CHAPTER 1: INTRODUCTION

RELEVANCE (WHY IS THIS PLAN NECESSARY?)

A long-range transportation plan is required to comply with federal and state laws and regulations for regional and statewide transportation planning. Transportation planning within metropolitan areas is defined by three major pieces of federal legislation: SAFETEA-LU[1], the current enactment of Federal transportation legislation, the Clean Act of 1990, and the Civil Rights Act of 1964. The current transportation plan, the *2030 Regional Transportation Plan* and its air quality conformity finding expired in November 2007. The Federal Highway Administration and the Federal Transit Administration granted PPACG an extension for final approval of the transportation plan until March 18, 2008. All transportation projects that use federal funds, or those that could significantly alter transportation within the designated metropolitan area, must be included in the plan. Although the long-range transportation plan is required for continuation of federal funding, its function is not regulatory; rather, it is to develop a strategy for the best use of public funds in meeting the goals of the community.

ISTEA and TEA-21, which preceded SAFETEA-LU, recognized the economic and cultural diversity of metropolitan areas emphasized the efficient use and preservation of existing transportation infrastructure, the synergistic relationship between all modes of transportation, the inclusion of private citizens and stakeholders in the planning process, and be financially constrained; meaning the transportation projects and strategies identified are backed by clearly specified federal, state, local, and/or private funding. They specified that long range transportation plans must plan for at least 20 years beyond its effective date of conformity issued by the Federal Highway and Federal Transit Administration, and use the latest available estimates and assumptions for population, land use, travel, employment, congestion, and economic activity (23 CFR 450.322). The transportation plan must be reviewed and updated every few years depending on air quality conformity status; and the MPO must demonstrate that the transportation activities included in the plan are consistent with the air quality goals established in the State Implementation Plan (40 CFR Part 93).

SAFETEA-LU, signed into law by President Bush August 10, 2005, reaffirmed all that ISTEA and TEA-21 set out to accomplish and added several other dimensions; strengthening environmental and planning linkages, encouraging better coordination and consultation with

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1 **S**afe, **A**ccountable, **F**lexible, **E**fficient **T**ransportation **E**quity **A**ct-A **L**egacy for **U**sers – Enacted in 2005

affected parties and other planning agencies, and adding detail to public participation requirements. It also shifts the evaluation of transportation systems from how well the system is physically operating to how well it is meeting the needs of its users in terms of moving people and goods, not vehicles. SAFETEA-LU requires that the following eight factors be reflected in metropolitan planning processes:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system;
- Increase the security of the transportation system;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- 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.

SAFETEA-LU is linked to the Clean Air Act Amendments (CAAA) of 1990. The CAAA recast the planning function to confirm that transportation planning will help and not hinder the region in meeting federal air quality standards. It encourages reduced auto emissions and fewer trips by single-occupant vehicles, and it promotes the use of alternative transportation modes, including transit and bicycles, as a viable part of the transportation system. Making receipt of all federal funding dependent on a region's ability to meet air quality standards reinforces the linkage between transportation planning and federal air quality standards.

Title VI of the 1964 Civil Rights Act (42 U.S.C. 2000d-1) states that ``No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on protected groups).

Presidential Executive Order 12898 (1994) directed each Federal agency to make Environmental Justice part of its mission. To implement this executive order, the U. S. Department of Transportation (DOT) directs its funding recipients to address the following fundamental environmental justice principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.

- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The *MOVING FORWARD 2035 Regional Transportation Plan* addresses new planning requirements of SAFETEA-LU. The Plan examines current regional conditions, takes into account updated socio-economic projections and changing growth patterns, and describes the financial resources available through current law and how well those resources will meet transportation system needs in the Pikes Peak Region through 2035. The form and functions of the multi-modal regional transportation system are described, the Pikes Peak Region's approach to coordinating planning concerns are presented, and the proposed fiscally constrained multi-modal system is listed. Mitigation and monitoring challenges and opportunities are defined; and projects that illustrate how the region would tackle unmet needs are listed. In its entirety, the *MOVING FORWARD 2035 Regional Transportation Plan* responds to the requirements for its composition and preparation process, and demonstrates conformity with applicable laws and regulations.

PLAN PURPOSE

The objective of long-range transportation planning is to provide a strategic framework for the development, operation, and management of the transportation system within the larger context of an area's social, economic, mobility, and environmental goals. Plans prepared within this framework must be flexible enough to adapt to changing economic and technological conditions and forward thinking enough to maximize return on investment, all while minimizing negative impacts.

Transportation planning itself is a process for balancing the links between mobility, accessibility, land-use, and socio-economic and ecological conditions to improve the quality of life for area citizens. This process is a coordinated effort between federal, state, and local governments and private transportation providers to continuously anticipate and respond to the comprehensive transportation needs of people and goods moving throughout the region. The *MOVING FORWARD 2035 Regional Transportation Plan* documents this process and presents the system improvements for all modes of transportation for the Colorado Springs metropolitan planning area through 2035.

The Pikes Peak Region's transportation system provides a vital service to the community in providing its citizens access to basic services, fostering economic activity, and enabling access to and from areas outside the region. The Pikes Peak Region is home to a number of military facilities; therefore, its transportation system serves a crucial role in national security. The *MOVING FORWARD* transportation plan and process considers all these transportation needs and charts a course to develop a safe and efficient multi-modal transportation system for all those who travel in the region.

The Pikes Peak Area Council of Governments (PPACG), as the federally designated Metropolitan Planning Organization (MPO) for the Colorado Springs Urban Area, derives its authority from Title 23, United Stated Code 134. Formed in 1967 under the Colorado laws regarding regional planning[2] and inter-governmental contracting[3], PPACG is not a unit of local government. Rather, it is an organization of local governments whose purpose is to identify regional problems and opportunities, develop solutions, and make recommendations on region-wide strategies to deal with those issues. PPACG's Board of Directors, composed of 19 members from participating local and county governments, governs the MPO. The term "Pikes Peak Region" is used to refer the Metropolitan Planning Area (MPA) for the Colorado Springs Urbanized Area. Figure 1-1 is a map of the Pikes Peak metropolitan boundaries and local jurisdictions.

MOVING FORWARD is the term the Pikes Peak Area Council of Governments (PPACG) uses to identify the Region's ongoing transportation planning process. The term is meant to communicate more than the process and its products, it is meant to challenge, inspire, and motivate its participants and to serve as a catalyst to engage the regional community in addressing its transportation needs. This concept is expressed in the Vision the Pikes Peak Region has adopted for its transportation system:

> *"Create a pre-eminent multi-modal transportation system that meets regional mobility and accessibility expectations as essential elements of the Pikes Peak Area's quality of life."*

The *MOVING FORWARD 2035 Regional Transportation Plan* describes the multi-modal transportation system components designed to facilitate mobility of people and goods throughout the region. The plan also identifies how the transportation system as recommended therein assures maintenance of national ambient air quality standards (NAAQS)[4] and meets the mobility needs of persons with disabilities. The *MOVING FORWARD 2035 Regional Transportation Plan* is fiscally constrained and identifies funding sources that are reasonably anticipated to be available to implement the transportation improvements for the period of time it addresses, which is 2005 to 2035.

Chapter 2, *MOVING FORWARD* Planning Framework discusses the public process in-depth. PPACG's committee structure provides continuing opportunities for involvement of and consultation with representatives of agencies involved in planning concerns relative to transportation in the Pikes Peak Region. A committee made up of citizens, the Community Advisory Committee, is the lead committee for ongoing input and review of public participation activities and input. PPACG's committee meetings are open to the public and each agenda sets aside time for public comment on any matter and for public comment on each item before any action is taken. Figure 1-2 illustrates the PPACG advisory committee structure.

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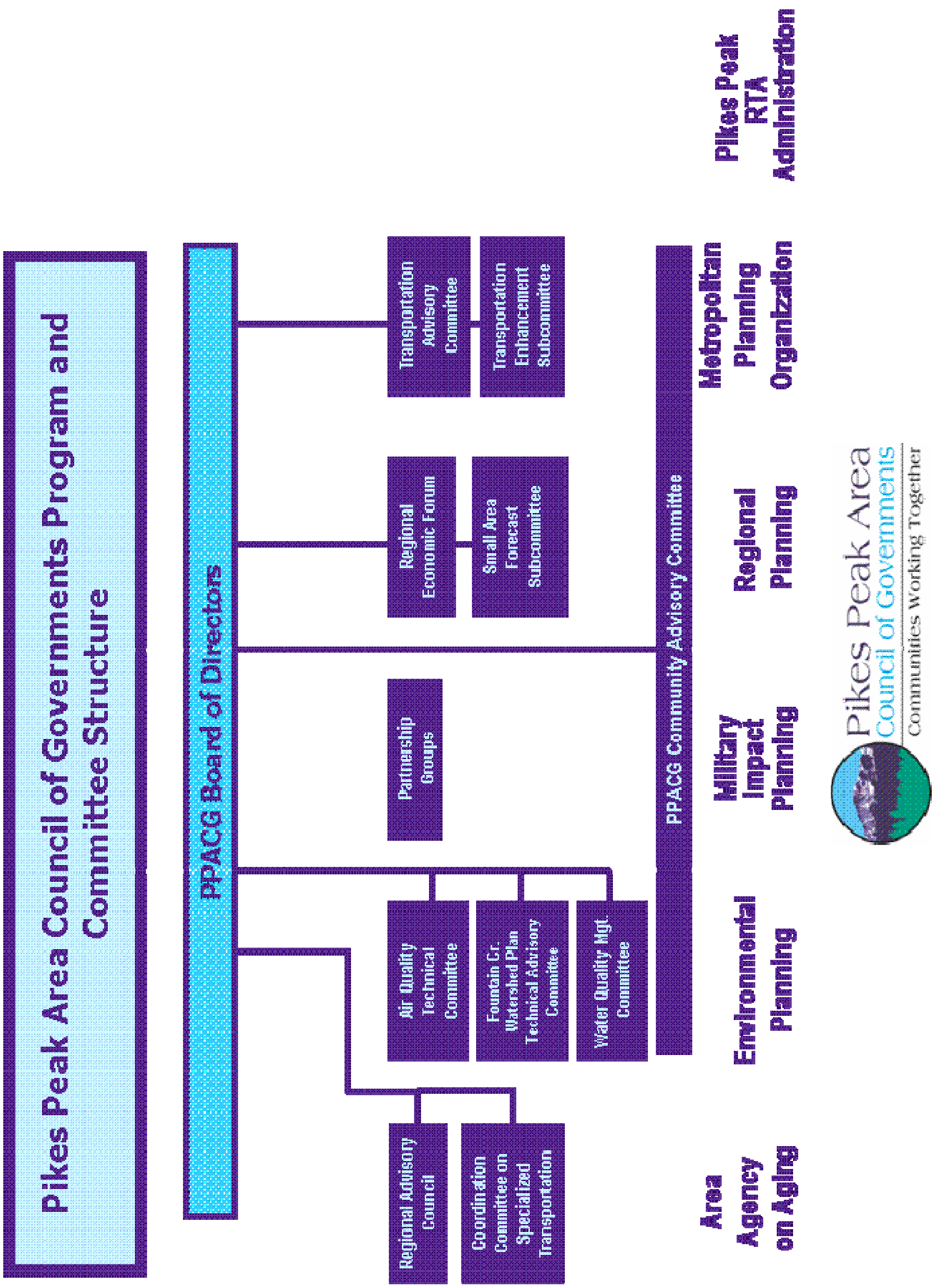
2 CRS 30-28-105.
3 CRS 29-1-203.
4 Clean Air Act, as Amended, 1990, Title 1.

FIGURE 1-1: THE PIKES PEAK METROPOLITAN PLANNING AREA

FIGURE 1-2: PPACG ADVISORY COMMITTEE STRUCTURE



PLAN SCOPE

The *MOVING FORWARD* 2035 *Regional Transportation Plan* communicates the components of plan development and presents a conceptual schedule for implementing transportation system improvements within the metropolitan planning area in the next 27 years. Chapter 2 identifies the region's vision, mission, principles, and goals for its transportation system; and it describes the process for completing the multi-modal evaluation of the projects proposed for inclusion in the plan. Chapter 4, the financial plan, demonstrates the availability of resources to implement the recommendations of the plan. The fiscally constrained plan is presented in Chapter 12, and the evaluation process to determine its compliance with United States Department of Transportation and Environmental Protection Agency joint transportation conformity rule[5] is detailed in Appendix A.

DOCUMENT ORGANIZATION

The Pikes Peak Area Council of Governments' *MOVING FORWARD 2035 Regional Transportation Plan* is an update to the current long-range transportation plan, *2030 Regional Transportation Plan*, which was adopted in October 2004. *MOVING FORWARD* is composed of three volumes:

1) *MOVING FORWARD 2035 Plan Executive Summary*;
2) *MOVING FORWARD 2035 Regional Transportation Plan* containing fourteen chapters; and
3) *MOVING FORWARD 2035 Plan Appendices*. These thirteen appendices provide supporting documentation.

NEXT STEPS

In transportation planning endeavors, there are steps that get out of sync and/or take more time than planned, provide unexpected challenges or results, raise new concerns or opportunities, or fail to meet expectations in one or more areas. All participants, observe things that could have been handled more effectively and perhaps, more expeditiously, but the immediate concerns may be the next committee or public meeting, providing products on time, or responding to questions from participants. Capturing these observations and "mining" this information can provide a valuable resource for improving the planning process. The best time to do this is while the thoughts are still fresh in the minds of participants.

When the *MOVING FORWARD 2035 Regional Transportation Plan* has been finalized, an evaluation process will be conducted with PPACG's advisory committee members and other participants to discuss how well expectations were met, what techniques were the most successful or not, and what would we like to see implemented in the next plan update process. This evaluation process will help to determine our progress in obtaining PPACG's public participation objectives what adjustments are needed to better facilitate a participatory transportation planning process.

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5 "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 USC or the Federal Transit Act."

A key part of many *MOVING FORWARD* participation activities was requesting participants to evaluate those activities and the information presented. Evaluation forms collected at open house public meetings, the Regional Transportation Roundtable, and focus groups will be used to assemble an initial set of data and participant observations to present to advisory committees and other interested parties. The Community Advisory Committee, as the lead committee for participation planning, will be asked to lead this discussion among members of other committees, PPACG staff, and other interested participants. The findings from these discussions can be used as a resource for future updates to PPACG's *Regional Transportation Planning Public Involvement Procedures*.

CHAPTER 13: MITIGATION AND MONITORING OF THE REGIONAL TRANSPORTATION SYSTEM

In the context of *Moving Forward*, environmental mitigation activities are broad strategies, policies, programs, and actions that serve to help avoid, minimize, or remediate the impacts to human and natural environments associated with the implementation of the regional transportation plan. The resource impacts identified in Chapter 3, Regional Setting, summarize general issues related to potential direct, indirect, or cumulative impacts of transportation investments within the region.

Due to the number of mitigation categories, not all of them are identified. If a category is not identified that does not mean that it is not valuable or necessary. The purpose of this effort is to encourage regional use of a coordinated adaptive planning process to identify issues that can be addressed proactively and concerns that can be mitigated or incorporated into projects in a manner that reinforces other planning efforts in the region.

The incorporation of mitigation into federally-mandated transportation planning means that this effort is not a one-time event that results in a single discrete output. Instead, it requires that the process become institutionalized and adaptive to the momentum and cyclical nature of regional needs and priorities. Therefore, the needed data gathering and public sector capacity-building should focus on analytical, participatory and political requirements that capture lessons from effective processes. This assistance needs to be sustained and focus on building inter-agency constituencies as well as public sector data and capabilities. There is only one federal source of funding for the transportation portion of this effort, STP-Metro. State and local sources can be used, but are in very tight supply.

FEDERAL REQUIREMENT

> *Apart of the consultation process, the long range plan shall include a discussion of types of potential environmental mitigation activities and areas to carry out these activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. (23 CFR Part 450.322(f)(7)).*
>
> *These activities shall be developed in consultation with Federal, State and tribal wildlife, land management, resource agencies and regulatory agencies. (23 CFR Part 450.322(g)).*

Federal Objectives

The SAFETEA-LU requirements are designed to provide a more consistent consideration of environmental issues at all stages of the transportation planning process. The environmental mitigation strategies and activities are intended to be regional in scope, and may not address potential project-level impacts. None of the changes in SAFETEA-LU alters how the National Environmental Policy Act (NEPA) relates to a long range transportation plan.

Planning for Mitigation

Planning in the context of complex interactions between social, economic, environmental, and political factors creates special challenges, especially when different stakeholder groups have conflicting interests. Simply put, it is much more difficult to mitigate a negative impact if there isn't agreement on what constitutes a negative impact. In the context of a voluntary Council of Governments such as PPACG, with a weak governance framework, issues require that PPACG utilize a continuous, iterative and adaptive process focused on improving information used in decision-making. The process needed to accomplish this is not a simple linear, technical process.

Instead, a planning process that identifies and adapts based on modeling, monitoring, and other research and analysis efforts adds value to other planning efforts and reinforces their effectiveness. Collaboration between different planning efforts, such as transportation planning, economic development, land-development, and wildlife conservation is critical because the impacts of policies will transect efforts.

Adaptive planning keeps evaluation processes flexible in order to better adjust to changing conditions. It is based on evaluating how social, economic, and ecological indicators are directly or indirectly changed by the real-world multitude of decisions, including transportation investment. It requires establishing the existing context, undertaking the needed analyses, involving the appropriate stakeholders, informing decision-making, and continuously monitoring and evaluating key indicators to improve both the process and the outcome.

