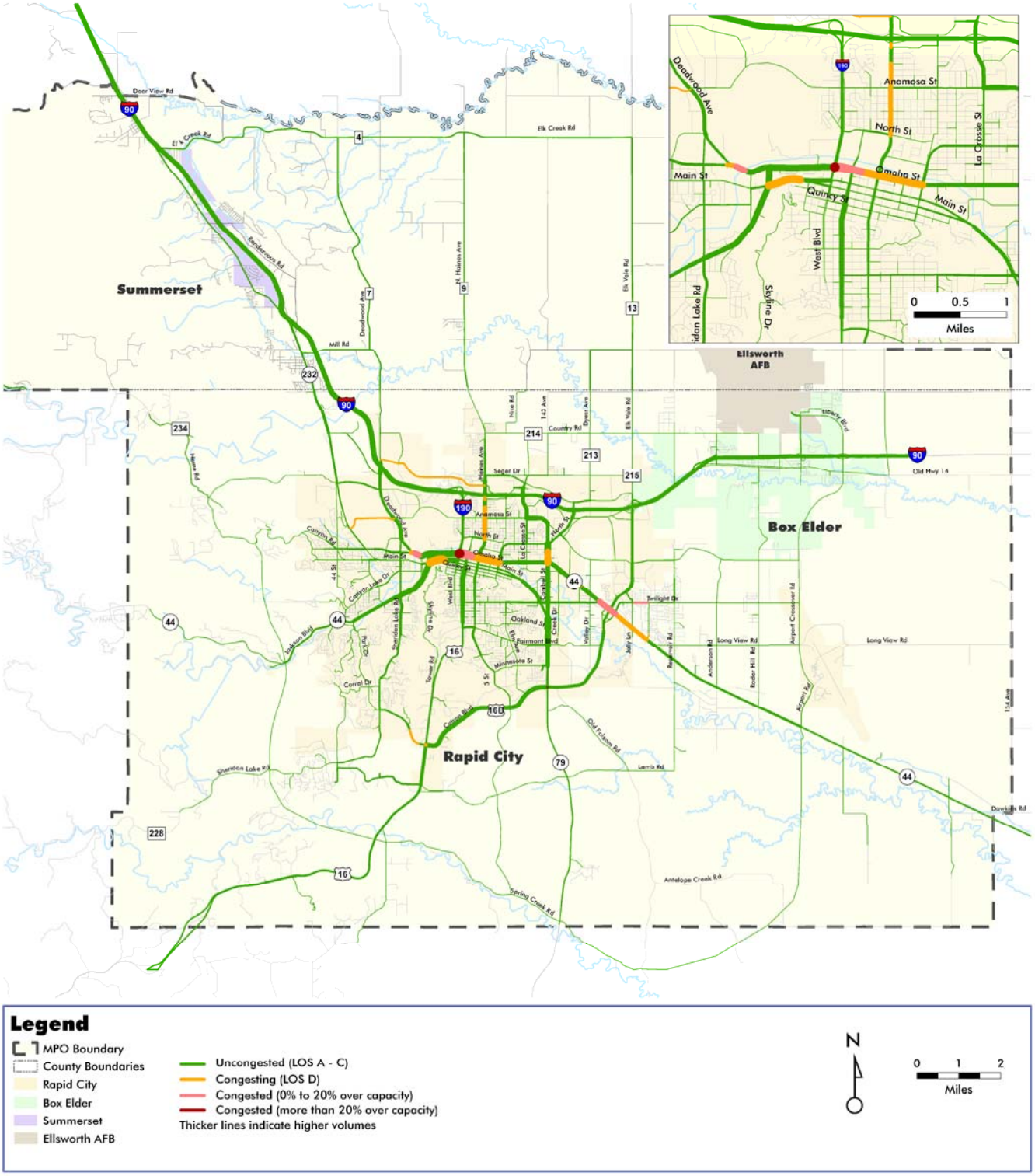


Table 6.3
Financially Constrained Roadway Improvements
Rapid City

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
37b	Sherdian Lake Rd	Deadwood Ave	West Main St	New 4 lane Principal Arterial	**100**	$2,600,000	High	Construct with 37, 37b
32	East Anamosa St Extension	Eglin St	Turbin Rd	New 4 lane Principal Arterial	**100**	$3,075,000	High	Developer funding $3,609,000
13	Omaha St	12th Street	Deadwood Ave	Widen 4 to 6 lanes (Principal)	**100**	$4,122,000	High	
24	East Anamosa St Extension	Lacrosse St	East North Street	New 4 lane Principal Arterial	**100**	$2,818,000	High	Developer funding $3,309,000
25	Tatanka / Disk Dr	Deadwood Ave	Haines Ave	New 2 lane Minor Arterial	**100**	$2,674,000	High/ Medium	
28a	Eglin St / Farnwood	East North Street	Eglin St	New 2 lane Minor Arterial	**97**	$520,000	High/ Medium	
1	I-90	Elk Creek Rd	Lacrosse St	Widen 4 to 6 lanes (Interstate)	**87**	$51,200,000	Long Term	Implementation 2020-2030. See project 1 in Pennington County and Meade County
32a	East Anamosa St Extension	Turbin Rd	Reservoir Rd	Widen 2 to 4 lanes New 4 lane Principal Arterial	**80**	$6,200,000	High	
14a	Jackson Blvd	Mountain View Rd	Sherdian Lake Road	Widen 4 to 6 lanes (Principal)	**77**	$962,000	Medium/ Long Term	Needed if Alt. 51 or Alt. 14 are funded
31	Country Rd Extension	Bunker Dr	existing Country Rd	New 2 lane Minor Arterial	**77**	$4,940,000	Medium	Access for water transmission main through Dakota hogback
7a	Cambell St	East North Street	St. Joseph St	Widen 4 to 6 lanes (Principal)	**73**	$5,040,000	Medium	
35	Mall Dr Extension	Lacrosse St	East North Street	New 2 lane Principal Arterial	**73**	$0	n/a	Developer funding total cost $1,794,000

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
2	Deadwood Ave / Meade County Road 7	Elk Creek Rd	I-90	Widen 2 to 4 lanes (Principal)	**63**	$294,000	Medium/ Long Term	Intersection improvements by 2030. See project 2 in pennington county and meade county. $11,720,000 of total cost unfunded
3	Haines Ave / Meade County Road 9	Elk Creek Rd	North of Mall Dr	Widen 2 to 4 lanes (Principal)	**63**	$498,000	Medium/ Long Term	Intersection improvements by 2030. See project 3 in pennington county and meade county. 11,000,000 of total cost unfunded
9	Lacrosse St	Seger Dr	Disk Dr	Widen 2 to 4 lanes (Principal)	**53**	$1,003,000	Medium/ Long Term	
37a	Sherdian Lake Rd	West Main St	Canyon Lake Dr	Widen 2 to 4 lanes (Principal)	**53**	$720,000	Medium/ Long Term	Construct with 37, 37b
20	Fairmont Blvd Extension	Cambell St	Southeast Connector	New 2 lane Minor Arterial	**50**	$0	n/a	Developer funding total cost $3,119,000. See project 20 in Pennington County
33	5th St Extension	Catron Blvd	Lamd Rd	New 4 lane Principal Arterial	**47**	$1,000,000	Medium/ Long Term	Construct with Alt 44; partial Rapid City annexation?. See project 33 in Pennington County
18	Concourse Dr	Eglin St	East Anamosa St	New 2 lane Minor Arterial	**47**	$0	n/a	Developer funding total cost $4,389,000
17	Mickelson Dr Ext	Homestead St	East Anamosa St	New 2 lane Minor Arterial	**47**	$0	n/a	Developer funding total cost $2,674,000
12	Mt. Rushmore Rd	Main St	Cathedral Dr	Widen 4 to 6 lanes (Principal)	**43**	$3,008,000	Medium/ Long Term	
10	Lacrosse St	I-90	Anamosa St	Widen 4 to 6 lanes (Principal)	**43**	$1,003,000	Medium/ Long Term	
51	Mountain View Rd	Jackson Blvd	Omaha St	Widen 4 to 6 lanes (Principal)	**43**	$1,624,000	Medium/ Long Term	Check costs
37	Sherdian Lake Rd	Canyon Lake Dr	Jackson Blvd	Widen 2 to 4 lanes (Principal)	**43**	$1,440,000	Medium/ Long Term	Construct with 37a, 37b