In order for the indicators to be meaningful to different types of planning efforts a common set of metrics (indicators) focused on status and trends of resources of concern is necessary. It is imperative that these indicators are developed cooperatively with the partner agencies. Monitoring changes in key indicators not only provides information on whether a strategy or plan is delivering desired outcomes it also assists in the early identification of unintended impacts.

Development of a Green Infrastructure Plan for the Fountain Creek Watershed, especially as it relates to the Fountain Creek Vision, is the best method of bringing the diverse interest groups together to develop a concept that can be more easily funded.

MONITORING REGIONAL INDICATORS

There are two regional indicators projects underway in the Pikes Peak region. The first, the Pikes Peak Sustainability Indicators Project (PPSIP) was initiated by the Fort Carson Army Mountain Post in 2003 and Phase One was completed in 2006. The second effort, the United Way Quality of Life Indicators project, is an ongoing effort in its second year. Both are attached as Appendix K and described below.

- The PPSIP is a partnership between the Fort Carson Mountain Post and the governments, businesses and citizens of the Pikes Peak Region that host Fort Carson's primary operations. The objective of PPSIP's Phase One activity was an indicators report that provided participating governments with sufficient information, developed in a regionally collaborative manner, to determine whether the governments wished to adopt indicators as a community and/or regional management strategy, adopt indicators that are regionally consistent, and formally collaborate on regional indicators and solutions to key challenges.

- The El Paso County United Way Quality of Life Indicators project began in 2006 with more than 100 interested community leaders joining one of nine Vision Councils. Each Vision Council addresses a different functional area. The nine categories, listed below, cover a variety of areas that can be improved by providing information to improve public decision-making. The goal of the effort is to create positive action by tracking data that will help community members prioritize and make more informed decisions about where and how to invest time, talent and resources. The nine categories are:

    - Moving Around Efficiently
    - Growing a Vibrant Economy
    - Preserving the Natural Environment
    - Fostering Community Engagement
    - Keeping the Community Safe
    - Sustaining a Healthy Community
    - Promoting Social Wellbeing
    - Achieving Educational Excellence
    - Enjoying Arts, Culture, and Recreation

  "Quality of life factors are critical to a successful future. There are hundreds of examples of once desirable places to live that deteriorated because of controllable issues that local leaders did not recognize and address. By examining what makes El Paso County great, we can bring people together around the issues that count. It is easier to create broad coalitions when there are basic community goals we can all agree on."

PPACG will participate in the collection of primary data related to "Moving Around Efficiently" and utilize other indicators to inform the regional transportation planning process.

CONTEXT SENSITIVE SOLUTIONS

In 2006, PPACG adopted a Transportation Planning Principle that states the region will:

> *"Protect and enhance the environment by implementing transportation solutions that are sensitive to natural and human contexts."*

CSS is a different way to approach the planning and design of transportation projects. It is a process that balances the competing needs of many stakeholders from the earliest stages of project development. It is also flexibility in the application of design controls, guidelines and standards to design and construct a facility that is safe for all users regardless of the mode of travel they choose. Applying CSS to the planning and design of a transportation project can make the difference between a successful project valued by the community or an embattled project taking years to complete. There are many definitions of CSS but they share a common set of tenets:

- "*Balance safety, mobility, community and environmental goals in all projects;*
- *Involve the public and stakeholders early and continuously throughout the planning and project development process;*
- *Use an interdisciplinary team tailored to project needs;*
- *Address all modes of travel;*
- *Apply flexibility inherent in design standards; and*
- *Incorporate aesthetics as an integral part of good design*."

An effective CSS approach to transportation planning and project development can take many different forms, but will typically include the following key elements:

- Understanding the purpose of and need for the project;
- Stakeholder involvement at critical points in the project;
- Interdisciplinary team approach to planning and design;
- Objective evaluation of a full range of alternatives; and
- Attention to community values and qualities including environment, scenic, aesthetic, historic and natural resources, while also meeting the safety and mobility needs.

PPACG will work to implement Context Sensitive Solutions concepts at the long range plan and transportation improvement program level in the Pikes Peak Region.

TYPES AND LOCATIONS FOR MITIGATION

Discussions with resource agencies have led to PPACG considering the concept of off-site and out-of-kind compensatory mitigation in the Pikes Peak region. This concept could increase regional benefits by restoring a large resource or a complex of habitats that would accomplish other goals and avoid discontinuous mitigation sites that are surrounded by urban features and prone to anthropomorphic impacts.

A desire of the Pikes Peak Area Council of Governments is that transportation planning and decision making, including project selection, will be integrated and coordinated with land use, water, and natural resource planning and management. The identification of a full range of environmental concerns will occur early in the transportation planning and project development process. Resolution of impact mitigation concerns may emanate from development of a Green Infrastructure Plan in the Pikes Peak Region.

Natural Setting

Climate and Precipitation

It is possible for climate to influence the manner in which the region is developed. For instance, subdivisions can be designed to capture the sun and to be protected from the wind. Developments with steep street grades which face north can be a safety hazard in the winter. Climate is important for energy conservation and safety reasons and should be considered along with other physical factors in new development.

Globally, climate is indirectly affected by urban form to the degree that development patterns affect travel behavior. Combustion of motor vehicle fuel emits carbon dioxide, a greenhouse gas that helps trap heat within the atmosphere. Emissions of carbon dioxide from motor vehicles have been increasing over time, and transportation is projected to be the fastest growing source of carbon dioxide emissions of any sector. Communities in the Pikes Peak Region have agreed that global warming is an issue of serious concern and are attempting to encourage practices that reduce greenhouse gas emissions. Transportation examples of this include providing more transportation choices, reducing vehicle travel, and decreasing fuel use per trip. This includes decreases in traffic congestion and increases in the occupancy of vehicles.

Geology and Paleontology

The geology and topography of the region makes for impressive landscapes but its inherent nature also makes it susceptible to the risks and hazards that go along with it. Most of the City of Colorado Springs is built over Pierre Shale, a Cretaceous rock that is weak and prone to shrinking and swelling, especially on hillsides. Recently the City of Colorado Springs passed an ordinance requiring developers to address geologic hazards on any proposed site and to engineer ways to mitigate those hazards. The Colorado Geological Survey completed a landslide susceptibility map for the region which delineates which areas are prone to slope failure and which are not. City planners, consultants, developers, and homeowners can use this data as a tool for future development and for appropriate hazard mitigation. When exploitation of geologic resources is permitted, a proper work plan should include facets on future landscaping, future land use, erosion control, water and air quality management, revegetation, and slope stabilization. Areas of particular geologic interest and significance such as the hogbacks around Garden of the Gods or the Teepee Buttes south of Fountain should be preserved as unique, educational, land-mix features.

Prior to any transportation construction projects or maintenance activities, a paleontological assessment should be done consisting of a literature review of known sites and a field review to look for fossil remains. Information on the specific locations of paleontological sites is not available to the general public in order to protect these resources. Interested parties should instead cooperate with Colorado's State Historic Preservation Office or with natural history museums. All geologic units with paleontological potential should be identified and protected for scientific study and public education.

Landscape and Vegetation

Soils and Mineral Resources

Of the nearly 200 soils found within the area only 2 were identified as potential restoration soils. The Fluvaquentic Haplaquolls (Map Unit 29) and Apishaps Silt Clay (Map Unit Ap) are hydric soils located on terraces and the higher portions of floodplains with continual sources of groundwater supply. Due to landscape positions, these soils are elevated out of the immediate floodplain and are consequently not as prone to water erosion. These soils also readily support riparian vegetation. Soils not selected for potential restoration projects generally occur in cold climates, do not have consistent hydrology, have shallow depths to bedrock or contain exposed bedrock, are located on steep slopes and lack close proximity to riparian areas.

Plants such as western wheat grass which can tolerate salinity should be selected for restoration activities containing Apishapa Silt Clay soils. Plants selected for restoration activities should be based on the characteristics of these two soils. Soils that should be avoided in potential restoration activities generally do not have consistent hydrology, have shallow depths to bedrock or contain exposed bedrock, are located on steep slopes, lack close proximity to riparian corridors or are located in the middle of floodplains.

The best mitigation locations are areas where the two above-mentioned soils are present which include terraces, marshes and swales and floodplain steps. Transportation projects should avoid locations where restoration opportunities are available on these soils. Important characteristics of these soils include the ability to support wetland or riparian vegetation, have continual source of hydrology, not prone to water or wind erosion, close proximity to riparian areas and are easily accessible. The information on Fluvaquentic Haplaquolls and Apishaps Silt Clay soils will be combined with other information from other resource reports to pin-point specific areas suitable for restoration.

Vegetation

Vegetation impacts from transportation projects can have direct impacts on the ecological health of an area and cumulative impacts to wildlife and other issues. In addressing vegetation, mitigation strategies include:

- Re-vegetating impacted areas to replicate or enhance native vegetative communities.
- Plant native trees where feasible in proximity to locations where trees are removed.
- Minimize construction disturbances by implementing best management practices.
- Enhancing and restoring the existing conditions of the local vegetative communities.
- Fundamental structures and ecological processes will be reestablished and maintained across landscape.
- Areas that are impacted by road widening activity should be surveyed to minimize the potential disturbance.

Potential vegetation mitigation locations are closely tied to the type of wildlife that they are able to support. Colorado Natural Heritage Program (CNHP) designates Potential Conservation Areas (PCAs) which are areas that can provide habitat and ecological processes upon which a species or community depends for its continued existence**.** CNHP ranks PCAs according to their biodiversity significance. Of the 22 PCAs located in the study area, two are outstanding significance (B1), three are very high significance (B2), three are of high significance (B3), seven of moderate significance (B4), and seven of general significance (B5). These are listed in the Table 13-1 and shown in Figure 13-1.

Other potential conservation areas include those designated by:

- Colorado State Parks as natural areas because they consist of native plant communities, habitat for rare plants or animals, geologic formations or processes, and paleontological locations.

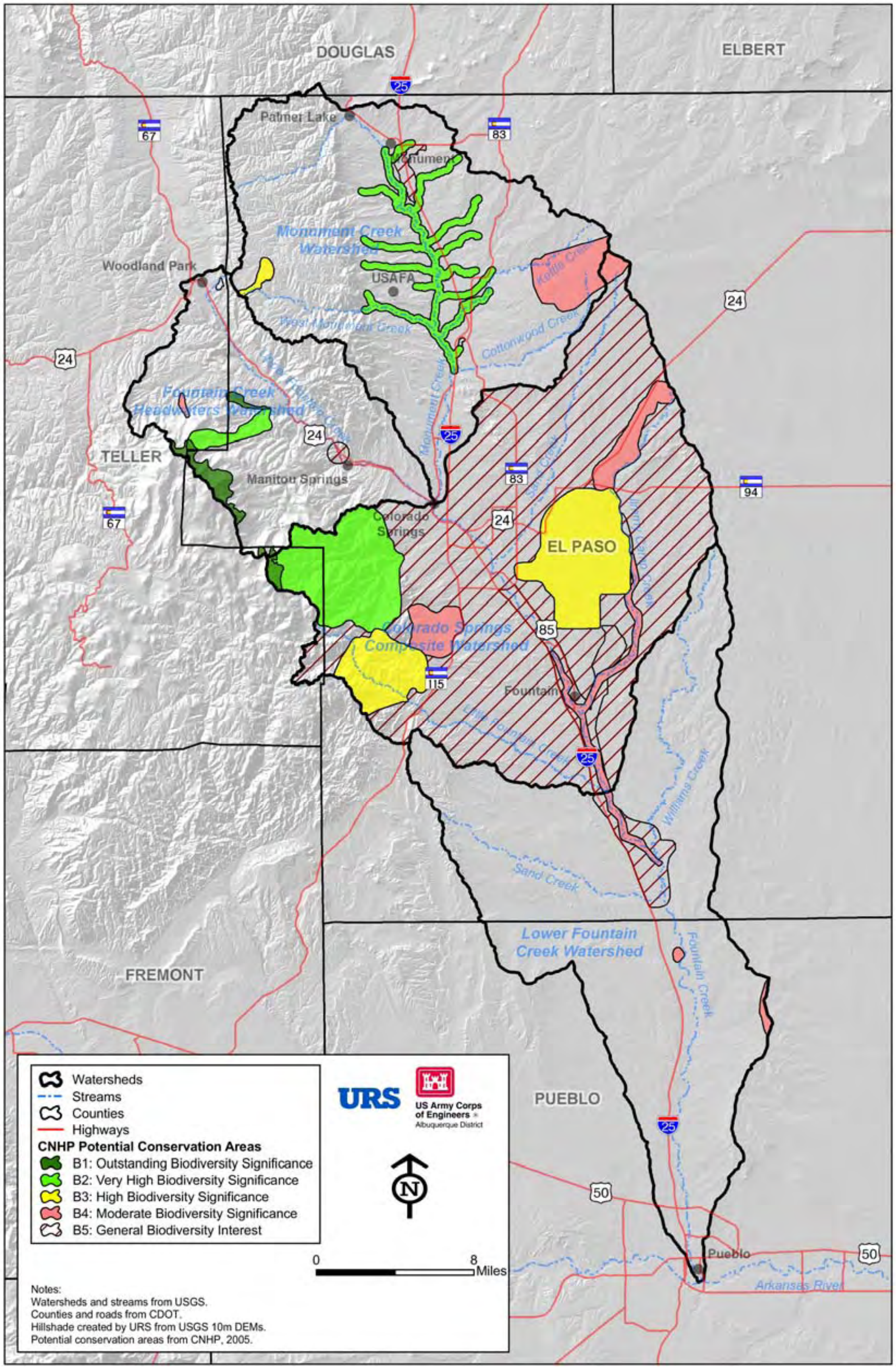
- Areas identified by USDA/USFS as Research Natural Areas (RNAs) where the primary management is for non-manipulative research. Two areas considered as RNAs are Gray Black Peak which encompasses 2,100 acres of ponderosa pine, mixed conifer and oak shrubland and Crystal Creek which is a 1,029 hectares montane forest habitat.

- Areas considered for conservation easements as part of the Colorado Open Lands and the Nature Conservancy Peak to Prairie Project which focuses on properties in southern El Paso County and Northern Pueblo County.

TABLE 13-1: POTENTIAL CONSERVATION AREAS

B1	B2	B3	B4	B5
Outstanding Significance	**Very High Significance**	**High Significance**	**Moderate Significance**	**General Significance**
Pikes Peak	Monument Creek	Farish Recreation Area	La Foret	I-25 Shamrock
Cascade Creek East	Severy Creek	Blue Mountain	Halfway Campground Site	Monument Southeast
	Cheyenne Canyon	Colorado Springs Airport	Cheyenne Mountain	Cave of the Winds
			Fountain and Jimmy Camp Creeks	Woodland Park
			Sand Creek Ridge	Fountain Creek
			Fountain Creek at Pinon	Widefield Mountain
			Midway Prairie	Marksheffel Road

FIGURE 13-1: POTENTIAL CONSERVATION AREAS



Wetlands

Wetlands (and riparian areas) are critical to the support and diversity of many flora and fauna, stabilize streambanks and act as a buffer strip to reduce stormwater runoff and reduce damage from erosion, sedimentation and flooding. Wetlands and riparian areas are critical to consider in reducing water volume because they act as energy and water absorbers, by spreading out fast flowing floodwaters, mitigating and minimizing the amount of damage. They act as a natural filtration devices to trap harmful water quality pollutants and sediments, and improve water quality. There are four different categories of wetlands present throughout the watersheds in the Pikes Peak Region – peatlands, marshes, wet meadows and riparian.

Under the CWA (Clean Water Act) and IWPA, the CDOT must demonstrate that all measures were taken to first avoid and then minimize impacts to wetlands to the fullest extent practicable. Unavoidable impacts are mitigated by way of wetland compensation through either restoration or creation of wetlands. CDOT uses the following Best Management Practices (BMPs) which are requirements of Section 107.25 of the Standard Specifications for Road and Bridge Construction to limit temporary impacts to wetlands:

- Construction, staging, fill material, equipment, etc. should be located outside of wetlands and riparian areas and at a minimum 15 meters outside of the high water mark.
- All practicable efforts should be used to avoid and minimize in-stream work.
- All measures should be taken to avoid excess application and introduction of chemicals.
- Geotextile fabrics shall be placed over existing wetland areas located within work areas.
- Temporary fencing should be installed in areas around the project area to protect wetlands and riparian areas.

Cities and counties also have requirements for construction activities around wetlands. Discharge of water directly into the streams from cofferdams or new channel construction is prohibited. Direct impacts to wetlands are typically offset by compensatory mitigation due to regulatory requirements in Section 401 and 404 of the Clean Water Act.

Implementation recommendations listed in PPACG's (2004) Water Quality Management (208) Plan to consider are:

- Protect critical stream environmental zones, floodplains, wetlands and riparian areas through zoning, acquired through conservation easements, land exchanges and development of transfer rights.

- Minimize wetlands disturbance and if disturbance is unavoidable, mitigation measures, such as preventing direct runoff, detention or infiltration of site runoff, and construction of new wetlands or enhancement of existing "poor quality" wetlands should be employed to achieve no net loss of wetlands.

- Plans for public or private infrastructure and investments should avoid floodplains, wetlands, riparian areas, steep erodible slopes, and geologic hazard areas to the maximum extent practicable (MEP).

- Section 401 and 404 permits should be reviewed for consistency with Regional Plans to determine potential impacts to critical areas.

Table 13-1 and Figure 13-1 shows PCAs which represent habitat that helps sustain rare, diverse, and/or significant ecological processes. Generally, the Colorado Springs area provides the greatest opportunity for the restoration of wetland/riparian areas. Many of the wetlands are in need of preservation due to high development pressure. Specific mitigation locations depend on many factors, such as the type of construction activity, vegetation type, health of the wetland area and if it is a wetland creation or wetland enhancement project.

The southern portion of El Paso County and Northern Pueblo County represent some of the greatest opportunities for the preservation of large quality wetland and riparian areas. One example of this is large plains cottonwood complexes along Fountain Creek, mixed with wetlands. Monument Creek Sub-Watershed also has smaller high quality wetlands ideal for preservation at the edge of rural areas that are being pressured by development. The criteria for high restoration potential include some level of undisturbed areas combined with a relatively large undeveloped area. Disturbance could include weed infestation, erosion, sedimentation, etc.

Hazardous Materials and Solid Waste

Although groundwater and surface water has been impacted by hazardous materials in numerous areas, the majority of these areas are currently being remediated. More information could be determined through a Phase I Environmental Site Assessment (ESA) which would include site visits, interviews with property owners, contact with state and local environmental agencies, and the review of historical sources such as historical aerial photographs, and historical topographic maps. This analysis will lead to a better understanding of any potential hazardous materials which will allow recommendations on any necessary remediation activities.

Many hazardous material facilities in the region have been cleaned up and have received “no further action” or “closure” status from the State of Colorado. Many of the remaining sties are open Leaking Underground Storage Tanks (LUSTs) that are currently being remediated under direction by the State of Colorado. The Corrective Action (CORRACT) and Comprehensive Environmental Response, Compensation and Liability Information Systems (CERCLIS) sites and some of the landfills are also currently undergoing soil and/or groundwater remediation. Although groundwater and surface water have been impacted by hazardous materials in numerous areas, the majority of the areas are currently being remediated. To more precisely determine impacts a Phase I ESA will have to be conducted.

Seismic Zones and Topographic Impacts

Improvements are constantly being made regarding the effects of seismic activity on transportation projects. Mitigation strategies regarding seismic zones include:

- Determine seismic zone areas and assess impacts on transportation projects
- Avoid building transportation projects or any type of activity in areas that have a high probability of seismic activity.
- Dealing with broader effects of ground shaking on actual structures and on preventing associated effects such as landslides.

Increase the seismic station coverage in Colorado, including a location at Colorado Springs to get a complete picture of the seismicity in Colorado. This will include detailed geologic site investigations. Areas where active faults are located are good possibilities for areas such as open space or agriculture uses which would have minimal possible impacts to transportation projects adjacent to such areas.

Maps showing a variety of hazards, including expansive soils, landslides, unstable slopes, and areas with mine subsidence risk can be viewed at: http://web.uccs.edu/geogenvs/Hazards/ Viewing these maps will allow a more precise determination of both natural hazards and potential topographic impacts.

Biological Resources and Issues

Wildlife Species, Viewing Areas and Crossings

Strategies for protection of wildlife species are also connected with wildlife habitat/vegetation. There are various types of conventional and non-conventional wildlife crossings:

- **SIMPLE SIGNS**: signs that warn the driver of potential wildlife on the road. This is the most common and least expensive, but still dangerous, method.

- **VARIABLE MESSAGE SIGNS (VMS):** similar to above, but only activated when needed. This option is best for less used roads with known seasonal migratory crossing.

- **CULVERT TYPE UNDERPASSES**: their principal design was for water movement, but can be easily adaptable as wildlife crossings. Culverts range from small to large sizes, but depending on the wildlife in focus, they are not always the right solution.

- **BRIDGE EXTENSIONS, OPEN-SPAN BRIDGES**: Where bridges already exist, animals may pass underneath along the low-terrain or riparian corridor. Incorporating this design into new and existing bridges is simple and encourages wildlife to use their preexisting migration routes which may limit habitat fragmentation.

- **WILDLIFE OVERPASSES**: While usually found in rural settings, an overpass provides the ideal crossing from the wildlife point of view. Typically the overpass consists of natural habitat vegetation and will seem as a natural extension of the terrain.

Sites have been identified by Colorado State Parks, Colorado Natural Heritage program (CNHP), wildlife viewing guides, local nature societies, and field experts as areas to observe wildlife and preserve as high quality wildlife habitat. These areas are currently protected as part of the Pike National Forest, city and county open space or parkland, or are on military bases and are subject to federal regulations. The wildlife viewing areas are: US Air Force Academy, Waldo Canyon Trail, Garden of the Gods, Bear Creek Regional Park, Red Rock Canyon Park, North Cheyenne Canyon Park, Fountain Creek Regional Park, Clear Springs Ranch, Fort Carson Military Installation, and Pueblo Area Wildlife Viewing Area. The locations of theses areas are shown on Figure 3-2, Important Wildlife Areas.

Major wildlife crossings exist within the urban area and at the boundary of developed and undeveloped land. Many species habitats currently are crossed by highways and roads. These include Highway 24 between 31st street west to Manitou Canyon, Highway 24, just south of Woodland Park, and Highway 115, from Colorado Springs to the El Paso County line.

Threatened and Endangered Species

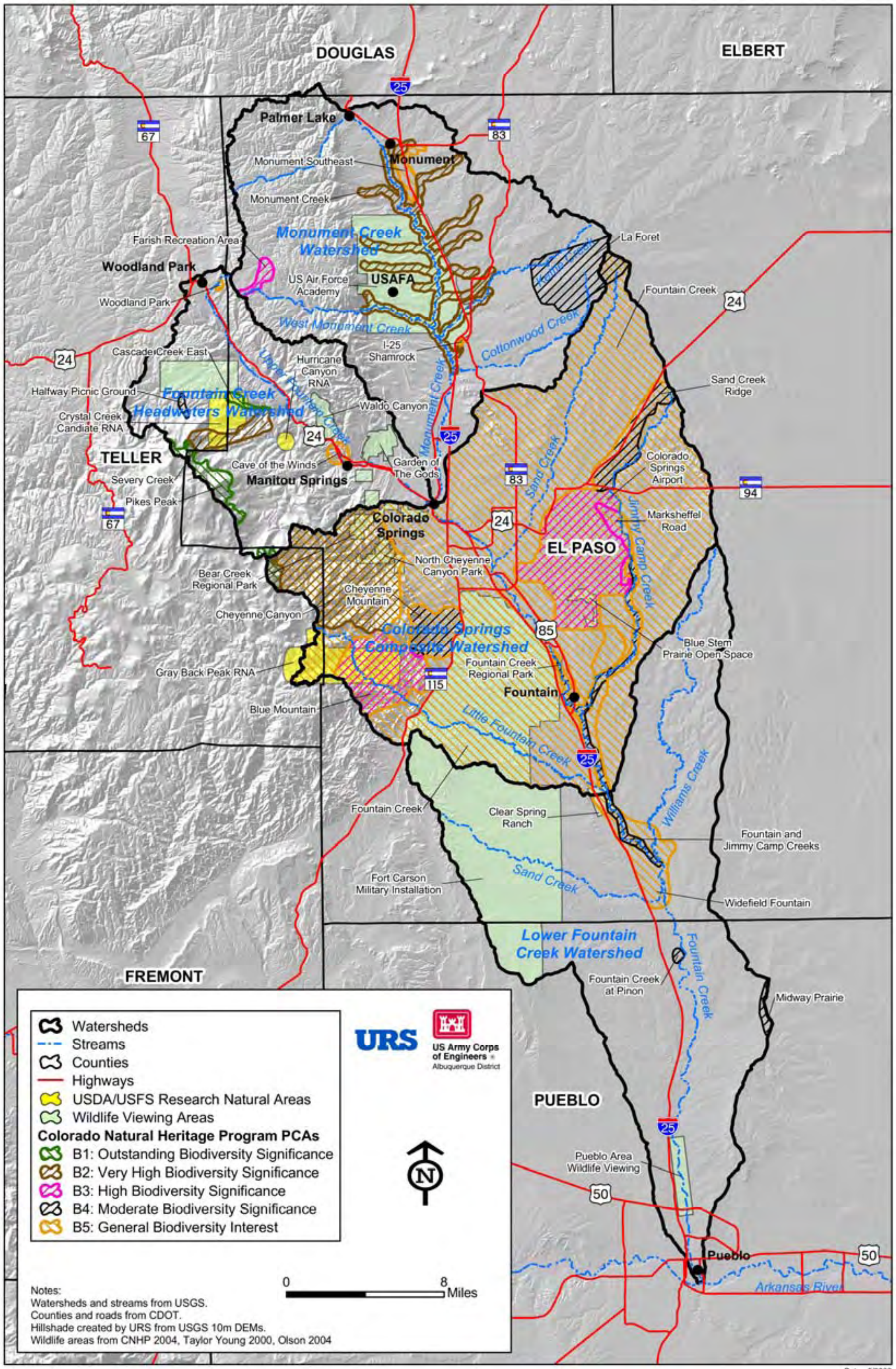
Protection of Threatened and Endangered Species are primarily governed by federal and state Regulations. Mitigation strategies are largely specific to the areas of concern and include:

- Creating wildlife crossings;
- Reducing habitat fragmentation;
- Limiting construction times to those appropriate for hibernation/migration;
- Establishing/restoring habitats as reserves or other protected wildlife areas; and
- Conduct monitoring to assure that disturbance areas do not exceed permitted amounts.

Federal Regulations include the Endangered Species Act (62 FR 27978, 1996). The purpose is to conserve and recover species in danger of extinction, and to cover the habitats and ecosystems these species depend upon. This is done by listing the species as either endangered or threatened. In the MPO there are, as shown in Table 2-6, 2 fish, 5 birds, 3 mammals, and 3 plants listed as threatened or endangered.

Locations are dependent on the species of concern. Targeting the detailed habitat ranges for the threatened or endangered species is essential to properly combating the issue and protecting the species. Of particular concern in this region is the Preble's Meadow Jumping Mouse which is known to be present in the I-25 corridor.

FIGURE 13-2: IMPORTANT WILDLIFE AREAS



Preble's Meadow Jumping Mouse

Suitable habitat for the Preble's Meadow Jumping Mouse is typically a dense combination of grasses, forbs, and shrubs and it hibernates near these riparian areas, usually from September or October to May. The western boundary is limited to below 7,600 feet. Preble's populations occur along Monument Creek and its tributaries, including West Monument, Teachout, Jackson, Beaver, Kettle, Cottonwood and Pine creeks. One of the most stable populations was discovered on the U.S. Air Force Academy (USAFA) property. The USAFA developed an Integrated Natural Resource Management Plan and a Conservation Plan and Agreement to improve and maintain habitat. The primary issues considered necessary to preserve the mouse are isolation of populations, habitat preservation, and potential for catastrophic events. Block Clearance Areas have also been established by the United States Fish and Wildlife Service in areas where the mouse habitat does not exist. Potential impacts from transportation projects include highway and bridge construction, destruction of habitat, and forming barriers to movement.

Migratory Populations

Most migrations, regardless of species, occur at predictable annual cycles. Timing transportation projects to reduce impact is a simple method for ensuring safety of migratory species. Also, for land animals, it is necessary to protect migration corridors and provide effective ways to pass through development and avoid road crossing.

The primary migratory corridors are along the main rivers and streams, and are most concentrated to the north of the city, where a lot of development is going to occur. These areas need to be looked at closely and carefully to examine the potential of habitat destruction by road building and development.

Invasive Species

To slow or reverse the proliferation of noxious weeds in the state, Colorado's governor issued Executive Order D006-99 requiring various agencies to develop weed management plans. Mitigation strategies include: implementation of a noxious weed management plan that incorporates appropriate methods developed for areas of ground disturbance.

CDOT has developed a standard protocol for weed management associated with highway projects which includes:

- Mapping of all weed species within a project area;
- Long term maintenance to control weed propagation;
- Re-establishment of native vegetation; and
- Weed eradication methods

Surface Water and Groundwater Issues

Stormwater Runoff and Impervious Surfaces

Imperviousness is an issue anywhere the natural ground surface is altered. Parking lots, roads, and buildings all interfere with natural filtration processes. Focused attention should be given to anywhere new roadways are planned to be constructed. The greatest percentage increase in impervious surface area will occur in the Jimmy Camp Creek and Sand Creek sub-watersheds and then Cottonwood Creek. Development trends in the north and to the east of the city of Colorado Springs are reaffirmed by these projections. Along with the increase in building of new developments comes the building of new roads in all the areas where construction projects are planned. All of these projects will dramatically increase the amount of impervious surfaces.

Identification of key filtration areas is necessary to reduce the issues that arise from imperviousness. At sites where infiltration must be preserved, stormwater ponds are a possible solution. Stormwater ponds collect runoff from roadways and other impervious surfaces and still allow the water to enter the ground, although at a nearby site. Possible mitigation strategies are shown in Table 13-1.

Given that the 2035 Regional Transportation Plan will increase the amount of impervious surfaces as well as the resulting effects, there are several management strategies which can be put into place to reduce the impacts of impervious surfaces onto the waterways. The first strategies are to put improvements right into the plans. The state of Colorado has developed a Non-point Source Management program to reduce the amount of pollutants in the waterways. In this, they suggest many BMPs, to help manage the construction and runoff of roads to reduce pollution in a feasible, economically viable way. It will be important to consider these BMPs when constructing and managing the 2035 Regional Transportation Plan, as they will help to maintain the health of the waterways. Below are a few examples (the full text can be found in Colorado’s Non-point Source Management Program):

- **IMPROVED GUTTER SYSTEM** - many projects already have this incorporated, but an improved gutter system would help manage stormwater and runoff. It could ideally replace ground water if constructed correctly, and it would also reduce the amount of overland flow and the amount of debris that is picked up by the flowing water.

- **HIGHWAY AND ROAD CONSTRUCTION** - the Colorado Department of Transportation has adopted an erosion control manual for all highway and road construction projects. The main points of the BMP are to protect areas that provide important water quality benefits that are susceptible to erosion or sediment loss to limit land disturbance. There are also inspection and general maintenance outlines to maintain the erosion and sediment release from a construction site.

- **STORMWATER QUALITY BMP** - For improving the quality of stormwater, the state recommends building grass swales and buffer strips, constructing wetlands, extending dry ponds and wet detention ponds, and making infiltration basins. These methods would improve the quality of storm water being released into the waterways, including storm runoff from roadways, so this BMP should be looked into.

TABLE 13-2: BEST MANAGEMENT PRACTICES

Erosion and Sediment Control BMP's	Stormwater Quality Management BMP's
1. Seeding and Mulching	11. Grass Swales
2. Surface Roughening	12. Grass Buffer Strips
3. Erosion Bales and Silt Fence	13. Constructed Wetlands
4. Berms, Diversions and Check Dams	14. Extended Dry Ponds
5. Inlet and Outlet Protection	15. Wet Detention Ponds
6. Slope Drains	16. Infiltration Basins
7. Erosion Control Blankets	
8. Channel Linings	
9. Sediment Traps	
10. Sediment Basins	

From the Colorado Non-point Source Management System, 2000

Erosion and Sedimentation

There are a broad range of potential watershed management practices designed to mitigate past and future problems based upon best management practices (BMPs). These are discussed in the previous section. When properly installed and maintained, BMPs play an important role in controlling non-point source pollution, thereby protecting water quality and riparian habitats, mitigating floods and maintaining stream stability. Several BMP manuals have been developed at national, regional and local levels.

- The Colorado Department of Transportation (CDOT) has developed an Erosion Control and Stormwater Quality Guide. Guidelines are given for the application, use limitations, design, construction, and maintenance of BMPs for erosion and sediment control, water quality and stormwater quality management.

- The City of Colorado Springs adopted the Drainage Criteria Manual, Volume 2, Stormwater Quality Policies, Procedures, and Best Management Practices (BMPs) for compliance with NPDES Phase I regulations. El Paso County has adopted similar measures to ensure compliance with the NPDES Phase II requirements.

Erosion is the primary concern for most of the headwater streams while sedimentation is a priority for many of the sections in the mainstem of Fountain Creek. Channel stability problems identified through the Army Corps of Engineers (ACOE) as preliminary recommendations are:

- **LIMIT SEDIMENT SOURCES** - Sand Creek; Cottonwood Creek, Eastern Tribs – Pine Creek, Black Squirrel Creek, Middle Trib, Monument Branch, Black Forest, Jackson Creek

- **PROTECT INFRASTRUCTURE** - Sand Creek, Cottonwood Creek, Pine Creek, Fountain Creek – Fountain Valley Park to Clear Springs Ranch, Fountain Creek – Monument Creek Confluence to Sand Creek Confluence and Monument Creek

- **STABILIZE STREAMS WITH CHANGED HYDROLOGY** - Monument Branch, Upper Cottonwood Creek – Above Rangewood, Teachout Creek, Elkhorn Creek, Black Squirrel Creek, Jackson Creek

- **PROTECT STREAMS WITH UNCHANGED HYDROLOGY** - Jimmy Camp Creek, East Fork Sand Creek – Above Constitution and Beaver Creek

Further information can be found in the ACOE recommendations found on the Fountain Creek Watershed website (www.fountain-crk.org)

Flooding and Floodplain Impacts

Restricting development on currently identified floodplains is an obvious strategy to minimize flood damage. Flooding is a natural event that is difficult to control. Flood control devices, such as levies, are an option, but are not always 100% reliable. Where projects cross onto existing floodplains, potential damage may be expected. Potential areas identified through the ACOE Watershed Study for flood risk reduction are: Pueblo Levee, Dam above Pueblo, Highway 24 Corridor (including Manitou Springs), Fountain/Monument Confluence to City Limits, Old Pueblo Road Corridor, Numerous Bridge Over toppings, Upper Monument Creek and Cheyenne Creek

Water Quality

Water quality is extremely important to the health of the land, the ecosystem, and human usage and is greatly affected by both point and non-source point polluters. Having good water quality makes it usable for wildlife and habitat preservation, recreation, drinking water supply, crop irrigation, and industry.