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
5	Catron Blvd	Cambell St	Mt. Rushmore Rd	Widen 4 to 6 lanes (Principal)	**43**	$9,800,000	Medium/ Long Term	See project 5 in Pennington County
44	Sammis Trail	US Hwy 16	Old Folsom Rd / Lamb Rd	New 2 lane Principal Arterial	**37**	$0	n/a	Developer funding total cost $15,120,000. See project 44 in Pennington County
19	Creek Dr Extension	Fairmont Blvd	Southeast Connector	New 2 lane Minor Arterial	**37**	$0	n/a	Developer funding total cost $2,674,000. See project 19 in Pennington County
21	Minnesota St Extension	Cambell St	Jolly Lane Extension	New 2 lane Minor Arterial	**37**	$0	n/a	Developer funding total cost $3,788,000. See project 21 in Pennington County
11	Elm Ave	Hanover Dr	E Catron Blvd	New 2 lane Minor Arterial	**33**	$0	n/a	Developer funding total cost $1,534,000
36	Reservoir Rd Extension	Twilight Dr	East Anamosa St	New 2 lane Principal Arterial	**33**	$0	n/a	Developer funding total cost $2,339,000. See project 36 in Pennington County
7b	Cambell St	East Anamosa St	East North Street	New 4 lane Principal Arterial	**27**	$1,196,000	Medium/ Long Term	Developer funding $1,404,000
16	Twilight Dr Extension	Reservoir Rd	Airport Crossover Rd	New 2 lane Minor Arterial	**27**	$0	n/a	Developer funding total cost $7,130,000. See project 16 in Pennington County
26	Seger Dr Extension	Dyess Avenue	Elk Vale Rd	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $2,339,000
28	Eglin St / Farnwood	Lacrosse St	East North Street	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $2,860,000
35a	Mall Dr Extension	Lacrosse St	Elk Vale Rd	Widen 2 to 4 lanes (Principal)	**23**	$6,480,000	Medium/ Long Term	Development will drive need for widening over life of plan
22	Carriage Hills Dr Extension	Corral Dr	Muirfield Dr	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $4,345,000. See project 22 in Pennington County
24a	East Anamosa St	Lacrosse St	East North Street	Widen 4 to 6 lanes (Principal)	**23**	$2,632,000	Medium/ Long Term	

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
27	Lacrosse St Extension	Seger Dr	Country Rd	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $2,339,000. See project 27 in Pennington County
7c	Cambell St	Eglin St / Farnwood Ave	East Anamosa St	New 4 lane Principal Arterial	**23**	$0	n/a	Developer funding $1,404,000. See project 7c in Pennington County. $1,196,000 of total cost unfunded
					Total	**$124,235,000**		

Table 6.4
Financially Constrained Roadway Improvements
Pennington County

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
1	I-90	Elk Creek Rd	Lacrosse St	Widen 4 to 6 lanes (Interstate)	**87**	$0	Long-Term	Implementation 2020-2030. See project 1 in Rapid City and Meade County
2	Deadwood Ave / Meade County Road 7	Elk Creek Rd	I-90	Widen 2 to 4 lanes (Principal)	**63**	$114,000	Medium/ Long Term	Intersection improvements by 2030. See project 2 in rapid city and meade county. $11,720,000 of total cost unfunded
3	Haines Ave / Meade County Road 9	Elk Creek Rd	North of Mall Dr	Widen 2 to 4 lanes (Principal)	**63**	$100,000	Medium/ Long Term	Intersection improvements by 2030. See project 3 in rapid city and meade county. $11,000,000 of total cost unfunded
20	Fairmont Blvd Extension	Cambell St	Southeast Connector	New 2 lane Minor Arterial	**50**	$0	n/a	Developer funding total cost $3,119,000. See project 20 in Rapid City
33	5th St Extension	Catron Blvd	Lamb Rd	New 4 lane Principal Arterial	**47**	$6,280,000	Medium/ Long Term	Construct with Alt 44; partial Rapid City annexation?
5	Catron Blvd	Cambell St	Mt. Rushmore Rd	Widen 4 to 6 lanes (Principal)	**43**	$0	Medium/ Long Term	
42	Anderson Rd Extension	East Anamosa St Extension	Twilight Dr	New 2 lane Minor Arterial	**43**	$0	n/a	Developer funding total cost $2,756,000
44	Sammis Trail	US Hwy 16	Old Folsom Rd / Lamb Rd	New 2 lane Principal Arterial	**37**	$0	n/a	Developer funding total cost $15,120,000. See project 44 in Rapid City
19	Creek Dr Extension	Fairmont Blvd	Southeast Connector	New 2 lane Minor Arterial	**37**	$0	n/a	Developer funding total cost $2,674,000. See project 19 in Rapid City
21	Minnesota St Extension	Cambell St	Jolly Lane Extension	New 2 lane Minor Arterial	**37**	$0	n/a	Developer funding total cost $3,788,000. See project 21 in Rapid City

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Priority	Comments
36	Reservoir Rd Extension	Twilight Dr	East Anamosa St	New 2 lane Principal Arterial	**33**	$0	n/a	Developer funding total cost $2,339,000. See project 36 in Rapid City
16	Twilight Dr Extension	Reservoir Rd	Airport Crossover Rd	New 2 lane Minor Arterial	**27**	$0	n/a	Developer funding total cost $7,130,000. See project 16 in Rapid City
41	East Anamosa St Extension	Reservoir Rd	Airport Crossover Rd	New 2 lane Principal Arterial	**27**	$0	n/a	Needed for connectivity. Developer funding total cost $8,848,000
22	Carriage Hills Dr Extension	Corral Dr	Muirfield Dr	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $4,344,000. See project 22 in Rapid City
27	Lacrosse St Extension	Seger Dr	Country Rd	New 2 lane Minor Arterial	**23**	$0	n/a	Developer funding total cost $2,339,000. See project 27 in Rapid City
29	Anderson Rd Extension	Twilight Dr	Longview Rd	New 2 lane Minor Arterial	**23**	$0	n/a	Needed for connectivity. Developer funding total cost $1,820,000
					Total	**$13,820,000**		

Table 6.5
Financially Constrained Roadway Improvements
Meade County

ID	Corridor	From	To	Description	Evaluation Score	Cost (2005 $$)	Priority	Comments
1	I-90	Elk Creek Rd	Lacrosse St	Widen 4 to 6 lanes (Interstate)	**87**	$0	Long Term	Implementation 2020-2030. See project 1 in Rapid City and Pennington County
38	Elk Creek Rd	I-90	Deadwood Ave / Meade County Rd 7	Widen 2 to 4 lanes (Principal)	**67**	$2,508,000	Medium/ Long Term	geometric and intersection improvements; center turn lane in some sections. $9,492,000 of total cost unfunded.
30	Mill Rd Extension	Deadwood Ave / Meade County Rd 7	N. Haines	New 2 lane Minor Arterial	**67**	$4,800,000	Medium/ Long Term	no data available, but appears warranted to N. Haines Ave. $9,500,000 of total cost unfunded
2	Deadwood Ave / Meade County Road 7	Elk Creek Rd	I-90	Widen 2 to 4 lanes (Principal)	**63**	$592,000	Medium/ Long Term	intersection improvements by 2030. See project 2 in Rapid City and Pennington County. $11,720,000 of total cost unfunded.
3	Haines Ave / Meade County Road 9	Elk Creek Rd	North of Mall Dr	Widen 2 to 4 lanes (Principal)	**63**	$402,000	Medium/ Long Term	intersection improvements by 2030. See project 3 in Rapid City and Pennington County. $11,000,000 of total cost unfunded
39	Elk Creek Rd	Deadwood Ave / Meade County Rd 7	Haines Ave / Meade County Rd 9	Widen 2 to 4 lanes (Principal)	**43**	$400,000	Medium/ Long Term	intersection improvements by 2030. $6,800,000 of total cost unfunded.
					Total	**$8,702,000**		