There are several segments on the 303d list for impairments of E. coli and Selenium, and they are closely watched for sediment loads. All of the projects must look at the potential effects to comply with the federally regulated standards and not add to the problem of more pollution in these waterways which affect the whole environment. Transportation projects will increase the pollutant loading to stream and riparian areas. Without mitigation strategies, the effect of pollutant loading over time may cause loss of ecosystem health and diversity.

Bacteria

Potential sources of high indicator bacteria levels include raw sewage spills, storm runoff from urban areas, and runoff from non-urban areas. Studies are currently underway for the purpose of using DNA analysis to determine whether *E. coli* bacteria come predominantly from human or from animal sources. Wildlife, livestock, and domestic animals also carry *E. coli* and fecal coliform bacteria, and discharge them into the environment. Identifying the predominant source(s) of bacteria may make it possible to devise control strategies that efficiently target bacteriological sources to reduce levels of indicator bacteria in Fountain Creek so that compliance with water quality standards is consistently attained.

Selenium

It is difficult for regulatory programs to mitigate natural sources of pollutants and there are no formulated specific strategies to address selenium. Transportation projects are not anticipated to contribute to the existing Selenium problems.

Groundwater

Problems to transportation projects due to groundwater have occurred in the past. Heaves and cracks caused by heavy rains in 1999 and two undiscovered springs under the highway delayed construction of a rebuilt freeway between Fillmore and Bijou Streets. Groundwater caused the soil to be too wet when the concrete was poured.

Increased pumping is lowering the water table dramatically. Mitigation strategies can include an electric pump to drain water and keep the highway from flooding. It is important that entities, which depend on ground and surface waters for domestic water supplies, should develop appropriate protection programs, such as a wellhead protection program pursuant to Section 1428 of the Safe Drinking Water Act, or a watershed protection program pursuant to CRS 31-15-707(l)(b).

Cultural Resources

Historic and Archaeological Resources

Preservation is accomplished primarily by those with a stake in the resource, whether that person or entity be in the public or private sector. Deciding which historic physical feature to preserve may evolve over time. While many buildings are saved for sentimental reasons, the majority are preserved as a consequence of its economic viability. Other considerations for preservation include the relative significance of the identified historic resource, its attraction to tourists and visitors, its promotion as a tool for education and enjoyment, and its formal contribution to the quality of life in the region.

The identification and preservation of archaeological resources is equally as important. As growth continues, all parties must be sure that agreements are in place with local, or once local, Native American tribes. Such formalized agreements often include specifications for actions upon discovering artifacts or grave sites. Cooperation between all parties involved and having an understanding of proper action guarantees that both sides will see their goals realized.

Within the MPO, there are many available resources whose objective is to identify and help protect these artifacts of the past. The City of Colorado Springs maintains the Historic Preservation Board for the purposes of assisting the city with projects that involve historic resources. The National Register of Historic Places, created under NHPA, is another facet to preservation. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. Currently there are six National Historic Districts within the MPO area, including Old Colorado City, the North End, and downtown Manitou Springs. Many buildings, bridges, mines, and railroad depots across El Paso and Teller Counties are also registered historic places. Figure 3-15 identifies all locations within the MPO area for historic and archaeological preservation. Specific locations of archaeological sites are not available to the general public in order to protect these resources.

Community Resources

Socio-Economics

Protection and enhancement of the environment is a key element in economic diversification and the provision of a stable economic community for residents of the Pikes Peak region. Many examples of the potential for economic diversification relate to the protection and enhancement of water quality, such as tourism and recreation. This includes:

- expansion of recreational opportunities under a system more sensitive to diverse public needs, balanced with needs to conserve resources and protect the watershed;
- management of the watershed under the auspices of regional and multi-jurisdictional planning efforts that include participation from a broad range of stakeholders, resource managers, and public officials;
- maintenance and/or establishment of viewsheds; and
- increased opportunities for local economic development.

In addition to its influence on the environment, the demographic and socio-economic trends also help provide a base for establishing the region’s future transportation vision. Expanding population, employment, and urban area size typically result in the need for increased transportation facilities and services. Changes in population alter travel patterns. An increase in the number of households or an increase in income results in an increase in the number of vehicle trips. Social patterns can determine travel characteristics as well. With new construction or increased traffic congestion, homes or businesses could be displaced and ethnically homogeneous neighborhoods could be divided. To address such negative impacts, more efficient utilization of transportation facilities is important to meet the increased travel demand. These improved transportation facilities and services are required to alleviate congestion, to maintain acceptable air quality, and to provide for the general safety and welfare of the community.

Public Services and Facilities

Each entity within the MPO region provides its own public services and facilities creating situations where different levels of service abound. While an urbanized area may offer obligatory services, a rural environment may only offer limited services such as voluntary fire protection.

To meet the expected increase in demand for pubic services and facilities throughout the Pikes Peak region, each jurisdiction should identify current and future deficiencies and recommend action steps for successfully implementing required improvements. In addition, each jurisdiction should keep communications strong and provide regional coordination among service providers via Memorandums of Understanding or Intergovernmental Agreements. Finally, each jurisdiction should work on identifying possible sources of future funding to provide additional facilities and increased public service to their area.

Land Use

Due to the rapid growth described in Chapter 5, Future Regional Development, the land use within the MPO area is increasingly residential or commercial and decreasingly agricultural or natural. This results in a low density, suburban and ex-urban land use pattern which spreads development impacts more broadly across the region. With this development comes increased automobile use, increased air and water pollution. To reduce these negative effects, local jurisdictions should encourage mixed-use developments and discourage developments that separate uses and necessitate vehicular trips. Balancing the distribution of employment and residential opportunities and land-use patterns that are mutually supportive of an intermodal transportation system can decrease reliance on an automobile and reduce congestion.

Neighborhoods

Roads have a particular impact on the landscape, fragmenting natural areas and neighborhoods. Effects of highways and roads on neighborhoods include loss of landmarks, degraded neighborhood identity, loss of community cohesion, interruption of traffic flow within neighborhoods, and increased noise. It is important, therefore, to recognize the central importance of all neighborhoods by continually improving the community's stewardship of its natural setting and strengthening the quality of a development's visual character and appearance. It is also important a neighborhood successfully integrates the uses and activities that meet the daily needs of its residents. To achieve this goal, many neighborhoods have formed active organizations to allow residents of different areas to get together to express common concerns and opinions. Examples of such groups include the North End Homeowners Association and the Organization of Westside Neighbors. An umbrella group, the Council of Neighborhood Organizations, provides a unified voice for these neighborhoods to participate in the decisions that affect them.

The MPO area contains a number of identifiable neighborhoods with a variety of living conditions that add to its character. There are neighborhoods in older but well maintained areas like the Broadmoor and there are neighborhoods in newer areas like Briargate. For the most part, new neighborhoods in the MPO area are located in the outlying areas to the north and east of the region, far from the downtown district. Use of Community Impact Assessment measures can help determine mitigation of neighborhood impacts.

Noise and Vibration

Typical noise dampening solutions involve the construction of a barrier surrounding the source of the problem. Highway sound walls are an effective manner in which to decrease the annoyance and risks to houses and businesses next to high-speed roadways. Pavement type can also be changed from the traditional concrete or asphalt for a blend that contains the remnants of used tire rubber. The rubber reduces friction and roadway contact, therefore reducing the noise problem. Also, new housing developments should not be encouraged directly adjacent to current rights-of-way.

While all streets and roads contribute to the issue, those with higher speeds are typically the source of vehicle-related noise. Interstate 25 and other regional freeways and expressways are examples of such roads. New developments allow the chance to mitigate the issue before the problem is out of hand whereas already developed areas prevent a challenge.

Federal laws and regulations require that it is necessary to undertake special technical analyses to identify and evaluate the potential noise impacts a project will involve. Once a noise impact is identified, CDOT will evaluate feasible and reasonable noise abatement methods to reduce traffic noise impacts. Traffic noise can potentially be reduced by addressing the noise source, noise path or noise receiver.

Parks and Recreation

A community must clearly recognize the trade-offs between providing adequate open space and allocating resources to other needs. When developing projects, coordinators should ensure that transportation developments do not interfere with the existing park system and should be encouraged to continue to reserve lands for future recreational use. Park and open space design should meet a wide range of recreational needs, preserve important natural features, use native landscaping materials, and incorporate multi-use facilities. All parks and open spaces should be well-maintained and remain functionally and physically attractive.

Recreation sites exist throughout the transportation planning region. The majority of parkland acreage within the region is in its natural state such as Garden of the Gods or Palmer Park while the rest can be found in community parks, neighborhoods parks, golf courses, and bicycle and pedestrian pathways. Projects that cross or may interfere with a site may occur. For example, bicycle and pedestrian paths commonly cross roadways and may need to be rerouted or detoured depending on the project.

Section 4(f) of the USDOT Act of 1966 applies to any USDOT funded project which involves the use of any significant publicly owned public park, recreation area, or wildlife and waterfowl refuge and any land from an historic site of national, state or local significance. Special environmental analyses are required to determine if there is a feasible or prudent alternative to taking the proposed action involving the use of the 4(f) property. In addition, the project sponsor must demonstrate that all possible planning to minimize harm has occurred. These measures to minimize harm, which include mitigation, will be documented in the 4(f) evaluation.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 applies to any USDOT funded projects which involve the use of lands which have Land and Water Conservation (LAWCON) or Open Space Land Acquisition and Development (OSLAD) funds involved in their purchase or development.

Air Quality

Particulate Matter

Particulate Matter is both naturally occurring and is created from road dust, automobile and diesel engine exhaust, soot, and sulfates and nitrates from combustion sources. Mitigation strategies include:

- Create and implement a Diesel Emission Control Program;
- Research and require improved street sanding and cleaning techniques;
- Encourage alternate transportation (public transit, bikes, etc.);
- Create and implement controls on wood burning;
- Pollution prevention programs; and
- Create and implement stationary source control policy.

No mitigation locations are recommended due to a lack of data and because current concentrations are significantly below the standard.

Carbon Monoxide

As Section 2 from the Regional Setting discusses, mobile source emissions and emissions from cars and trucks are one of the largest sources of carbon monoxide emissions in the region. Mitigation strategies include:

- Encourage burning of cleaner fuels;
- Reduce vehicle miles traveled;
- Encourage alternate transportation (public transit, bikes, etc.);
- Reduce congestion and improve traffic flow; and
- Improve land use and transportation planning.

No mitigation locations are recommended due to a lack of modeling data and because current concentrations are significantly below the standard.

Ozone

PPACG initiated a voluntary effort to reduce ozone concentrations in the summer of 2007 which included:

- Develop a PPACG web page regarding ozone strategies;
- Update Ozone Pollution pamphlet;

- Contact individual gasoline suppliers and encourage them to continue delivering voluntarily lower Reid Vapor Pressure (RVP) fuel; and
- Distribute “Stop At the Click” Stickers.

On June 20, 2007 EPA proposed to lower the primary health standard for ozone to a level within the range of 0.070 and 0.075 ppm. A final recommendation will be issued by March 2008. This is further explained in Attachment 3, EPA Revised Ozone Standard Fact Sheet. If the standard were to be between 0.070 and 0.075 ppm, based on current concentrations (0.073 ppm at U.S. Air Force Academy and 0.074 ppm at Manitou Springs), PPACG could be found to be in non-attainment and would implement mandatory regulations. This would require development of a State Implementation Plan for ozone and establishment of VOC and NO_x emission budgets. Possible strategies, based on what is being considered in Denver are:

- High Emitter Vehicle Scrappage Program
- Inspection/maintenance Program that would focus on hydrocarbons and nitrogen oxide
- Adoption of a lower Reid Vapor Pressure gas
- Colorado Clean Car Program
- Create policies to control vehicle idling
- Encourage alternate transportation (public transit, bikes, etc.)

Further research, including dispersion modeling, needs to be conducted to determine potential mitigation locations. Because ozone is a regional pollutant it is difficult to pinpoint precise locations so strategies would be implemented either statewide or locally.

Summary

The 2035 Regional Transportation Plan could have a large effect on the environment if projects are not managed properly. Because of this, pollution prevention and mitigation strategies must be fully evaluated to prevent as much harm as possible. Some possible mitigation effects for the construction of new roads is to ensure that all construction is done in a way which promotes erosion control, and apply best management practices to target runoff and prevent any unnecessary run-off in these loose granite areas. Another concern for pollution control in this watershed is it is currently on the monitoring 303d list for the EPA for impairments of E. coli and Selenium, and is closely watched for sediment loads. All of the projects must look at the potential effects to comply with the federally regulated standards and not add to the problem of more pollution in these waterways which affect the whole environment.

It is also important to make certain regulations are being followed. Some stricter policies could be put into place to make sure this is happening. Also, alternative routes could be considered to build in places which would not affect water quality, for example not building near impaired streams or wetlands. Also, policies could be created and more money could be directed to improve public transportation to take more traffic off of the roads and reduce the need for quite as much. These have been discussed in previous sections.

A more fundamental problem with the transportation plan is that it reflects the high amount of development occurring in the urbanizing areas, and this development will have many significant effects on the environment and the region as whole in the future. A more sustainable city planning with less sprawl would create significant improvements for the environment and greatly reduce the planned amount of impervious surfaces.

Many of the projects in the transportation plan are repairing or making improvements on already existing roads, and many issues related to problems like habitat fragmentation have already occurred. However, construction itself has an effect and the increase in roadway area also has a big effect on the environment and the region.

The overall intent of this Section is to maintain the existing high quality of the natural landscape while accommodating growth and development. Implementation of the recommendations made in this Section will have social and economic costs and benefits and will consider the importance to:

- meet the needs of the present without compromising the quality of life in future generations;

- maintain economic growth while minimizing air quality and water quality pollution, repairing environmental damages of the past, producing less waste, and extending opportunities to live in a pleasant and healthy environment; and

- meet human needs by maintaining a balance between development, social equality, ecology, and economics.

This requires taking a larger regional perspective, looking at past trends, current activities and how future activities might affect the region. Through a regional perspective, it is easier to determine the direct, indirect and cumulative impacts of existing and proposed projects. This Section recognizes that the recommendations made to mitigate and prevent future problems have positive and negative effects.

Implementation of the recommendations in this plan will be accomplished through the recommended use of policies and strategies that target the unique problems throughout the planning region. Implementation of the recommendations could require greater enforcement and development and refinement of new and existing regulations.

The *negative impacts* in implementation of the recommendations include:

- land use impacts;
- community and neighborhood impacts;
- temporary local construction impacts on noise, dust, soil disturbance, and traffic; and
- increased levels of regulation and development costs associated with protecting water quality.

Positive impacts include:

- maintenance of water quality in streams;
- protection of aquatic life in fishery resources;
- maintenance and composition of plant species;
- maintenance of ecological processes across the landscape; and
- protection of wetlands and riparian areas.

Policies need to address water quality degradation; urban runoff; construction activities; agriculture activities; use of chemicals; fill in of wetlands and degradation of riparian areas.

CHAPTER 12: IMPLEMENTATION PLAN

Jurisdictions that own components of the transportation system will implement the vast majority of the transportation improvements in the next 27 years. To assure that the transportation system meets existing and future travel needs of the Region, the *2035 Regional Transportation Plan* includes implementation guidance for maintenance, operational, safety, and capacity improvements, as well as transit, non-motorized and ridesharing systems. The *2008 – 2013 Transportation Improvement Program* (Appendix B) is a six year listing of all federally and state funded transportation projects programmed to be built within the MPO boundaries. Since the TIP must be updated every four years, it is the ultimate implementation tool of the *2035 Regional Transportation Plan*.

In the development of the *2035 Regional Transportation* Plan, several alternative investment philosophies were created using an extensive public input process. Based on public comments receieved, policies that maintain and operate the existing transportation system are more important than projects that increase system capacity. The projects in the recommended system are outlined in Figure 12-1 and listed in Table 12-1 below.

SYSTEM MAINTENANCE AND PRESERVATION

As described in Chapter 6, maintenance of the transportation system requires commitment to funding preventive maintenance. This generally refers to maintaining or rehabilitating the surface of roads and to replacing or repairing bridges.

Even with a design life of 75 years, there are many bridges that currently, or will in the next 27 years, need rehabilitation. The bridge maintenance goal is to improve all deficient structures as soon as possible, and to provide adequate funding to inspect, maintain, rehabilitate or replace all state and local structures. The primary source of bridge funding requires competition with other regions around the state. In order to secure this funding for local and regional needs the needs must be communicated to state and federal officials.

FIGURE 12.1 INSERT RECOMMENDED SYSTEM PICTURE HERE

Recommended Maintenance and Preservation Strategies

- Continue resurfacing and reconstruction programs, with priority assigned to higher volume routes.
- Standardize design and use of pavements that better absorb noise and drain water, such as the rubberized pavements currently being investigated by the City of Colorado Springs.

SYSTEM MANAGEMENT AND OPERATIONS

System management refers to programs and some infrastructure that are used to operate roadways. The goal is to make the transportation system as effective and efficient as possible. Some of the most common features include signal synchronization, traffic monitoring, variable message signs, incident management, public information programs, and marked detours.

Recommended Management and Operations Strategies

- Implement the Regional Intelligent Transportation Systems (ITS) Strategic Plan and regional ITS architecture to enhance incident management program effectiveness.
- Continue development of coordinated traffic-responsive signal systems. Implement interconnected traffic adaptive (responsive) signal systems along all major transportation corridors. Install 'Un-interruptible Power Systems' and other fail-safe systems for all major traffic signal locations.
- Implement an Incident Management System which includes electronic signage and centralized traffic control along with camera monitoring equipment to direct traffic. Traffic camera information and diversion information should be communicated with the public.
- Support real-time traveler information systems, incident management and information/communication/monitoring systems, including live video feed or internet access to traffic cameras.
- Develop a congestion/incident diversion route signal and signing capability. Secure diversion route signs, barricades, and other support materials to deploy when incidents occur and diversions are necessary.
- Institute an Incident Management program, including an assistance patrol, traffic cameras, and other program measures.
- Develop and implement an interoperable interagency communications system for incident management and emergency response. Support multi-agency and multi-modal

coordinated emergency preparedness response planning, training. Secure resources for effective programs.

- Install ‘pedestrian timing signals’ that count down time remaining for pedestrians to cross at major pedestrian intersections. Install audible pedestrian signal equipment at key locations as warranted. Utilize alternative pedestrian detection and pre-emption systems as appropriate.
- Implement automatic vehicle location systems (AVL) and related dispatching programs for emergency responders, transit and other partners in incident management.
- Expand travel demand management (TDM) programs to help reduce the number of peak-period single occupant automobile trips.
- Institute a 0.1 milepost reference system and maintain it.
- Include public rest areas in the traffic camera surveillance program.
- Plan for future installation of cameras for surveillance and security of rail lines and transit stops.
- Complete the regional concepts for transportation operations.
- Better link transportation planning and operations, which may include data or resource sharing, cooperative planning or operations activities.

ROAD AND HIGHWAY PROJECTS

This is the aspect of implementation that the Pikes Peak Region and most MPOs nationwide have focused on. The federal and state funded projects in this plan are primarily expansion projects, not construction of new roads. The construction of roads on new alignment is primarily paid for through private funding as part of development agreements. Due to financial constraints, some new routes may include tollways. The roadway projects recommended for implementation are shown in Table 12.1

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
102	21st St Corridor Improvements	Private	$10,315	Widen roadway and install curb and gutter on 21st St between US 24 and Lower Gold Camp Rd. Install on-street bike lanes along entire length of roadway for this primary N-S Bikeway Corridor. Upgrade to minor arterial, construct curb and gutter, and install drainage improvements.	Private
	25th St Bridge	Colorado Springs	$392	Replace existing 2-lane functionally obsolete bridge structure at Fountain Creek	Local
	30th St Bicycle Lanes	Colorado Springs	$956	Construct paved shoulders and install signage and markings to provide continuous on-street bicycling on 30th St. from Fontanero St. to Garden of the Gods Rd.	Enhance-ments
	Academy Blvd/Flintridge Dr Intersection Improvements	Colorado Springs	$622	Upgrade the intersection by adding turn lanes and improving intersection geometry.	Local
	Academy Blvd/Fountain Blvd Interchange	Colorado Springs	$51,861	Construct an interchange at the intersection of Academy Blvd and Fountain Blvd.	Local

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
107	Academy Blvd/Union Blvd Interchange	Colorado Springs	$2,271	Construction of a grade-separated interchange at the intersection of Academy Blvd and Union Blvd.	Metro
111	ADA Pedestrian Ramp Program	Colorado Springs	$10,372	Provide ADA pedestrian ramps throughout established neighborhoods to increase walk ability and comply with ADA.	Local
	Airport Rd Bicycle Lanes	Colorado Springs	$924	Install bicycle lanes on Airport Rd. from Circle Dr. to Powers Blvd. This project would require some asphalt and concrete construction.	Enhance-ments
	American Discovery Trail Connection	Woodland Park	$114	Ten foot paved trail with Fountain Creek bridge/crossing from the US 24 underpass along Laura Lane to Fountain Creek and across the creek to the American Discovery Trail.	Enhance-ment
	Arrival/Departure Airfield Control Group Facility for Peterson Air Force Base	CDOT	$8,100	Construct military deployment facilities at Colorado Springs Airport.	Dept. of Defense
115	Austin Bluffs Bridge Widening at Cottonwood Creek	Colorado Springs	$2,576	Widen bridge from 49 feet to 150 feet. Accommodate the Cottonwood Creek Trail below.	Local

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
116	Austin Bluffs Corridor Improvements (East)	Colorado Springs	$2,700	Widen as a 6-lane principal arterial with median control, improved signal coordination and other safety improvements between Barnes Rd and Ruby Rd.	Local
117	Austin Bluffs Corridor Improvements (West)	Colorado Springs	$3,060	Widen as a 6-lane principal arterial with median control, improved signal coordination and other safety improvements between Nevada Ave and Academy Blvd. Accommodate bicycles with Austin Bluffs Multi-use Trail and/or on-street bike lanes.	Local
	Austin Bluffs/Union/Fillmore ITS Project	Colorado Springs	$1,385	Connect I-25 ITS to Academy Blvd ITS; extend Austin Bluffs Pkwy. ITS from I-25 to Academy; install Union Blvd. ITS from Austin Bluffs Pkwy. to Fillmore St.; install Fillmore St. ITS from I-25 to Union Blvd.	CMAQ
119	Banning Lewis Pkwy	Private	$207,000	Construct new four-lane principal arterial from Bradley Rd. to Woodmen Rd.	Private
	Banning Lewis Ranch Roads	Private	$50,000	Construct new four-lane principal arterials within the Banning Lewis Ranch.	Private

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Baptist Rd and Interchange Improvements	El Paso County	$21,500	Upgrade from a 2-lane collector to a 4-lane major arterial from Mithcell Rd. to Tari Dr. and reconstruct the interchange at I-25.	Local/ Private
125	Barnes Rd Extension	Private	$8,000	Extend as principal arterial from Marksheffel Rd to US 24 in 2 phases. Phase I from Marksheffel to Banning Lewis Pkwy (2015), and Phase II from Banning Lewis to US 24 (2020)	Private
	Bijou St Bridge Improvements	Colorado Springs	$6,223	Improve the Bijou St. bridge over Shooks Run.	Local
	Black Forest Rd Alignment Upgrade	El Paso County	$1,141	Safety project to realign Black Forest Rd. at its intersection with Hodgen Rd.	Local
126	Black Forest Rd Extension	Private	$3,000	Extend from current terminus at Woodmen Rd to Dublin Blvd in 2 phases. Phase I from Dublin north to the current city limits (2005) and Phase II, the remainder of the way north to Woodmen Rd (2015).	Private
127	Black Forest Rd Widening	Private	$2,000	Widen to a six lane principal arterial from Woodmen Rd to Briargate Pkwy.	Private
130	Black Forest Rd: Old Ranch Rd to Research Blvd	Private	$2,553	Expand 2-lane minor arterial to a 4-lane major arterial.	Private

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	BNSF Railroad Corridor Acquistion	Colorado Springs	$1,060	Purchase and/or develop the BNSF rail right-of-way along Nevada Ave. into a multimodal corridor for non-motorized transportation and/or bus rapid transit.	Enhance-ments
131	Bradley Rd Extension: Grinnell St to Powers Blvd	El Paso County	$2,074	Construct 4-lane major arterial.	Local/ Private
133	Briargate Pkwy/Stapelteon Rd Extension	El Paso County	$10,507	Extend as a 4-lane principal arterial extension from Black Forest Rd to Curtis Rd.	Local/ Private
	B Street Underpass Improvements	El Paso County	$1,204	Improvements to Fountain Creek Regional Trail underpass at S. Academy and I-25.	Enhance-ments
	Bridge Program Pool	CDOT	$1,785	A pool for repairing or replacing bridges to be selected.	Bridge
141	Centennial Blvd Design and Construction	Colorado Springs	$23,960	Design a 4-lane minor arterial extension from Fillmore St to I-25. Include bike lanes, pedestrian facilities with pedestrian access to Sonderman Park from Mesa Springs neighborhood. Include noise walls/berms adequate to shield Sonderman Park and Mesa Springs Neighborhood from excessive noise.	Local, Private

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Chamberlain Trail Improvements	El Paso County	$304	Culvert improvements under I-25 south of SH 16 connecting Fountain Creek Regional Trail to Fort Carson.	Enhance-ments
	Cheyenne Blvd/Tejon St Intersection Improvements	Colorado Springs	$1,660	Upgrade the intersection by adding turn lanes and improving intersection geometrics.	Local
143	Cheyenne Blvd Corridor Improvements	Colorado Springs	$3,000	Design and construct intersection improvements at the Cheyenne Blvd/Tejon/Ramona/Cascade intersection and improve access to Nevada Ave via Ramona; construct on-street bike lanes on Cheyenne Blvd for this primary E-W bikeway corridor connecting the Tejon St Bikeway with the Cresta/21st St Bikeway and Cheyenne Canyon Park; improve pedestrian access at the intersection; reduce travel lanes from 4 to 3 from Nevada to Cresta.	CMAQ
	Cimarron St Bridge	Colorado Springs	$5,376	Replace existing 4-lane bridge structure at Conejos Street	Local

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
144	Citywide Congestion and Incident Management Signal Improvement	Colorado Springs	$1,120	Design and implement a citywide Intelligent Transportation System (ITS) to reduce congestion and improve safety without the cost of roadway expansion. Improvements include video camera systems at key traffic locations; fiber optic lines, variable message signs, ramp metering, HAR and trailblazer signs to route traffic around accidents and congestion problems. Develop traveler information systems to communicate with drivers and the public when problems with the system occur; develop intelligent work zone control; develop intelligent public agency vehicles that include two way communications and interact with the signal system.	Local
145	Citywide On-Street Bikeway Improvements	Colorado Springs	$240	Identify and construct on-street bike lanes citywide for bikeways shown in the Intermodal Transportation Plan.	Local

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
146	Citywide Roadway Safety and Traffic Operations	Colorado Springs	$3,920	Install safety facilities such as guard rail, redesign medians and intersection to improve capacity, and install new traffic signals where warranted to improve traffic operations and safety. Purchase and install impact attenuators at locations where fixed hazards cannot be moved.	Local
	Citywide Pedestrian Access/Mobility Improvements	Colorado Springs	$145	Construct transit waiting pads; install accessible curb ramps, sidewalks, pedestrian count-down signalheads, and Accessible Pedestrian Signals	Metro
	Constitution Ave. Extension	Colorado Springs	$15,000	Extend as a 4-lane principal arterial from Paseo Rd. to I-25 at the Fontanero St. interchange	Local
	Constitution Ave/Paseo Rd Intersection Improvements	Colorado Springs	$41	Upgrade intersection between Constitution Ave and Paseo Rd to improve traffic flow and turning movements.	Local
	Cottonwood Trail Construction	Colorado Springs	$636	Construct a 12 foot concrete trail from Academy Boulevard to Vincent Road.	Enhance-ments
151	County Line Rd: I-25 to Furrow Rd	El Paso County	$1,786	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
152	Cresta Rd Sidewalks	Colorado Springs	$388	Construct 5-foot detached sidewalks on westside of road from La Veta Wy to Cheyenne Blvd. Sidewalk from La Veta Wy to Hermosa Wy can be built in existing right-of-way using existing curb and gutter. Construction of sidewalk from Hermosa to Cheyenne Blvd will require elimination of the existing southbound right-turn lane and construction of a 4 to 6 foot high retaining wall ($20,000 - $40,000). This section would require new curb and gutter as well.	Local
	Creekwalk Trail Improvements	Manitou Springs	$1,176	Extend Colorado Springs Midland Trail to the west and connect with multi-use systems. Improvement Creekwalk Trail from the eastern Manitou Springs city limits, through five parks and the downtown area of Manitou Springs, to the western city limits.	Enhance-ments
156	Curtis Rd Upgrade	El Paso County	$24,893	Widen and upgrade to a 4-lane principal arterial from Judge Orr Rd to SH 94.	Local/ Private

TABLE 12.1
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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
161	Dublin Blvd Extension	Private	$6,000	Extend as a principal arterial from its current terminus just east of Tutt Blvd through Banning Lewis Ranch to US 24 in 2 phases. Phase I east to Banning Lewis Pkwy (2005) and Phase II from BLP to US 24 (2010). Include on-street bike lanes per ITP.	Private
163	Eco Pass Program	Colorado Springs	$1,378	Seed funding for market and implementation of an Eco Pass and ride incentive program.	CMAQ
164	El Paso County ITS Program	El Paso County	$1,450	Intelligent Transportation Systems implementation for unincorporated El Paso County.	CMAQ
	Enhancements Pool	Various	$4,091	Pool for transportation enhancements projects to be selected.	Enhance ments
	Evans Ave. Bridge Improvements	Colorado Springs	$519	Make improvements to the Evans Ave. bridge over N. Cheyenne Creek	Local
	Fillmore St Bicycle Lanes	Colorado Springs	$647	Install on-street bicycle lanes on Fillmore St. and Fontmore Rd from Centennial Blvd west to 31st St.	Enhance-ments
170	Fillmore St Corridor West	Colorado Springs	$4,800	Widen to 6 lanes between I-25 and Centennial Blvd. Project to also include turn lanes, bike lanes, curb and gutter, and sidewalks.	Local

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
171	Fillmore St TSM Improvements	Colorado Springs	$5,376	Make transportation system management and intersection improvements between I-25 and Union Blvd as outlined in the East West Mobility Study: Fillmore/ Union intersection, Prospect intersection, El Paso intersection, and Prospect St storm sewer--Phase I. Improve safety at Fillmore and Cascade intersection.	Local
172	Fontaine Blvd Extension	El Paso County	$9,000	Construct a 4-lane principal arterial from Marksheffel Rd to Meridian Rd.	Local
	Fountain Creek Trail Bridge Repair	El Paso County	$304	Bridge abutments on the south side of Fountain Creek Regional Park, damaged by recent flooding, will be replaced.	Enhance-ments
	Fountain Creek Regional Trail Extension	Fountain	$456	Extend as an unpaved trail from Fountain south to the county border.	Enhance-ments
	Fountain Creek Regional Trail – Rosemont Section	Woodland Park	$191	Construct a ten foot paved trail from Sheridan Ave. to the Safeway shopping center along Fountain Creek.	Enhance-ments
	Front Range Trail Underpass Improvements	El Paso County	$424	Improve an existing culvert underneath I-25 for pedestrian access.	Enhance-ments

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
175	FTA Section 5307 Projects	Various Entities	$13,829	Funds FTA 5307 (Urbanized Area Formula Grants) eligible projects. Eligible purposes include planning, engineering design and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities; construction of maintenance and passenger facilities; and capital investments in new and existing fixed guideway systems.	FTA 5307
176	FTA Section 5309 Project	Various Entities	$1,400	Funds Section 5309 (Transit Capital Investment Program) eligible projects. Eligible activities include new and replacement buses and facilities, modernization of existing rail systems, and new fixed guideway systems.	FTA 5309
178	Garden of the Gods Rd Intersection Improvements	Colorado Springs	$892	Upgrade intersection between Forge Rd and Chestnut St to improve traffic flow and turning movements by widening the North Forge approach and installing dedicated left turn lanes at both intersections.	Local
179	Garrett Rd: US 24 to Curtis Rd	El Paso County	$1,908	Expand 2-lane collector to a 2-lane minor arterial.	Local

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
180	Gleneagle Extension: SH 105 to Baptist Rd	El Paso County	$3,836	Construct 2-lane minor arterial.	Local
	Hancock Ave Bridge	Colorado Springs	$800	Replace existing 2-lane structurally deficient bridge at Templeton Gap Floodway	Local
182	Hancock Ave Corridor	Colorado Springs	$540	Upgrade to include the construction of center medians and modifications to geometry between Union Blvd and Fountain Blvd.	Local
183	Hancock Expressway	Colorado Springs	$10,340	Construct street and drainage improvements by extending Chelton Rd south to Drennan Rd and realigning Hancock Expressway east from Monica/Claredon to new Chelton Rd. and then east to Powers Blvd.	Local, Private
	Hancock Expressway Bicycle Lanes	Colorado Springs	$4,243	Install on-street bicycle lanes on Hancock Expressway from Fountain Blvd. to the S. Circle Ave. overpass.	Enhance-ments
	Hazarde Elimination Pool	CDOT	$10,384	Pool for hazard elimination (safety) projects to be selected in the Pikes Peak region.	Hazard Elimina-tion Safety

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Hodgen Rd Upgrade	El Paso County	$8,345	Upgrade from 2-lane collector to a 2-lane minor arterial from Roller Coaster Rd. to Eastonville Rd.	Local
189	I-25 Bridges in the Pikes Peak TPR	CDOT	$4,200	Replace bridges on I-25 in the Colorado Springs Metropolitan Area. Project selection based on project need/structural deficiency.	Bridge-On State Highway System
190	I-25/Northgate Park-and-Ride	Colorado Springs	$750	Construct park-and-ride lot of approximately 300 parking spaces in the vicinity of I-25 and Northgate Rd.	CMAQ
	I-25: Northgate Rd to El Paso County Line	CDOT	$1000	Construction of a chain-up station on I-25 south of Monument Hill and safety improvments.	CDOT Regional Priorities, Safety
191	I-25: Powers Blvd to Douglas County Line	CDOT	$794,000	Complete reconstruction of Interstate from S. Academy Blvd. to Douglas County line. Includes interchange reconstruction, widening to 6 general purpose lanes from S. Academy Blvd. to SH 105 and adding one HOV lane in each direction from MLK Bypass to Briargate Pkwy.	Strategic (7th Pot), CMAQ, Metro, CDOT Regional Priorities
	Interquest Corridor Project Phase II	Colorado Springs	$1,763	Coordinate traffic signal expansion along Powers Blvd. corridor to the completion of the I-25 north-south connection	CMAQ