Table 6.6
Illustrative Projects

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Comments
47	Hwy 79 / Sturgis Rd	North of Knutson Ln	I-90	Widen 2 to 4 lanes (Principal)	**43**	$7,438,000	Meade County Portion not funded; Pennington County portion not fully funded. $5,522,000 of total cost unfunded.
15	Airport Crossover Rd	Terminal Dr	I-90	New 2 lane Minor Arterial	**40**	$9,274,000	Pennington County portion not funded completely. $3,648,000 of total cost unfunded

Table 6.7
Studies

ID	Corridor	From	To	Description	Evaluation Score	Public Cost (2005 $$)	Comments
34	Jackson Blvd Extension	West Omaha St	Main St	New 6 lane Principal Arterial	**23**	$0	Not recommended (Jackson Blvd. Extension Study)
8	5th St	Main St	St. Patrick St	Widen 4 to 6 lanes (Principal)	**33**	$0	See Alt 12; both alternatives not necessary
48	Outer South Loop Rd	Sheridan Lake Rd	Airport Crossover Rd	New 2 lane Minor Arterial	**33**	$0	Not necessary by 2030 but preserve ROW, study. Total cost $29,120,000 unfunded
50	West Outer Loop	Sheridan Lake Rd	Canyon Rd / Nemo Rd	New 2 lane Minor Arterial	**40**	$0	Check Costs/Alignment due to topography; feasibility? Study. Total cost $14,560,000 unfunded
49	West Loop Connector	Sheridan Lake Rd	Hwy 79 / Sturgis Rd	New 2 lane Principal Arterial	**47**	$0	Feasible?, study. Total cost $7,000,000 unfunded
14	Jackson Blvd	Main St	Mountain View Rd	Widen 4 to 6 lanes (Principal)	**57**	$0	Not recommended (Jackson Blvd. Extension Study). Total cost $1,154,000 unfunded
23a	West Anamosa St. Extension	Sturgis Rd	Plaza Dr. Ext	New 2 lane Minor Arterial	**67**	$0	Study, see Alts 23, 45, 46. Total cost $2,600,000 unfunded
46	Plaza Dr Extension	Sturgis Rd	Nemo Rd	New 2 lane Minor Arterial	**70**	$0	Study, see Alts 23, 23A, 45. Total cost $8,814,000 unfunded
23	West Anamosa St Extension	Plaza Dr. Ext	I-190	New 2 lane Minor Arterial	**97**	$0	Topographic Challenges. Must be constructed with Alt 23A and/ or Alt 45, see Alt 46 ; study. Total cost $6,640,000 unfunded
45	Plaza Dr	Anamosa St Extension	Sturgis Rd	New 2 lane Minor Arterial	**97**	$0	Not feasible due to mining claims, study, see Alts 23, 23A, 46. Total cost $8,840,000 unfunded

7. Intermodal Transportation Planning

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.

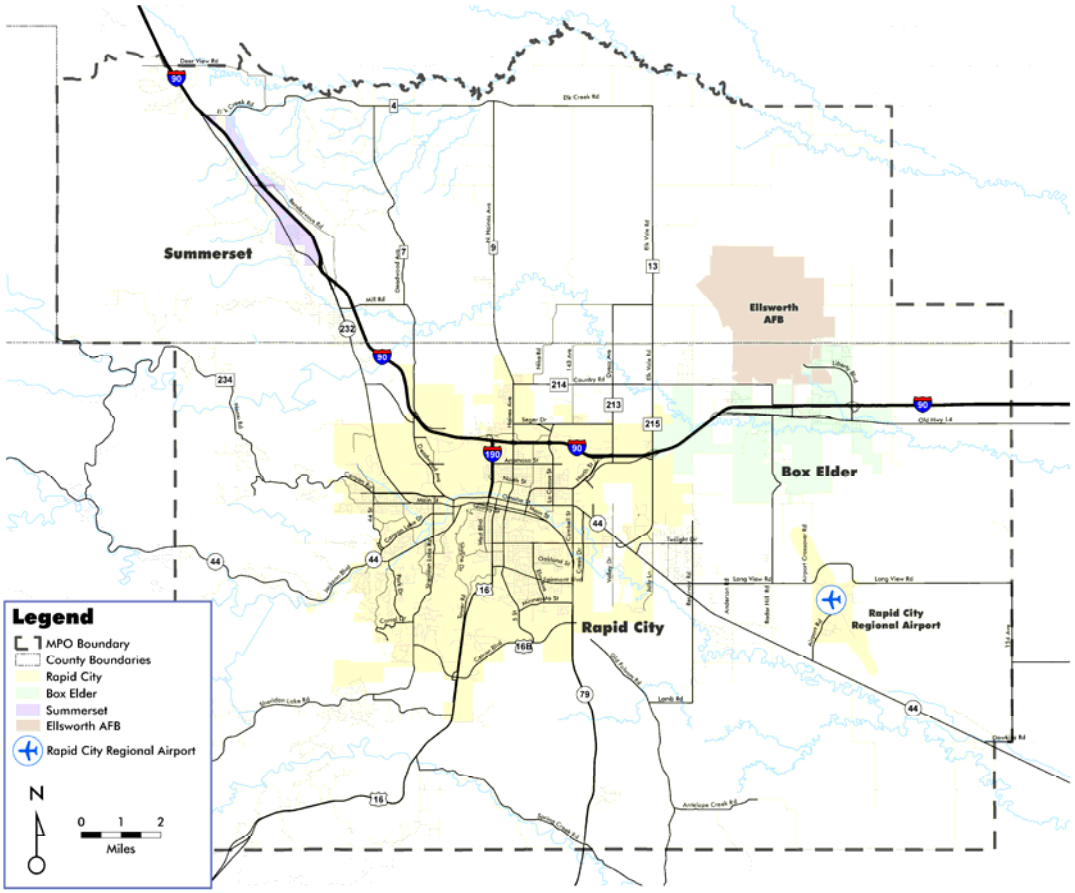
The Rapid City region fulfills a role as an important link in the regional, statewide, and national transportation system. At the local level, intermodal planning activities and ongoing improvements that address freight and other needs will help to maintain the region's economy and competitiveness.

Intermodalism is the concept that binds the modes together so that people and freight movements can be made in the most efficient manner possible. Beyond the basic 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. The *2030 Long Range Transportation Plan'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 System

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 and again in May 2004. It is available from the Rapid City Growth Management Department.



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 passengers annually. The Rapid City Regional Airport is a primary commercial service airport that now serves more than 202,000 passenger enplanements per year with projections up to 300,000 by the year 2017 based on Airport Master Plan forecasts.

During the development of the *2030 Long Range Transportation Plan*, 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;
- SD 44 is planned to be widened to 4 lanes between downtown Rapid City and Airport Rd.;
- a recreational path for pedestrians and bicyclists is planned for the abandoned railroad corridor adjacent to SD 44; and
- Airport Crossover Road (Illustrative Project) connecting directly north to I-90 was identified for implementation if additional funding becomes available. This corridor would provide additional access to the airport via a direct connection north to I-90.