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Jackson Creek Trail Improvements	El Paso County	$608	Culvert improvements along Jackson Creek Trail at I-25 to provide access to AFA from Gleneagle.	Enhance-ments
	Jimmy Camp Creek Trail Construction	Fountain	$6,996	Complete the unpaved trail on the northwest side of Fountain to the confluence of Jimmy Camp Creek with Fountain Creek in the southwesterly portion of the city.	Enhance-ments
	La Foret Trail Improvements	El Paso County	$688	Improvements to the existing culvert structure to facilitate passage underneath I-25 for the La Foret Trail east of the Air Force Academy.	Enhance-ments
	Lake Ave Sidewalk	Woodland Park	$153	Complete curb, gutter, sidewalk and drainage improvements.	Enhance-ments
	Las Vegas St Shoulders	Colorado Springs	$1,410	Install paved shoulders on Las Vegas St. from Tejon St. to US 85/87.	Enhance-ments
	Lewis Palmer Pedestrian Bridge Construction	El Paso County	$2,880	Construct a pedestrian bridge over I-25 north of Baptist Rd. connecting the west side of Monument to Lewis-Palmer H.S.	Enhance-ments
	Maintenance and Operations	Various	$594,165	Maintenance and operations by state and local entities.	Mainten-ance

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Manitou Ave Pedestrian and Drainage Improvements	Manitou Springs	$3,633	Improve drainage, road, intersections; widen walks; landscape; bumpouts & ramps; lighting, undergrounding, wayfinding	Metro
195	Marksheffel Rd Widening: Woodmen Rd to US 24	Private	$16,096	Widen as a 6-lane principal arterial.	Local, Private
196	Marksheffel Rd: US 24 to Mesa Ridge Pkwy	El Paso County	$111,000	Expand 2-lane minor arterial to a 4-lane principal arterial between US 24 and Bradley Rd and expand to a 4-lane expressway between Bradley Rd and Mesa Ridge Pkwy. Construct an interchange at SH 94.	Local, Metro, Private
197	Meridian Rd: Hodgen Rd to Rex Rd	El Paso County	$2,105	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
198	Meridian Rd: Rex Rd to Woodmen Rd	El Paso County	$6,011	Upgrade from 2-lane collector to a 4-lane, then 6-lane principal arterial.	Local/ Private
199	Meridian Rd: US 24 to Falcon Hwy	El Paso County	$420	Construct 4-lane major arterial transition to existing 2-lane Falcon Hwy.	Local
200	Meridian Rd: Woodmen Rd to US 24	El Paso County	$4,000	Construct 4-lane, then 6-lane principal arterial.	Private
202	Mesa Ridge Pkwy Extension	El Paso County	$4,149	Construct 4-lane principal arterial from Powers Blvd to Marksheffel Rd.	Local

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
242	Metro Rides	Colorado Springs	$20,000	RIDEFINDERS' programs are designed to reduce automobile dependency and to promote the use of alternative transportation options in the Pikes Peak region. Services include free carpool matching for the general public, long distance commuter vanpools, Bike Week, telecommuting consultation, School Pool for families, and general transportation information (bus routes, walking and biking trails etc.).	CMAQ
	Metro Route 3 Bus Stop Improvements	Colorado Springs	$246	Improve pedestrian and bicycle safety and access to the public transportation system from the Downtown Terminal through Old Colorado City to Manitou Springs.	Enhance-ments
203	Milam Rd: Old Ranch Rd to Shoup Rd	El Paso County	$2,172	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
206	N Carefree Extension	Private	$6,000	Extend as a principal arterial from Peterson Rd to Marksheffel (2005) and from Marksheffel through Banning Lewis Ranch to US 24 (2020).	Private

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
207	N Nevada Ave Revitalization and Safety Improvements	Colorado Springs	$7,053	From Fillmore St. to I-25 install basic infrastructure such as curb and gutter, sidewalk, drainage facilities and street lights, turn lanes, parking controls and crosswalks along with landscaped medians. Widen to six lanes from Austin Bluffs Pkwy to I-25.	Local, Metro, Private
210	Nevada Ave/Mt. View Lane Intersection	Colorado Springs	$900	Upgrade intersection to improve geometrics, increase safety and improve crossing of Templeton Gap multi-use Trail. Improvements should include curb and gutter, sidewalks, improved signalization and delineated traffic lanes.	Local
211	Nevada/SH 115 Bus Lanes and Q-Jumpers	Colorado Springs	$7,425	Design and construct Q-jumpers/bus lanes/bus pullouts and ITS along this corridor from PPCC (south) to Austin Bluff along SH 115 and Nevada Ave.	CMAQ
	Nevada Ave Streetscaping	Colorado Springs	$3,397	Install raised landscaped medians, corner bumpouts, ADA compliant ramps, and upgrade other streetscaping (aesthetic paving treatment, planters, bike parking, street lighting, landscaping) on Nevada Ave. from Boulder St. to Cucharras St.	Enhance-ments

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
214	Northgate Rd Corridor	Private	$20,000	Reconstruct as a 6-lane facility and straighten the excessive curves, add turn lanes and provide safety improvements. This project will be funded jointly with an area developer. Reconstruction will include an on-street trail crossing for Smith Creek Trail. Project limits are SH 83 to I-25	Private
	Ohio Ave Trail	Fountain	$860	Construct a paved trail between Highway 85 and Jimmy Camp Creek.	Enhance-ments
215	Old Pueblo Rd Bypass	Fountain	$5,000	Expansion of Old Pueblo Rd and bridge at Jimmy Camp Creek; relocation of the existing connection to the US 85 south of Illinois Ave; new railroad crossing.	Local
	Park-and-Ride Access for Bicycles and Pedestrians	Colorado Springs	$76	Make bicycle and/or pedestrian access improvements to existing park-and-ride lots and transit substations. This will include improved sidewalks, trail connectivity, bicycle parking, directional and information signage, etc.	Enhance-ments
217	Park-and-Ride Lots, Phase 2	Colorado Springs	$15,000	Design and construct 8 park-and-ride facilities with 300 parking spaces each.	CMAQ/ FTA 5307
219	Peterson Rd Construction	Private	$1,000	Extend from current terminus north to Dublin Blvd.	Private

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
226	Phase 2 Bus Lanes and Q-Jumpers	Colorado Springs	$27,720	Design and construct Q-jumpers/bus lanes/bus pullouts and ITS along the following corridors: Fountain Blvd from Weber to Powers, US 83/Academy from Chapel Hills Mall to Flying Horse Ranch, Colorado Ave/US 24 in the west to Peaks Pike Ave and US 24 to Falcon	CMAQ
228	Pikes Peak Ave Bus Lanes and Q-Jumpers	Colorado Springs	$7,425	Design and construct Q-jumpers/bus lanes/bus pullouts and ITS along this corridor from Cascade to Murray	CMAQ
	Pikes Peak Greenway Improvements	Colorado Springs	$11,046	Pave and make other improvements to various sections of the Pikes Peak Greenway trail along Monument Creek.	Enhance-ments, Local
	Pikes Peak Library District Bookmobiles	Pikes Peak Library District	$642	Purchase and operate two bookmobiles.	CMAQ
229	Planning	PPACG	$30,815	Funds for PPACG regional planning activities.	Planning
	Platte Ave Bridge Improvements	Colorado Springs	$17,517	Improve the Platte Ave. bridge over Sand Creek.	Local
	Platte Ave Widening	Colorado Springs	$8,298	Widen to six lanes from Academy Blvd to Powers Blvd.	Local

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230	Platte Ave TSM	Colorado Springs	$5,000	Improve the efficiency of the existing roadway network by implementing measures that improve the operations and safety of Platte Ave, including improved traffic signalization, expanded intersection capacity, and better access management. Project limits are Cascade to Academy.	Local
232	Powers Blvd: Mesa Ridge Pkwy to I-25 (at Northgate Rd)	CDOT	$1,107,500	Complete studies to determine needed corridor improvements and implement them. Construct new facility from SH 83 to I-25. Upgrade the corridor to a grade separated freeway from Barnes Rd to Platte Ave. This will include roadway construction and new interchanges and grade separations at 25 locations.	Strategic (7th Pot), CDOT Regional Prioties, Local, Private
234	PPCC Express	Colorado Springs	$3,000	Operating local express from Pikes Peak Community College (PPCC) north campus to PPCC south campus.	CMAQ
239	Research Pkwy Extension	Private	$9,000	Extend as a 6-lane principal arterial from Powers Blvd to Black Forest Rd and from Black Forest Rd to Woodmen.	Private

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Rock Island Trail Construction	Colorado Springs	$2736	Construct a 10-foot, paved trail from Powers Blvd. through Banning Lewis Ranch to the eastern City limits. Construct a trail underpass under Union Blvd. at Constitution Ave.	Enhance-ments
243	Rockrimmon/ Delmonico North	Colorado Springs	$1,660	Upgrade the intersection by adding turn lanes and improving intersection geometry.	Local
244	Rockrimmon/Pro Rodeo Dr	Colorado Springs	$830	Upgrade intersection to improve traffic flow and turning movements. Provide on-street bike lanes on Pro Rodeo as per City Bicycle Plan.	Local
	Safe Routes to Schools Pool	CDOT	$7,930	Pool for Safe Routes to Schools projects to be selected.	Safe Routes
	Sand Creek Trail	Colorado Springs	$171	Construct 1.1 mi. 12' concrete trail; construct three 8' concrete access trails from adjacent neighborhoods to Sand Creek Trail; build 2 ped. bridges	Enhance-ments

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Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
250	SH 16: I-25 to Powers Blvd (including Mesa Ridge Pkwy)	CDOT	$55,930	Complete needed studies for improvements along this corridor. Expand from 2-lane to 4-lane facility from I-25 to SH 85 including reconstruction of I-25/SH 16 interchange and SH 16/SH 85 Interchange. Improve geometrics and intersections along Mesa Ridge Pkwy from SH 85 to Powers Blvd.	Bridge-On State Highway System/ Con-gestion Relief/ Discretion-ary/ Strategic (7th Pot)
251	SH 67 Corridor Improvements	Woodland Park	$3,462	Implementation of access control plan, widening turn lanes, raised medians, sidewalks, drainage improvements and signalization from US 24 north to Triple B Ranch Rd.	CDOT Regional Priorities, Private
252	SH 67/Kelley's Rd Intersection Improvement	Private	$1,100	Implementation of improvements at intersection of SH 67 and Kelley's Rd.	Private
253	SH 83: Shoup Rd to County Line Rd	CDOT	$70,000	Widen to 4-lane principal arterial.	CDOT Regional Priorities, Private

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254	SH 85: SH 16 to Academy Blvd (SH 83)	CDOT	$5,000	Widen to 4 lanes.	CDOT Regional Priorities
255	SH 94: US 24/SH 94 Intersection to Enoch Rd	CDOT	$60,000	Widen to four lanes from US 24 to Enoch Rd.	CDOT Regional Priorities
	SH 115 Widening and Safety Improvements	CDOT	$88,000	Widen to four lanes from Nelson Blvd to Rock Creek Canyon Rd.	CDOT Regional Priorities
256	Shopping Express	Colorado Springs	$5,500	Operating local express from Citadel Mall to Chapel Hills Mall. This includes the purchase of 3 to 4 buses.	CMAQ
257	Shoup Rd: Black Forest Rd to Vollmer Rd	El Paso County	$1,196	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
258	Shoup Rd: SH 83 to Black Forest Rd	El Paso County	$2,670	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
	Sinton Trail Underpass Improvements	Colorado Springs	$672	Reconstruct an existing trail tunnel, under Centennial Blvd., which is substandard in design.	Enhance-ments

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Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
260	Southeast Corridor Extension, Phase 1	Colorado Springs	$30,122	Widen to 4 lanes between SH 115 and B St; interchange improvements at SH 115 and I-25; construction of a 4-lane expressway between Academy and Powers; construction of a new road 600 feet south of existing Drennan between Academy and Hancock and a widening of existing Drennan between Hancock and Powers; and purchase of right-of-way for the ultimate project, with interchanges at Academy and Hancock.	Local
263	Stapleton/Curtis Extension: Eastonville Rd to US 24	El Paso County	$1,400	Construct 4-lane major arterial.	Local
264	Stapleton/Curtis Extension: US 24 to Judge Orr Rd	El Paso County	$2,500	Construct 4-lane principal arterial	Local/ Private

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
265	Stetson Hills Extension	Private	$2,000	Extend as principal arterial with on-street bike lanes from Marksheffel to US 24. Improve Huber Rd east to Tamlin Rd to upgrade/rename facility Stetson Hills Blvd; construct new section from Rock Island RR to US 24 (2010). Upgrade Tamlin Rd from Huber Rd to Rock Island RR as new Stetson Hills Blvd (2015).	Private
266	Struthers Rd: Falcons Nest to Baptist Rd	El Paso County	$3,000	Construct a 4-lane minor arterial.	Local/ Private
	Teller County Trail Construction	Teller County	$612	Construct a 10-foot paved trail from Wal-Mart to Crystola	Enhance-ments
271	Toll Roads	CDOT	$416,000	Funds to be held in a pool. Specific projects to be determined at a later date.	Tolling
272	Tourist Shuttle	Colorado Springs	$3,000	Operating transit services between the following tourist locations: Zoo, Old Colorado City, Manitou Springs and Downtown. This also includes the purchase of 3 to 4 buses to operate the service.	CMAQ
273	Traffic System Upgrade	Colorado Springs	$,1238	New signals and signal upgrades in the City of Colorado Springs.	Metro

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Transit – Existing Service Improvements	Colorado Springs	$117,000	Improve bus service to achieve 30 minute peak and 60 minute off-peak headways.	FTA 5307, CMAQ, Local
	Transit – New Service Area	Colorado Springs	$33,000	Expand possible call-and-ride and fixed route bus service to the northern and eastern areas of Colorado Springs.	FTA 5307, CMAQ, Local
	Transit – New Call and Ride Service	Colorado Springs	$16,000	Implement call-and-ride bus service in key areas.	FTA 5307, CMAQ, Local
	Transit – New Rapid Transit Service	Colorado Springs	$229,000	Install and operate two fixed guideway/rapid transit bus service routes.	FTA 5307, New Starts, CMAQ, Local
	Transit – Capital Improvements	Colorado Springs	$28,936	Capital improvements and planning efforts for transit services.	FTA 5307
276	Transit Planning and Administration	Colorado Springs	$16,000	FTA eligible staff salaries/benefits for planning and administrative activities (2005-2030).	FTA 5307, Metro

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
279	Transit System Maintenance and Misc Capital	Colorado Springs	$26,140	Capitalized maintenance, Paratransit offset transit enhancement (1% of FTA required), surveillance equipment (1% of FTA required), support vehicles overhauls/shop equipment/TVM hardware/software.	FTA 5307
280	Transit Vehicles for Elderly and Disabled Transportation Services	PPACG	$224,460	69 small paratransit vehicles replacement and rehabilitation and service expansion; 151 large paratransit vehicles replacement and service expansion.	FTA 5310, FTA 5311, Metro

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
281	Transportation Enhancement Eligible Projects	PPACG	$19,900	Funds to be held in a pool. Specific projects to be determined at a later date. Eligible projects must relate to surface transportation and include pedestrian and bicycle facilities, safety and educational activities for pedestrians and bicyclists, acquisition of scenic easements and scenic or historic sites, scenic or historic highway programs, landscaping and other scenic beautification, historic preservation, rehabilitation and operation of historic transportation buildings, structures, or facilities, preservation of abandoned railway corridors, control and removal of outdoor advertising, archaeological planning and research, environmental mitigation to address water pollution, and transportation museums.	Enhance-ments
282	Tutt Blvd Extension	Private	$6,000	Extend as arterial (2010) from Dublin Blvd to Milam Rd, except for short section from Cottonwood Creek to Research Pkwy Extension (2015).	Private

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Uintah St Bicycle Lanes	Colorado Springs	$356	Construct bicyle lanes on Uintah St. west of I-25. Project requires shoulder stabilization and new paving in existing right-of-way.	Enhance-ments
284	Union Blvd Extension	Private	$3,000	Design and construct as a principal arterial from Research to Powers (2005) and from Powers to Milam Rd (2010).	Private
	Union Blvd/ Academy Blvd Interchange	Colorado Springs	$86,000	Construct a grade-separated interchange at the intersection of Union Blvd and Academy Blvd. Ensure accommodation of bicycles and pedestrians in the design.	Local
	Union Blvd/ Constitution Ave. Intersection Improvements	Colorado Springs	$3,199	Upgrade intersection of Union Blvd. and Constitution Ave. to improve traffic flow and turning movements.	Local
285	Union Blvd/ Fillmore Interchange	Colorado Springs	$86,000	Construct a grade-separated interchange at the intersection of Union Blvd and Fillmore. Ensure accommodation of bicycles and pedestrians in the design, as well as access issues for the many medical campuses in the area.	Local

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
286	Union Blvd/Austin Bluffs Pkwy Interchange	Colorado Springs	$31,700	Construct a grade-separated interchange at the intersection of Union Blvd and Austin Bluffs Pkwy. Ensure accommodation of utility relocations and accommodate intersection of multi-use trails (Templeton Gap and Austin Bluffs Trails).	Local
287	Union Blvd/Milam Rd Corridor Study: Cordera Crest Blvd to Shoup Rd	El Paso County	$250	Function and design analysis to coordinate transportation system improvements between the City of Colorado Springs and El Paso County, including corridor-level detail project recommendations.	Metro
	Union Blvd/Woodmen Rd Interchange	Colorado Springs	$48,000	Construct a grade-separated interchange at the intersection of Union Blvd and Woodmen Rd. Ensure accommodation of bicycles and pedestrians in the design.	Local
	University Park Trail Construction	Colorado Springs	$1,290	Construct a paved trail from Rockhurst Blvd. to N. Nevada Ave. through the UCCS campus.	Enhance-ments
288	US 24 Realignment/ Woodland Park Bypass	Woodland Park	$447	Corridor preservation for US 24 Woodland Park Bypass.	Metro

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
289	US 24/Serpentine Ave Park-and-Ride Overlook	Manitou Springs	$550	Acquisition, design and construction of a park-and-ride facility on Higginbotham Flats overlook to Manitou Springs adjacent to US 24 near Serpentine Ave intersection. Project also provides overlook bench seating with restroom and landscaping for park-and-ride users.	CMAQ
290	US 24 West: I-25 to Edlowe Rd.	CDOT	$460,000	Complete studies to identify needed improvements along this corridor and implement recommendations. Improve geometrics and intersections from I-25 to Edlowe Rd. west of Woodland Park. Add interchanges to various locations from I-25 to Manitou Springs. Widen to six lanes from I-25 to Manitou Ave. and reconstruct interchange at Manitou Ave. Construct a park-and-ride facility at 31st St. Construct a four-lane bypass from about Glendale Dr. to Bluebird Hill St.	CDOT Regional Priorities

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
291	US 24 East: Powers Blvd to Elbert Hwy	CDOT	$330,000	Complete expansion to 4 lane facility from Powers to Elbert Rd. Reconstruct interchange at Peterson Rd and construct an interchange at Marksheffel Rd. Replace bridge over Sand Creek and over drainage south of Judge Orr Rd (I-18-G). Conduct planning study to identify future needs from Powers Blvd. to Calhan.	Bridge, CDOT Regional Priorities, Local
	Ute Pass Ave Improvements	Green Mountain Falls	$893	Widen the paving on Ute Pass Ave to provide bicycle/pedestrian lanes from Town line to Town line (5,355 FT). Construct sidewalks, street lights, paved parking spaces, enhanced signage, remove utility poles and overhead lines, and plant street trees, and other landscaping.	Enhance-ments
	Ute Pass Trail Phase III	El Paso County	$1,368	Construct Ute Pass Trail from Cascade to Ute Pass Elementary School along Fountain Creek and Hwy 24.	Enhance-ments
292	Vincent Dr Extension	Colorado Springs	$5,732	Extend from Dublin Blvd to Nevada Ave to relieve pressure on Woodmen Rd and I-25. Include sidewalks and on-street bike lanes as shown in the approved ITP.	Local

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
	Vincent Dr Bridge	Colorado Springs	$5,952	Replace existing 2-lane functionally obsolete bridge structure at Cottonwood Creek	Local
293	Vollmer Rd: Briargate Pkwy to Black Forest Rd	El Paso County	$1,376	Upgrade from 2-lane collector to a 4-lane principal arterial.	Local
294	Vollmer Rd: Hodgen Rd to Shoup Rd	El Paso County	$1,458	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
295	Vollmer Rd: Shoup Rd to Briargate Pkwy	El Paso County	$1,107	Upgrade from 2-lane collector to a 2-lane minor arterial.	Local
296	W Uintah St Intermodal Safety Improvements (2 phases)	Colorado Springs	$1,867	Expand the existing road cut between Cooper Ave and Mesa Rd on the north side to allow room for sidewalk, striped bike lanes, and a striped median to improve vehicle lane geometry. Re-grade hillside to north of existing roadway and install retaining wall to protect facilities. Combination of retaining wall, sidewalk and curb and gutter will provide pedestrian facilities and protect roadway from seasonal mudflows ($1.0M). Phase II will make similar improvements on south side ($1.1M). Project limits are Cooper St to Mesa Ave.	Local
	Woodland Park Express Service	Colorado Springs	$1,846	Provide transit bus service between Colorado Springs and Woodland Park.	CMAQ

TABLE 12.1
Fiscally Constrained Multi-Modal Project List

Map ID	Project Name	Sponsoring Entity	Total Cost (in $1000s)	Project Description	Funding Source
297	W Woodmen Rd Corridor Improvement Phase 2	Colorado Springs	$3,335	Upgrade to major collector including a 44-foot wide (3 lane) street with curb and gutter, right turn lanes at several intersections, and trail improvements (Woodmen Trail). Construct adequate drainage system to include inlets. Project limits are Buckhorn to Peregrine.	Local
298	Woodmen Rd Park-and-Ride Lot	Colorado Springs	$1,840	Design and construct a park-and-ride facility with 250-300 parking spaces along Woodmen Rd from Powers Blvd to Black Forest Rd.	FTA 5307
299	Woodmen Rd: I-25 to Powers Blvd	Colorado Springs	$60,548	Design, right-of-way acquisition and construction of a 6-lane parkway (principal arterial), including interchanges at Academy/Woodmen and Union/Woodmen, bike lanes, noise walls, and landscaping in accordance with Woodmen Corridor EA.	Metro/ Local
300	Woodmen Rd: Powers Blvd to US 24	El Paso County	$16,511	Expand 2-lane major arterial to a 4-lane, then 6-lane expressway.	Metro/ Local/ Private

PUBLIC TRANSPORTATION

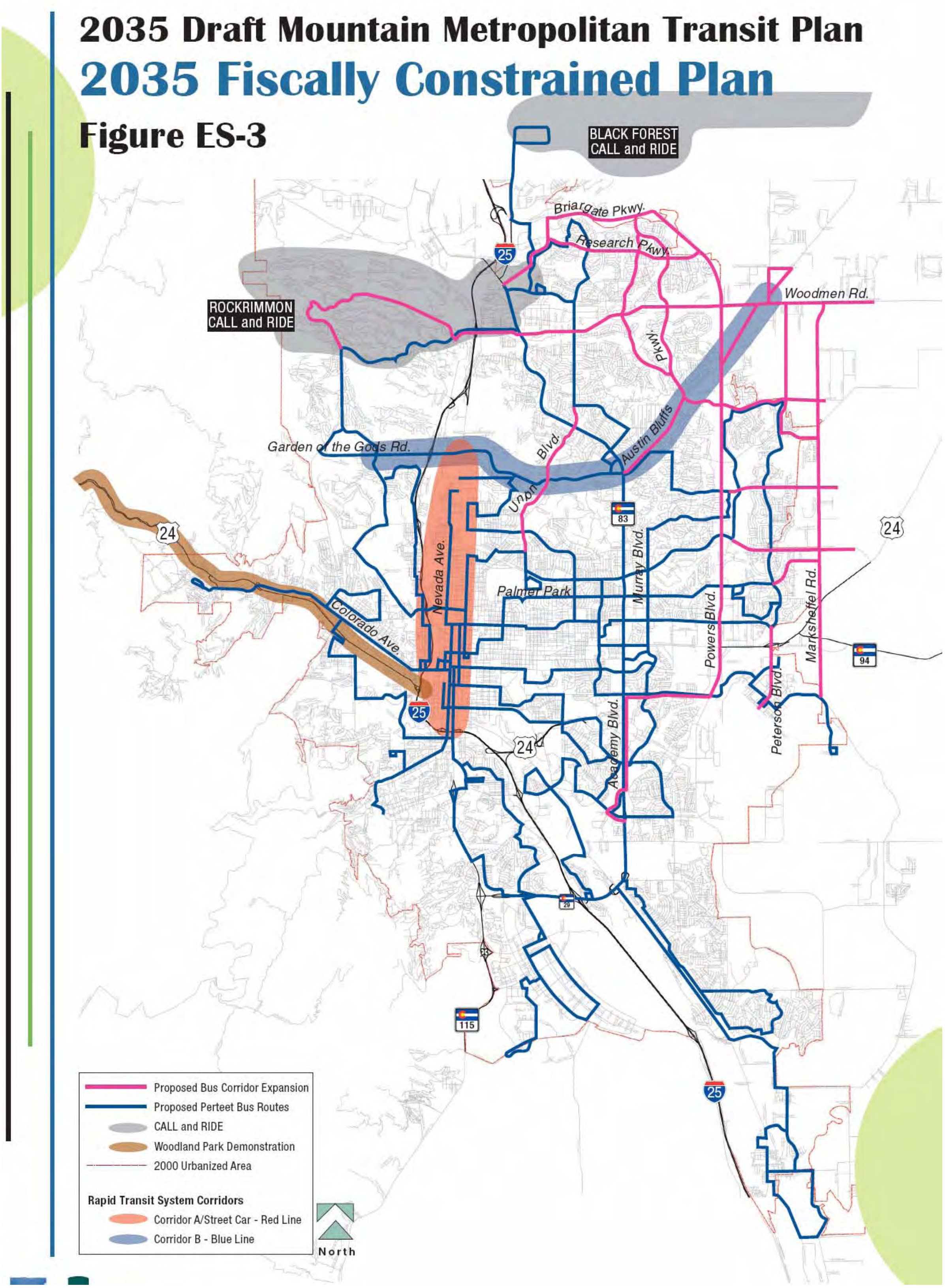
The public transportation projects described below and illustrated in Figure 12-2 assumes that funding of Mountain Metropolitan remains similar to today with the exception of FTA Small Starts and New Starts funding identified for two fixed guideway/rapid transit projects. Significant additional planning will be needed before such funding can be applied for. If the corridors are not competitive for this funding, local funding will need to replace these FTA funds or the projects cannot be constructed.

Transit Implementation Strategies

This plan provides guidance on a logical order for transit improvement implementation in a fiscally constrained environment. The key steps of the implementation plan are described below:

- Adopt service standards and begin routine evaluation of service
- Support statewide commuter rail initiatives
- Implement service improvements to achieve 30 minute peak and 60 minutes off peak headways: 2008 – 2009
- Implement a regional decision-making structure and evaluate potential for possible dedicated funding source: 2008-2010
- Conduct Feasibility Study for Downtown fixed guideway/rapid transit corridor: 2008 – 2010
- Serve northern and eastern areas through possible call and ride service and fixed-route expansion: 2009 – 2011
- Implement call and ride service in key areas: 2010 – 2011
- Conduct Alternatives Analysis for Downtown fixed guideway/rapid transit corridor: 2010 – 2011
- Construct Phase 1 of fixed guideway/rapid transit: 2016 – 2020
- Begin operation of Phase 1 fixed guideway/rapid transit: 2021 – 2025
- Construct Phase 2 of fixed guideway/rapid transit: 2021 – 2025
- Begin operation of Phase 2 fixed guideway/rapid transit: 2026 – 2030

Figure 12-2: Public Transportation Projects



Non-Motorized Transportation Strategies

Non-motorized, bicycle and pedestrian, projects identified in the *Regional Non-Motorized Transportation Plan* (Appendix F) and recommended for implementation are listed in Table 12-1.

Human Service Transportation Implementation Strategies

Planned long-range specialized transportation improvements do not assume substantial changes over the existing level of service provided. Additional funding would be required for any notable increases in service provided.

Freight Implementation Strategies

The *2035 Long Range Transportation Plan* does not specifically include any planned improvement for facilitating the movement of freight. However, planned improvements to the roadway network and regional transportation corridors will benefit freight traffic.

Rail Implementation Strategies

The Colorado Department of Transportation (CDOT) and the two class one railroads operating in Colorado, the Burlington Northern Santa Fe Railway Company and the Union Pacific Railroad, have been holding discussions regarding the possible re-location of rail infrastructure east of El Paso County and away from the Front Range. These preliminary efforts between CDOT and the railroads have been known either as the “Colorado Railroad Partnership Project” or as “Colorado's Safety and Mobility Partnership Project.” This study is intended to be preliminary in nature and broad in terms of detail, since it may be an initial phase of what may become a more comprehensive analysis of the infrastructure. The specific impacts to rail operations in the Colorado Springs Metropolitan Area have not been finalized. Any actions resulting from these discussions will be incorporated into future long-range plan updates.

Aviation Implementation Strategies

Improvements to aviation facilities are not included in the *2035 Long Range Transportation Plan*. However, ground access improvements, either roadway or public transportation, to aviation facilities are included.

Other Transportation Services

The Metro Rides program (carpools, vanpools, and schoolpools) is included in the 2008-2013 Transportation Improvement Program.

SAFETY STRATEGIES

- Establish effective programs to monitor and evaluate the highway system to make it possible to identify locations where improvements are needed.

- Conduct necessary studies and improve deficient locations.

- Support CDOT’s efforts to implement the strategies and achieve the goals set forth in the Strategic Highway Safety Plan.

- Continue to participate in Colorados Strategic Highway Safety Plan and provide direct input to its working groups.

- Install continuous traffic count stations on strategic regional roadways

- Support education and training programs and regulations for truck safety, bicycles and pedestrians, older drivers, and driving under the influence.

- Support the Safe Routes to School Program.

- Work cooperatively with CDOT and local governments to develop Safe Routes plans and obtain grant funding from the CDOT’s Safe Routes to School Grant Program

CHAPTER 11: CONSULTATION AND COORDINATION

The Pikes Area Council of Governments (PPACG) is a voluntary organization of municipal and county governments that provides a forum for local officials to identify regional opportunities and challenges, develop solutions, and make recommendations on area-wide strategies. The PPACG is the lead agency for transportation planning, air quality planning, water quality planning, demographic and economic forecasting, services for seniors, and military impact planning. In this role, the PPACG strives to improve coordination and communication between planning efforts and improve decision-making by integrating the information and efforts of multiple agencies, disciplines and activities.. PPACG's mission in bringing these efforts together is to aid decision-making and speed implementation of projects by providing information that quantifies future impact. The direct, indirect, and/or cumulative effects of various agencies' plans and projects can be assessed to highlight conflicts and connect them to avoidance, preservation, and/or mitigation priorities. This assessment process sets the stage for the next planning step, the environmental assessment process required by NEPA.

Federal Requirement

> *Each MPO shall consult with State and local agencies responsible for natural resources, environmental protection, conservation, historic preservation, and land use management concerning the development of the long-range transportation plan. Consultation shall involve, as appropriate, a comparison of transportation plans with State conservation plans or maps and a comparison of the transportation plan against inventories of natural or historic resources.*
>
> *A part of the consultation process, the long range plan shall include a discussion of types of potential environmental mitigation activities and areas to carry out these activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. (23 CFR Part 450.322(f)(7)).*
>
> *These activities shall be developed in consultation with Federal, State and tribal wildlife, land management, resource agencies and regulatory agencies. (23 CFR Part 450.322(g)).*

Federal objectives:

The FHWA's Planning and Environment Linkages (PEL) initiative presents and promotes an approach to transportation decision-making that considers economic, community and environmental goals early in the planning stage and carries them through project development, design, and construction. This approach encourages internal and external communication and coordination throughout the decision-making process—between transportation staff responsible for planning and project development, between transportation agencies and resource agencies, and between agencies and the public. It also enables agencies to take a broader, interregional perspective instead of one that looks only at individual projects.

PPACG Processes

PPACG incorporated economic and land development planning throughout the transportation planning process beginning at the earliest stage; during socio-economic forecasting as part of the regional modeling system. Coordination with each entity occurred through the committee structure defined below, and during working meetings necessitated by the forecasting process as described in Chapter 5, Future Regional Development. TELUM utilizes local municipality land-use plans to determine transportation needs.

Environmental Impacts

The resource impact information identified in the regional setting chapter summarizes general issues related to potential direct, indirect, or cumulative impacts of transportation investments within the region. The fact that an issue is not identified does not mean that the issue is not one of concern. This is the first attempt at identifying these at the regional long range plan level. The purpose of this effort is to encourage regional use of a coordinated adaptive planning process to identify issues that can be addressed proactively and concerns that can be mitigated or incorporated into projects in a manner that reinforces other planning efforts in the region.

Specifics regarding types and locations of mitigation is identified in Chapter 13, Mitigation and Monitoring.

Key Partners

The PPACG Board of Directors is primarily comprised of city and county elected officials responsible for local planning and zoning decisions. There are several other important groups represented on the Board of Directors, including; regional transit issues, military affairs, and CDOT.

PPACG also has a formal standing committee process that brings many other planning entities and issues into our process to coordinate regional planning issues. Key committees are described below.

The Transportation Advisory Committee (TAC).
The TAC is intimately involved in every step of the transportation planning process, with no less than monthly meetings and special meetings at key steps in the process. Membership on the TAC includes:

City of Colorado Springs
City of Colorado Springs
City of Fountain
City of Manitou Springs
City of Woodland Park
Colorado DOT HQ
Colorado DOT Region 2
El Paso County
El Paso County
Teller County
Town of Green Mountain Falls
Town of Monument
Town of Palmer Lake
PPACG
Colorado Air Quality Control
Colorado Springs Utilities
Federal Highway Administration
Federal Transit Administration
Fort Carson Army Base
Peterson Air Force Base
Mountain Metro Transit
US Air Force Academy

The Regional Economic Forum (REF).
The REF involvement primarily centered on ensuring that the transportation planning process included adequate consideration of the land-use and economic development plans of entities throughout the region. Membership on the REF includes:

Convention & Visitors Bureau
Convention & Visitors Bureau
Colorado Springs EDC
Colorado Springs Chamber
Housing & Building Association
Downtown Partnership of CS
City of CS Economic Dev. Dept.
Colorado Springs Airport
Manitou Springs EDC / BID
Fountain Economic Develop Dept
Greater Woodland Park Chamber
City of Cripple Creek
Colo. Springs Black Chamber
Hispanic Chamber of Colo Sprgs
So. Colorado Women's Chamber
Colorado Springs Utilities
Colorado Springs Utilities
Colorado Springs Utilities
Pikes Peak Assoc. Of Realtors
Tri-Lakes Chamber
Pikes Peak Community College
Pikes Peak Community College

The Community Advisory Committee (CAC). Membership on the CAC includes:

City of Colorado Springs
City of Colorado Springs
City of Colorado Springs
City of Fountain
City of Fountain
City of Manitou Springs
City of Manitou Springs
City of Woodland Park
El Paso County

El Paso County
El Paso County
League of Women Voters
Teller County
Town of Green Mountain Falls
Town of Monument
Town of Palmer Lake
Citizen-At-Large
Citizen-At-Large
Citizen-At-Large
Citizen-At-Large
PPACG
Citizen-At-Large
Citizen-At-Large
Colorado Springs Chamber
Council of Neighborhood Org.