Railroads

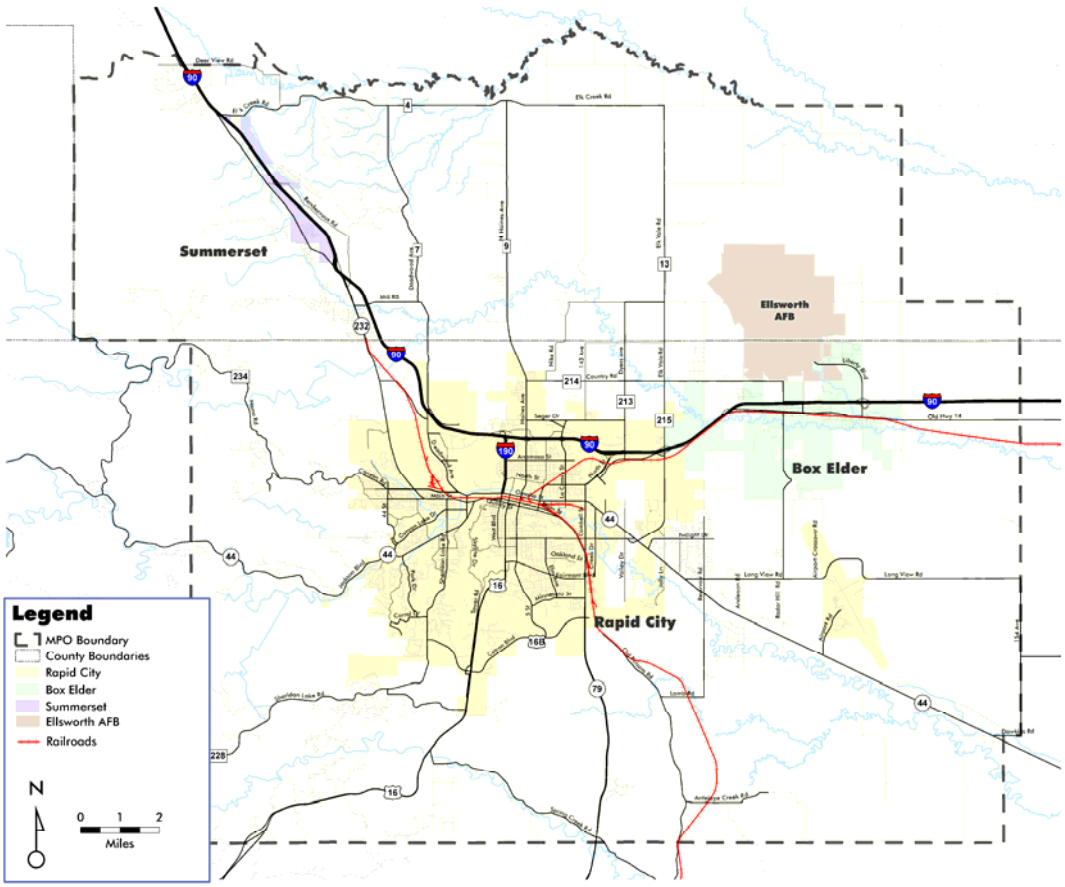
Rapid City is a key commercial center served by active rail lines of the Dakota, Minnesota & Eastern (DM&E) Railroad. The DM&E Railroad system is the largest contiguous Class II regional railroad system in the United States and the only regional railroad with connections to all major North American Class I railroads.

The DM&E Railroad has been in operation since 1986. The main line extends from the Mississippi River at Winona, Minnesota to Rapid City. From Rapid City, a line branches to the northwest to serve Belle Fourche, SD and Colony, WY. Another line branches from Rapid City south to Chadron and Crawford, Nebraska. Possible expansion of the DM&E in western South Dakota has been discussed.

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 Pedestrian and Bicycle Facilities Plan, this abandoned corridor is planned as a recreational path

along SD44 between downtown Rapid City and the Rapid City Regional Airport.

During the development of the *2030 Long Range Transportation Plan*, the railroad-related discussions included ongoing implementation of the Railroad Crossing Improvement and the Roadway Safety Improvement programs. One public comment was received regarding a desire to relocate the existing track from downtown Rapid City to a less intrusive location.

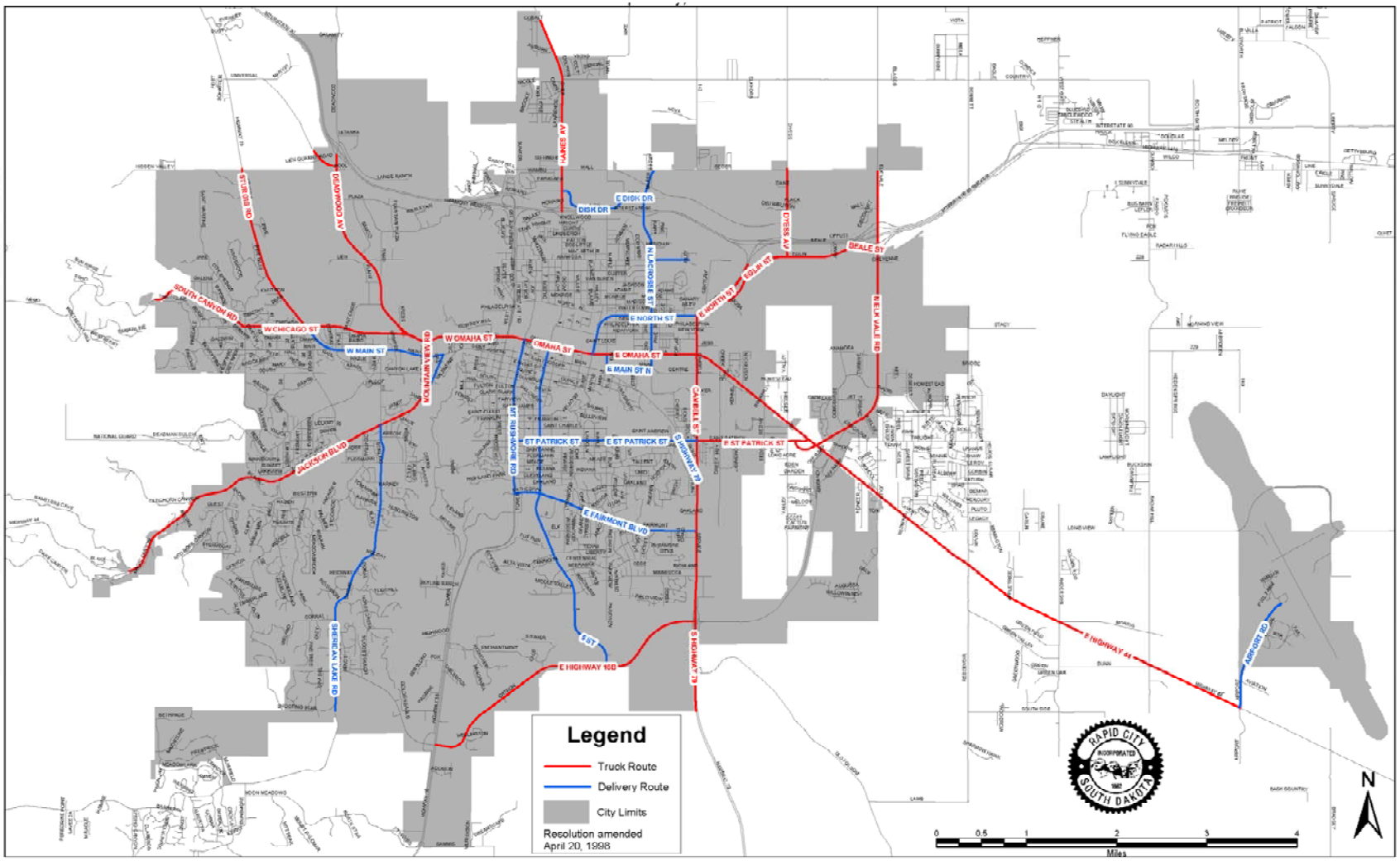


Freight Planning and Truck Routes

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 7.1 identifies the Truck Routes and Delivery Routes approved by the City Council of Rapid City. 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.

Figure 7.1
Truck Routes and Delivery Routes



Note: Map shows approved Truck and Delivery Routes at the time of printing and is subject to change. The Rapid City Growth Management Department will have the most recent map.

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. Currently, the Rapid City area does not have significant intermodal freight hubs, rail terminals, or pressing freight issues.

Intelligent Transportation Systems

The implementation of intelligent transportation systems in the region can improve 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. Future *Long Range Transportation Plan* development efforts should include an evaluation and prioritization of intelligent transportation system improvements.

8. 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 many aspects of a community's quality of life. It is important that the alignment, 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 protect public investments in community facilities and to protect and preserve the natural areas sensitive to development, the impacts of traffic and new roadway construction are measured 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.

Environmental Justice

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 the *Rapid City Area 2030 Long Range Transportation Plan*.

Guidance for evaluating environmental justice in planning and impact assessments is provided in several sources. The most relevant source for the *Rapid City Area 2030 Long Range Transportation Plan* is the Order 6640.23, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued by FHWA on December 2, 1998. The Order explains how FHWA-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.

Rapid City Area Demographics

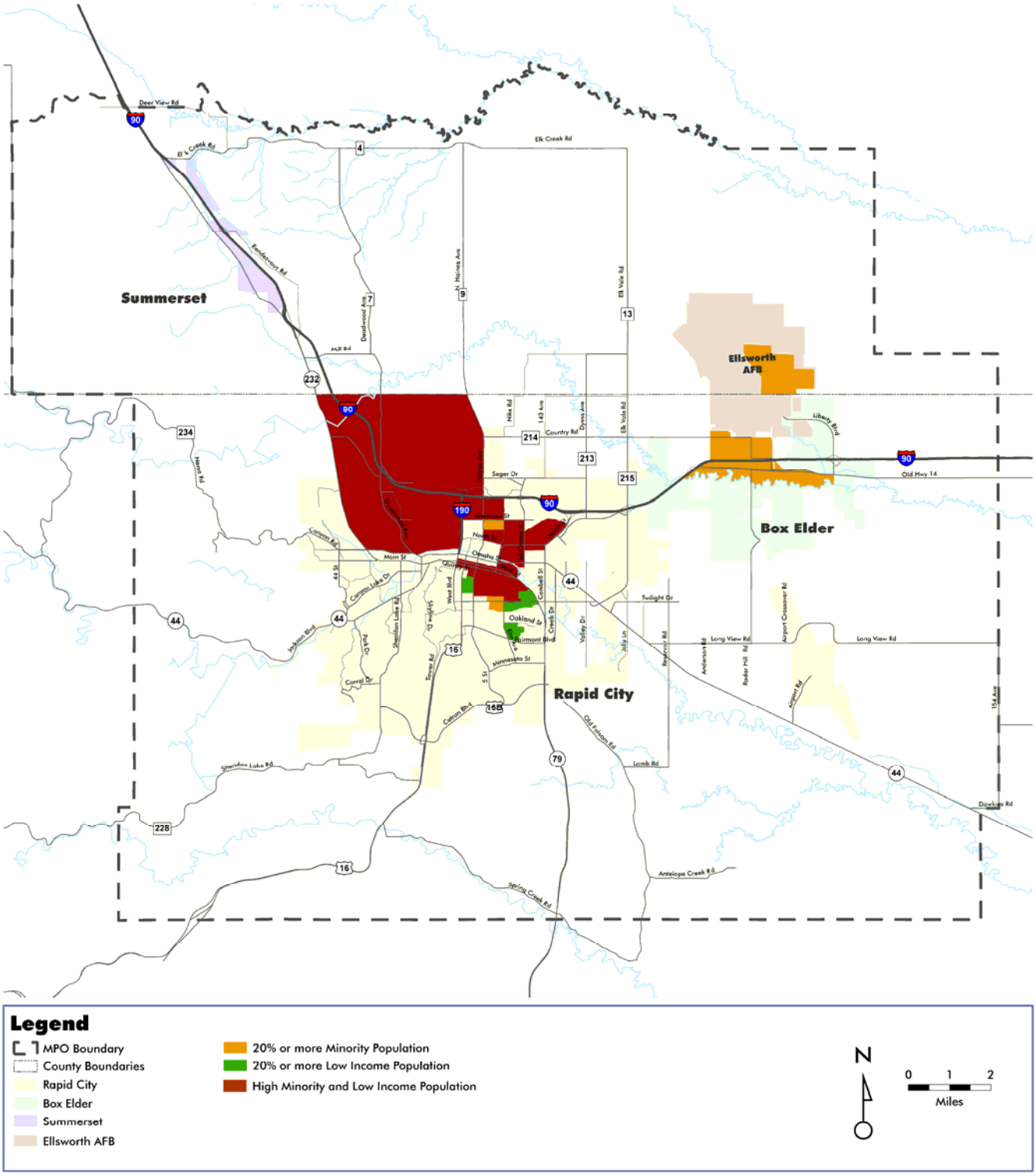
An overview of the ethnic and income characteristics of the City of Rapid City is presented in Figure 8.1 and Table 8.1. The table also provides data for the state and nation as a context for comparison to larger geographic areas. The 2000 census indicates that while the population of Rapid City is predominantly white (85 percent), minority populations comprise at least 20 percent of the residents in sixteen census block groups. The 2000 census also indicated that nearly 13 percent 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 percent or greater). The 20% definition is often used to identify locations of significant minority and low income populations.

Table 8.1
Socioeconomic Characteristics

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 8.1
Minority and Low Income Concentrations



Potential Effects of the Recommended Plan

In general, the Environmental Justice analysis for the *Rapid City Area 2030 Long Range Transportation Plan* 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. 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.

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 the *Rapid City Area 2030 Long Range Transportation Plan*. These impacts are summarized in Tables 8.2 and 8.3, and illustrated in Figures 8.2, 8.3, and 8.4.

Table 8.2
Environmental Justice Analysis
(Pennington County)

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
102.00	2	✓	✓	Arterial street widenings will increase the capacity of travel lanes. The widenings will be constructed to increase multimodal facilities, and the most recent safety standards will be applied. Possible relocation may occur to residents/businesses adjacent to the roadway widenings. Right-of-way needs should be closely scrutinized to minimize impacts to minority and low-income areas.	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	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
102.00	6	✓		The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
103.00	1	✓	✓	Interstate-90 borders this block group. 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.		
103.00	2	✓	✓	Interstate-90 borders this block group. 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.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
103.00	3	✓	✓	The West Anamosa Street extension should be studied further as a new arterial. While some environmental effects are possible, this area is generally undeveloped so impacts to target populations will be minimal. The new roadway will be constructed according to current urban street design standards, safety requirements, and increased provision of multimodal transportation.	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.
104.00	2	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
104.00	3	✓	✓	The East Anamosa Street extension and Campbell extension 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	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
105.00	3	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
105.00	4	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* 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
106.00	1		✓	The *Rapid City Area 2030 Long Range Transportation Plan* 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.
106.00	4		✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
107.00	1	✓	✓	The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
107.00	3	✓		The *Rapid City Area 2030 Long Range Transportation Plan* does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
108.00	1		✓	Mt. Rushmore Road borders this block group. The widening of Mt Rushmore Rd to 6 lanes is included in the *Rapid City Area 2030 Long Range Transportation Plan*. 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.		

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
109.03	1	✓		The Spruce Drive improvement and extension borders this block group and is proposed as a new facility. While some environmental effects are possible, the proposed alignment in this area follows the existing Spruce Drive and will not include additional travel lanes. Therefore, all improvements can be made with minimal impacts to the existing right-of-way width. The new roadway will be constructed according to updated urban street design standards, updated safety requirements, and increased service provision for multimodal transportation.	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.
114.00	3	✓	✓	Arterial street widenings will increase the capacity of travel lanes. The widening 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 widenings. Right-of-way needs should be closely scrutinized to minimize impacts to minority and low-income areas. 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. The West Anamosa Street and Hidden Valley Road extensions should be studied further as new arterials. While some environmental effects are possible, this area is 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.		

Table 8.3
Environmental Justice Analysis
(Meade County)

Tract	Block Group	Minority	Low-Income	Roadway	Transit	Bicycle and Pedestrian
202.00	2	✓		The Rapid City Area LRTP 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		✓	The Rapid City Area LRTP does not recommend any roadway improvements in this block group, so no impacts are anticipated.		
204.00	4		✓	The Rapid City Area LRTP does not recommend any roadway improvements in this block group, so no impacts are anticipated.		

Figure 8.2
Roadway Improvements

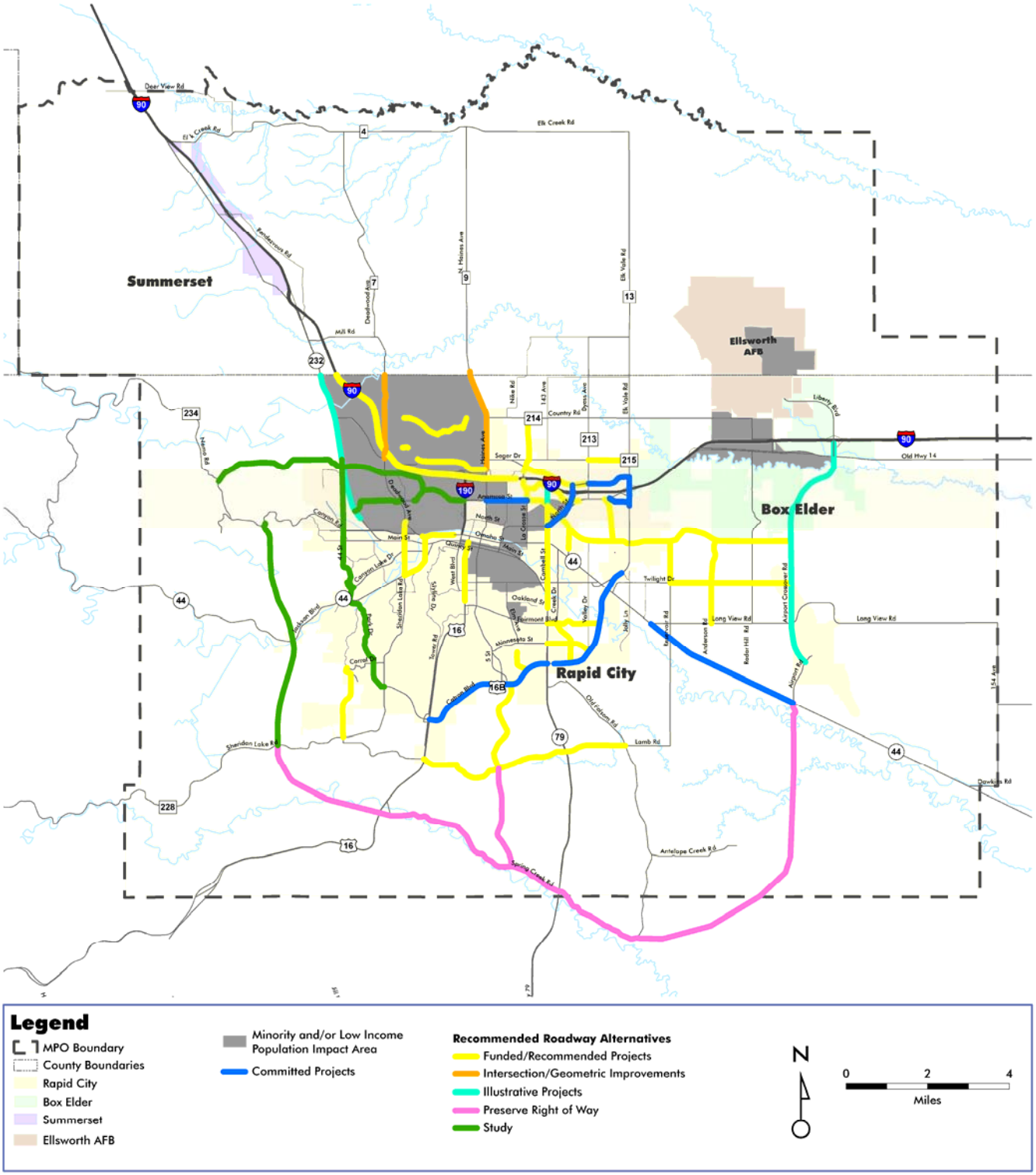


Figure 8.3
Pedestrian and Bicycle Improvements

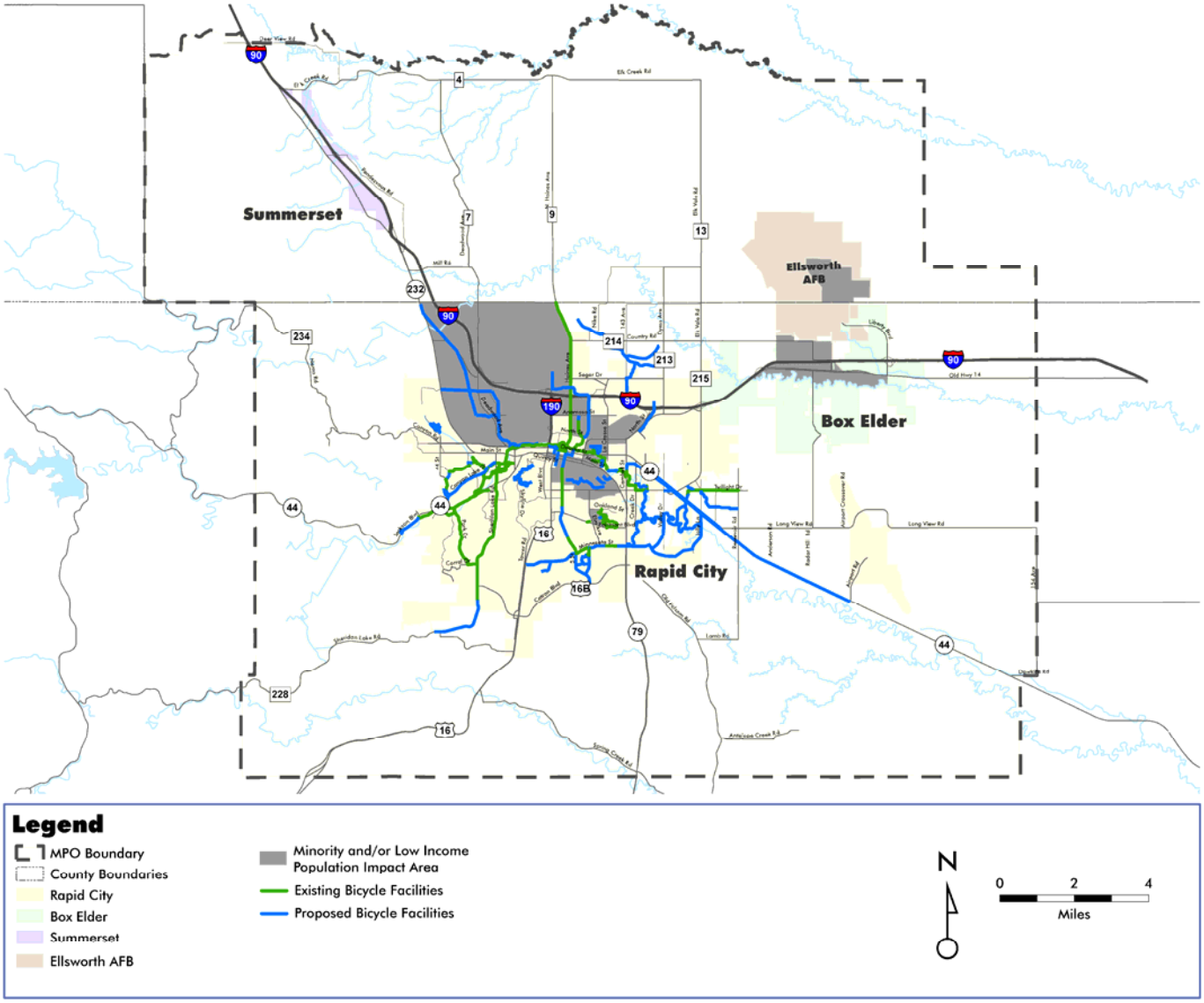
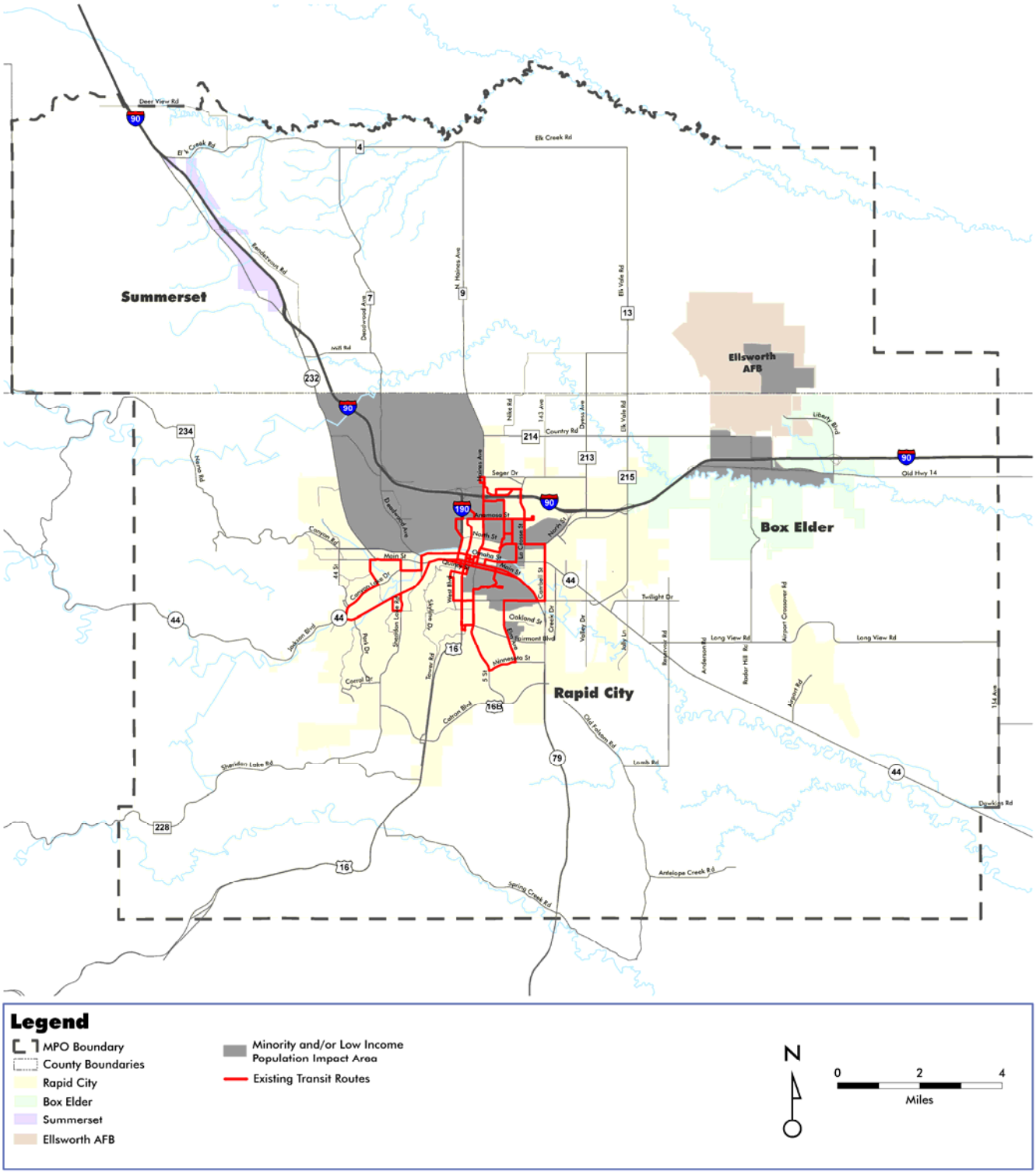


Figure 8.4
Transit System Bus Routes



The criteria used for the minority population impact study was based on Census 2000 census block group data with 20 percent or greater minority resident population per block group. Sixteen minority block groups may be affected. Table 8.2 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 percent 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, twenty-one census block groups include minority and/or low-income population concentrations that may be affected by the implementation of the *Rapid City Area 2030 Long Range Transportation Plan*. The transportation categories that have been analyzed are roadways, bicycle and pedestrian facilities, and transit services.

In conclusion, none of the transportation improvements recommended by the *Rapid City Area 2030 Long Range Transportation Plan* appear to have any adverse impacts to the identified minority or low-income populations. In fact, many of the improvements will have positive impacts to these populations in terms of increased access to the community and 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 *Rapid City Area 2030 Long Range Transportation Plan'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.

Floodplains and Wetlands

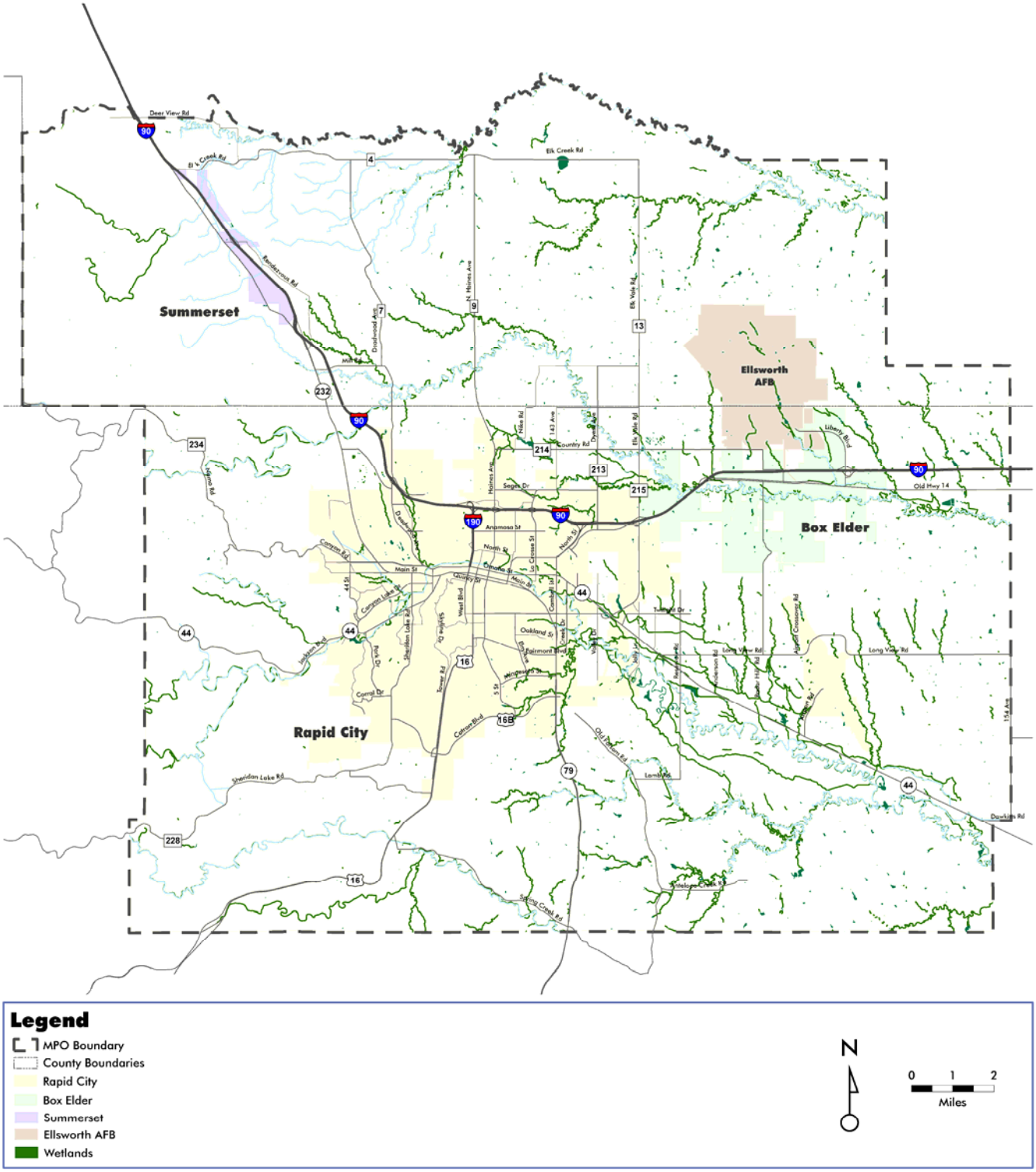
The development of roadways in or through floodplains, wetlands, or other environmentally sensitive areas is discouraged. When it has been determined that no other choice is feasible and a roadway expansion is necessary, the expansion will be undertaken only if it can be demonstrated that the improvement will have no negative impacts upon the environment or that negative impacts that are created will be mitigated. Wetlands and waterways are shown in Figure 8.5.

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.

In addition to floodplains and wetlands, other environmental factors might be considered in future efforts in which projects are evaluated, selected, and prioritized. Additional measures might include air quality, noise, groundwater, historic sites, and other factors.

Figure 8.5
Wetlands



Energy Conservation

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.

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 2030. 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 the *2030 Long Range Transportation Plan* will reduce energy consumption to some extent. Furthermore, additional investments in alternative modes consistent with may further reduce vehicle trips and their associated energy needs.

Transportation Planning and Livable Communities

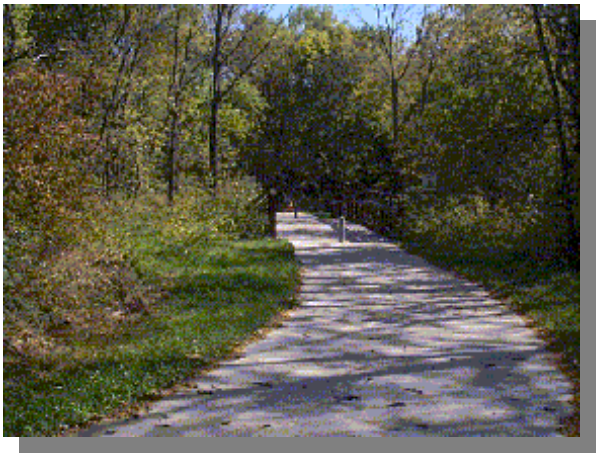
When we think of the components related to traffic that help create livable communities, we may think of issues such as traffic calming, street design, scenic road preservation, bicycle facility parking and design, public transit, transportation policies for planning and people, land use planning, parking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

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 at least the past fifty years, street and road projects have been treated solely as conduits for motor vehicles by state departments of transportation. The primary need was considered to be speed. Safety in roadway design has been developed to serve this need. Elevating this need above all other needs of real-life people has real-world implications to 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. 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 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 then 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 pretty much kissed off this half of their lot. The main reasons front yards have become more unlivable is 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 a neighborhood, 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 city or community-wide basis, everyone in the city or 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.

9. PLAN IMPLEMENTATION

The *Rapid City Area 2030 Long Range Transportation Plan* is an important document that drives the regional transportation planning process to a large extent. As Figure 9.1 shows, many planning activities and studies are necessary prior to the development of the *Long Range Plan,* and other events occur subsequent to the Plan's development and approval.

For example, it is necessary to forecast land uses and socioeconomic data (e.g., population, employment) before the Plan is prepared in order to determine long range transportation needs and solution. As the Plan is implemented, changes to the transportation system can be fed back into the previous assumptions of land use and demographic activity to heighten consistency in the planning process.

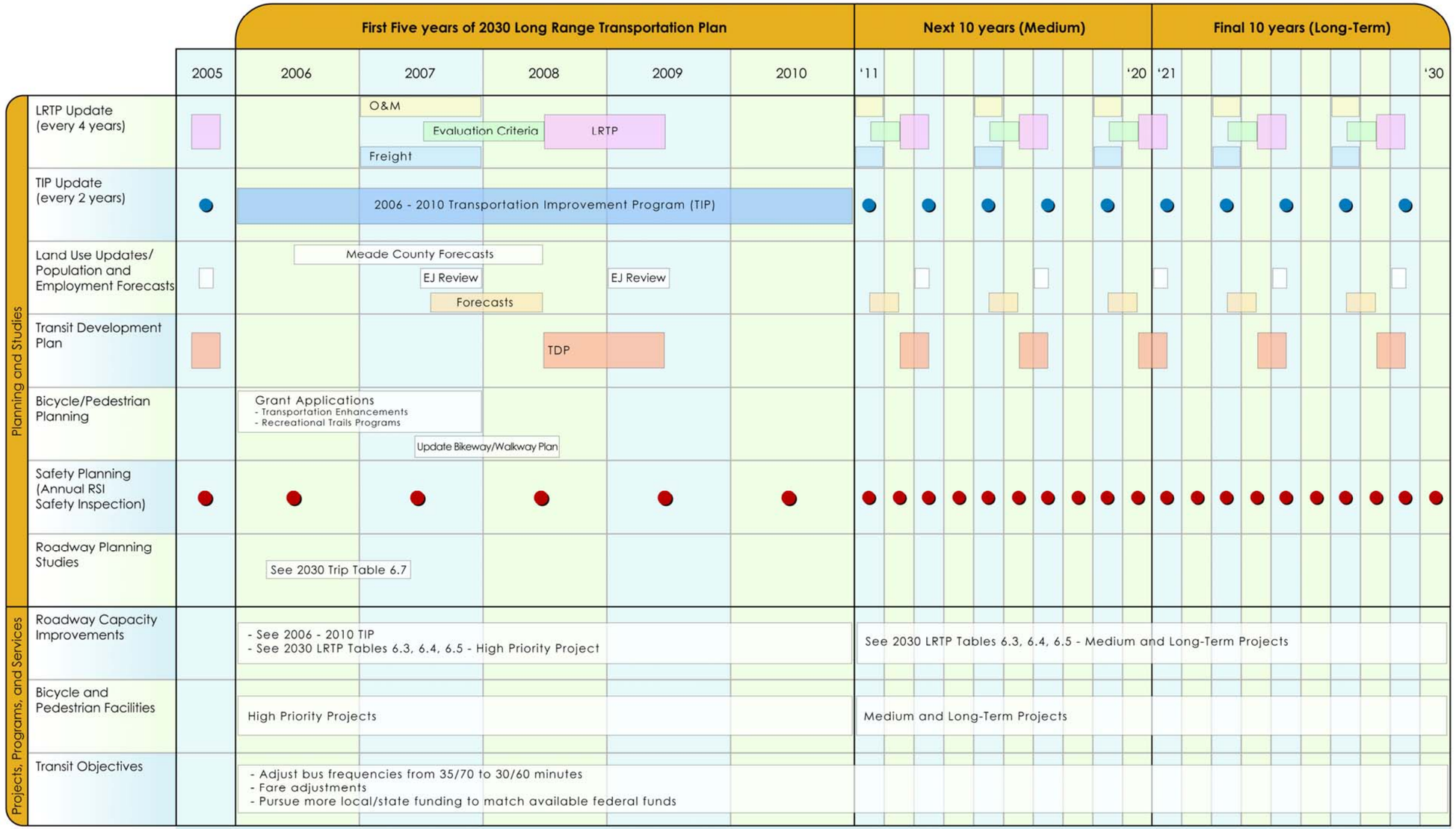
Figure 9.1 also recommends that the area's *Transit Development Plan* be developed concurrently with the *Long Range Transportation Plan.* This is a recommendation and is not absolutely necessary, but it makes sense in the ongoing planning and implementation processes for transportation facilities and services. Figure 9.1 is simply a recommended timeline for planning activities and implementation to occur, and it is subject to adjustment based on resource availability and changing conditions with regard to land use and the transportation system.

High Priority Projects and Objectives

Figure 9.1 identifies several planning activities and projects, programs, and services that are desired and recommended in the first five years (2006-2010) of the *Long Range Transportation Plan.* Among these recommendations are the following high priority planning activities:

- develop detailed household and employment for the portion of Meade County in the planning area;
- identify issues and costs associated with operations and maintenance of the transportation system;
- establish issues and information related to freight movements and needs;
- develop additional evaluation criteria (e.g., air quality, safety, energy consumption, etc.) to be used to evaluate, select, and prioritize projects in future planning efforts;
- pursue new and permanent funding for the Pedestrian and Bicycle Facilities Plan;
- update the *Bikeway/Walkway Plan*;
- continue collecting and reviewing high accident locations through the annual roadway safety inspection process;
- update the *Transit Development Plan*;
- update the *Long Range Transportation Plan*; and
- enhance the environmental justice process as part of the next Plan's development.

Figure 9.1
Plan Implementation Timeline (DRAFT)



Note: Plan Implementation Timeline is provided for reference only and subject to change.