The Air Quality Technical Committee (AQTC). Membership on the ACTC includes:

City of Colorado Springs
City of Colorado Springs
City of Fountain
City of Manitou Springs
City of Woodland Park
Colorado Air Pollution Control Div.
Colorado Air Pollution Control Div.
Colorado Springs Utilities
Colorado Springs Utilities
El Paso County
El Paso County
Teller County
Town of Green Mountain Falls
Town of Monument
Town of Palmer Lake
Colorado DOT
Fort Carson
Fort Carson
Peterson Air Force Base
PPACG
Schriever Air Force Base
US Air Force Academy

The Water Quality Management Committee (WQMC). Membership on the WQMC includes:

Academy Water & Sanitation District
Cherokee Metropolitan District
City of Fountain
City of Woodland Park
Colorado Springs Utilities
Donala Water & Sanitation District
Donala Water & Sanitation District
El Paso County
El Paso County
Fort Carson
Fountain Sanitation District
Fountain Sanitation District
Palmer Lake Sanitation District
Palmer Lake Sanitation District
Park County
Schriever Air Force Base
Security Water & Sanitation
Security Water & Sanitation
Teller County
Teller County
TriView Metropolitan District
US Air Force Academy
Widefield Water & Sanitation
Widefield Water & Sanitation

Garden Valley Water & Sanitation
Monument Sanitation District
Woodmoor Water & Sanitation
Woodmoor Water & Sanitation

The Specialized Transportation Advisory Subcommittee (STAS). Membership on the STAS includes:

Pikes Peak Partnership
City of Colorado Springs Public Works
Colorado Springs Independence Center
Colorado Div. of Vocational Rehab.
Community Partnership for Child Dev.
Easter Seals of Southern Colorado
Fountain Valley Senior Services
Goodwill Industries
Metro Mobility
Citizen-At-Large
Citizen-At-Large
Citizen-At-Large
Pikes Peak Mental Health Center
Regional Advisory Council
Silver Key Senior Services
Mountain Metropolitan Transit
Teller Senior Coalition
The Resource Exchange
Yellow Cab
Community Intersections
Colorado DOT – Transit
PPACG
PPAAA

A Public Participation Working Group was also formed to facilitate two-way communication with key transportation stakeholders in the region. The Working Group's responsibilities were to assist in the development of public involvement methods and products that will be designed to:

- Facilitate public outreach and communication;
- Obtain representative viewpoints of the region's citizens;
- Provide factual information on transportation planning topics; and
- Generate interest in the 2008 through 2035 Regional Transportation Plan development process.

The Public Participation Working Group was composed of representatives from existing agency and community transportation organizations such as PPACG's advisory committees, Colorado Springs Citizens Transportation Advisory Board and El Paso County's Highway Advisory Commission. Participants in the Working Group were recruited from the following advisory committees, commissions, and boards who have interest in transportation planning:

- PPACG Advisory Committees;
  - Community Advisory Committee (CAC)
  - Transportation Advisory Committee (TAC)
  - Transportation Enhancement Subcommittee (TES)
  - Specialized Transportation Advisory Subcommittee (STAS)
  - Air Quality Technical Committee (AQTC)
  - PPAAA Regional Advisory Council (RAC)
- City of Colorado Springs Citizen's Transportation Advisory Board (CTAB); and
- El Paso County's Highway Advisory Commission (HAC).

PPACG also has monthly meetings to coordinate transportation planning and programming activities with CDOT, Mountain Metro Transit, and the Federal Highway Administration.

Land development and the transportation system
The availability of road, rail, air, and other transport services and infrastructure help determine the location and distribution of development. Correspondingly, the location, density and site design of development has a significant influence on travel demand, the efficiency of public transport services and options for mobility. Coordinating development and transport planning can ensure that transportation corridors and their surroundings are planned, designed, developed and managed as integrated facilities for more than one transportation mode, if appropriate. The closest relationship between development and transportation is access management. This relationship is discussed in Chapter 8, Transportation System Management and Operations.

Using collaborative adaptive planning processes it is possible to:
- support economic, social, sustainability and environmental objectives for the region,
- increase the profitability of a development,
- improve the amenity of an area,
- promote regional economic efficiency,
- support the use of public transport and promote cycling and walking,
- ensure that the transport network provides transport and access for all, including those with mobility difficulties and the transport disadvantaged
- deliver more efficient, safe and effective freight movement and minimize community and infrastructure impacts of freight movement,
- encourage development in areas where adequate infrastructure exists or can be provided efficiently
- minimize social and equity issues of transport infrastructure provision and maximize investment.

Economic development and the transportation system
The iterative considerations between regional transportation and regional economic growth and efficiency involve:
- identifying and preserving transportation corridor options for the future provision of road, rail or other transportation infrastructure
- planning transport networks in a flexible manner in order to accommodate new, expanding and changing industries within the Pikes Peak Region
- maximizing funding opportunities to meet future demands, particularly by industry, on transport networks, especially road,
- ensuring the long-term viability of transport links to strategic regional infrastructure.

Planning and Environmental Linkages
There are two primary efforts that PPACG used to link the long range transportation planning effort with environmental concerns. The first effort was led by CDOT; the second was led by PPACG using a contract with the Colorado Natural Heritage Program funded through the FHWA.

CDOT hosted an Environmental Forum on March 14, 2007. This event was intended to improve relations and aid planning understanding at the regional level between resource/regulatory agencies and transportation planners. The one-on-one discussion format fostered an atmosphere of cooperation and provided an opportunity for collaborative identification of potential conflicts and opportunities for resource and regulatory agency needs and concerns to be identified at the earliest planning stages. Subject matter experts from 16 Federal and State agencies and organizations identified environmental issues and concerns for each regional transportation planning agency. A summary of the issues, arranged by resource agency is in Table 11-1 below.

For the second, the Colorado Natural Heritage Program (CNHP) implemented NatureServe Vista and performed analyses that identified key critical conservation, mitigation, and avoidance sites within El Paso County. This effort included coordinating with the Peak to Prairie project and the Central Shortgrass Prairie EcoRegional Assessment for data and previously prioritized conservation areas. NatureServe Vista is a decision support system (DSS) that integrates conservation information with land use patterns and policies. Fully implemented it provides tools to help manage natural resources and enables users to create, evaluate, implement, and monitor land use and resource management plans that operate within the existing economic, social, and political context to achieve conservation goals.

Table 11-1.

Environmental Protection Agency (EPA)	NEPA documents are too long; and the process could be streamlined. NEPA documents must be “bullet proof” to avoid potential litigation which is now rampant. Potential lawsuits could be on I-70 Mountain Corridor PEIS, I-70 East Corridor (Both within Region 1).
Transportation (CDOT) Municipal Separate Storm Sewer System (MS4) Discharge Permit Program	Best Management Practices outside of the Municipal Separate Storm Sewer System (MS4) program areas are usually part of the NEPA process. Colorado Springs is in an MS4 Area (>20K persons per sq. mi.) as determined by the EPA. Some communities are creating storm water utilities (e.g., Denver, Colorado Springs, Arapahoe County).
Colorado Department of Public Health and Environment (CDPHE) - Solid Waste	Midway landfill facility includes onsite composting/waste diversion, agricultural manure processing, water treatment plant sludge processing and other organics

	Laying asphalt and the cleaning of spray nozzles on trucks may contaminate the soil.
CDPHE - Water Quality	MS4 only covers U.S. Census designated urbanized areas. CDOT voluntarily implements MS4 statewide MS4 process covers permanent water quality installation and continued function of features or practices (e.g., Cañon City). “Total Maximum Daily Load” program is where CDPHE manages sediment from various projects.
CDPHE - Air Quality	Cañon City has a maintenance plan in place for Particulate Matter (PM10). Cripple Creek has a Memorandum of Agreement in place for PM10. Park County rapid population growth is a concern for them falling into nonattainment. The Ozone (O3) issue is caused by vehicular emissions but oil and gas development is also a contributing factor.
Division of Wildlife (DOW)	Dead animals by the road are a public hazard and aesthetic issue. Wildlife crossings must be site specific and underpasses (box culverts) tend to be more cost efficient than overpasses as well as useful to ranchers. DOW requests avoidance of native cutthroat trout habitat, brown trout habitat in the Arkansas River, and prairie dog colonies. SH 96 from Westcliffe to Wetmore in Custer County has heavy deer crossings. CDOT should take the lead role in contacting DOW before starting highway projects to mitigate wildlife conflicts.
State Historic Preservation Office (SHPO)	Sec. 106 states that cultural resources must be eligible for, or formally listed on, the National Register of Historic Resources. Examples of historic resources include objects, structures, sites, buildings, historic districts and traditional cultural properties. Manitou Springs is a National Historical

	Landmark. ____ is on the National Register District. .
United States Fish and Wildlife Service (USFWS)	Species present in the TPR include: Mexican Spotted Owl in Pine National Forest, Bald Eagle, Lynx, and Greenback Cutthroat Trout. In Park County the South Platte River Basin serves as the habitat for the Pawnee Mountain Skipper Butterfly (40% of whose habitat was destroyed by the Hayman fire). Migratory birds are often a factor in bridge replacement projects. Threatened & Endangered issues should be handled early in the NEPA process to avoid delays in the process.
United States Army Corps of Engineers (USACOE)	Fens (wetlands) in Cripple Creek near SH 67 may need to be moved due to ongoing mining activities. Fens could be affected by widening US 285 in Park County which would automatically trigger a 404 permit. TPR should work with partners to consider all possible "green" options, prior to requesting a permit.
Federal Highway Administrations Central Federal Lands (CFL) and Colorado Trout Unlimited	Highway projects disturb the natural curvature of river basins. Auto accident drivers should be held liable for waterway impacts. Fishing in Colorado is a billion dollar industry.
The Nature Conservancy	"National Tourism Heritage" has designated 22,000 acres of conservation area for prairie dog habitat throughout the Eastern Plains (S.E. Colorado). The Nature Conservancy promotes Eco-Regional Assessments to conserve representative biodiversity within the Southern Rocky Mountains Follow-up: the Nature Conservancy can provide DVDs to CDOT to show migration areas.
CDOT Wildlife Program	CDOT's Shortgrass Prairie Initiative has

	24,400 acres of land to mitigate statewide Mitigation impacts will last for 20 years or until they reach 58,000 acres of impact. Only 250 Lynx left in the entire state and generally stay above 8,000 feet. CDOT recommends constructing over/underpass only on major roadway/highway construction projects and using guardrails to mitigate wildlife accidents.

Colorado State Parks (CSP)	Current Projects include the Ring the Peak Trail which is in progress. Colorado Front Range Trail along Fountain Creek may impact I-25. Colorado Front Range Trail Master Plan and Implementation Plan outlines the proposed trail from south of Pueblo to Trinidad. and supports non-motorized vehicles in the right-of-way along highways and the accommodation of bike lanes wherever possible. CSP wants CDOT to become an active partner in creating recreational trails and non-motorized uses in highway ROW, and accommodate bike lanes wherever feasible.
Federal Highway Administration (FHWA)	Looking at a broader scope of environmental issues and not just NEPA-related criteria help address flaws between planning and NEPA. Need to encourage locals to consider land use issues and their transportation impacts up front in the NEPA process. Colorado is designated as a focus state for the new "Planning and Environmental Linkages" program to fund projects that join together the planning process and the environment. Pueblo and Pikes Peak Area COG/MPO in coordination with the USACOE have received FHWA funds for the Fountain Creek Watershed study. Outcome from the Fountain Creek Watershed study will be incorporated into their 2035 plans.
(USFS)	New federal travel regulations designate roads, trails and areas for motorized use in USFS lands. The regulations prohibit off-road (cross country) motorized use outside of designated areas in Forest Service lands. Follow-up: USFS would like access to CFR's 2035 Plan Technical reports.

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CHAPTER 10: SYSTEM SECURITY

REGIONAL TRANSPORTATION SECURITY

In the years since the 9/11 attack there has been greater emphasis placed on emergency preparedness and homeland security issues. Title 23 in the Code of Federal Regulations, in Section 450.322(f), now states "The metropolitan transportation plan should include appropriate emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) and safeguard the personal security of all motorized and non-motorized users." Given the relative infancy of NIMS implementation, the role of PPACG is currently limited to support of preparation through evacuation modeling.

From a transportation planning perspective, homeland security is still an emerging area of concern, and different areas will have different security priorities, so that a one size fits all approach is not appropriate. Expectations of the FHWA / FTA in regards to what the transportation plan should reflect in regards to security include:

- Defining the role of the MPO and public transportation operators in promoting security, which may in part be defined elsewhere in State or local legislation related to emergency management responsibilities.

- Identify critical facilities and transportation system elements and the risk to assets such as highways, transit systems or rail lines critical to national defense or economic security, and infrastructure intricately related to potential high value security targets.

- Identification of appropriate security goals and strategies.

- Reflection of projects and strategies that will increase the security of transportation system users in the long range transportation plan and the Transportation Improvement Program (TIP).

The foci of the combined local, state, and federal security planning efforts are to minimize the direct or indirect disruptions caused either by natural or human actions. These can occur in any season of the year and may cover a limited or wide-ranging geographic area that impact the Pikes

Peak region or its neighboring areas and result in a rapid and large influx or exodus of persons. Examples of the types of events that create situations where security issues arise include:

TABLE 10-1: SECURITY EVENTS

Natural Events	Human Events
Tornado	Hazardous Material incident
Blizzard	Power Outages
Flood	Act of terrorism (bombing)
Wildfire	Civil Disturbance (ex: riot)

Whatever the cause, disasters have several key characteristics, which include:

1) The event is unexpected, with little or no prior warning or opportunity to prepare;

2) Lives, health, or the environment are endangered, and

3) Personnel and emergency services may not be available during the initial stages of a disaster due to demands for their services.

When one element in the system breaks down it may cause a series of sequential reactions that amplify the severity of the original impact from compounding secondary impacts to transportation, utilities, communications systems, fuel supplies, and/or water supplies. This disaster cascade could damage transportation infrastructure which could severely restrict the abilities of police, fire, and paramedic services to provide services during or after a disaster. For example, damage to roads may cause the following:

- Ambulances prevented from reaching victims and/or victims prevented from reaching emergency medical services.
- Police and fire departments prevented from reaching areas of concern.
- Flow of needed supplies is interrupted.
- Ability to assess damage is compromised.

Federal Requirement

The U.S. Department of Transportation has adopted the following SECURITY, PREPAREDNESS AND RESPONSE goal as part of its strategic plan:

> *"Balance transportation security requirements with the safety, mobility and economic needs of the Nation and be prepared to respond to emergencies that affect the viability of the transportation sector."*

Key federal objectives of this goal are to have:

> *"Our security strategies recognize that the transportation network must not only move millions of people and tons of cargo daily but also must remain a vital link for Department of Defense mobilization requirements; Natural disasters such as hurricanes, tornados, earthquakes and floods demonstrate that the government needs to be ready to collaborate and cooperate in new and innovative ways to cope with such events effectively;*
>
> *Disruptions, could sharply affect the operation of certain transport sectors, particularly aviation, rail, and transit, critical to response and recovery. Similarly, terrorist and criminal attacks on transportation systems can disrupt passenger transportation and the flow of cargo, particularly vital commodities such as food, medicines and petroleum products. Damage to large segments of roadway, tunnels, or bridges, as well as to waterway transport, rail freight movement, and transit services are all plausible risks.*

Important elements of PPACG's initial response to the new security planning requirements include cataloging available emergency management resources and documenting actions that the area has already undertaken, especially at the state level.

Planning for Security

In 2004, the U.S. Department of Homeland Security introduced the National Response Plan (NRP) and the National Incident Management System (NIMS). The NRP establishes a comprehensive, national, all-hazards approach to domestic incident management across a spectrum of activities. NIMS provides a nationwide template enabling government and nongovernmental responders to respond to all domestic incidents using a coordinated and modular approach based on the Incident Command System (ICS). As of October 1, 2006, federal preparedness funding is conditioned upon full compliance with NIMS. NIMS compliance means:

- Local jurisdictions have adopted NIMS through resolution or legislation as the local jurisdiction's all-hazard, incident response system without "sunset" provisions;
- Have appropriate personnel complete NIMS training courses;
- Complete a self-assessment to establish a NIMS baseline as to where the jurisdiction stands in regards to NIMS implementation;
- Institutionalize the use of the Incident Command System; and
- Establish a strategy for implementing NIMS (NIMS requirements are phased in over a period of years).

The all-hazards planning approach to community preparedness includes four phases, listed below. The four stages represent a mix of long term and short term preparedness. The first priority is Preparedness (getting an emergency operations center established and staffed, coordinating available resources, getting the infrastructure such as communication systems needed to respond in place) and Response (establishing Incident Command protocols, assigning responsibilities, and conducting training exercises). Recovery, and to a larger extent Mitigation, are areas where PPACG may defer initial efforts because the immediate payoff of such steps are not as great.

A. Mitigation

1. Identify threats to systems and resources.

2. Develop plans, procedures and organizational structure needed to ensure the safe and timely movement of the public and emergency service resources continue during an incident.

3. Maintain sufficiency ratings and other data such as built plans for primary bridges and critical transportation infrastructure.

B. Preparedness

1. Identify and maintain a network of available local, County and State resources to aid safe and timely movement of the public and emergency service resources.

2. Participate in training sessions and exercises.

3. Evaluate agency EOPs.

4. Ensure that administrative and accounting procedures are in place to document actions taken and all costs incurred during incident operations.

5. Ensure that on-call contracts with engineering companies and construction contractors include provisions for emergency services.

C. Response

1. Select and contact appropriate personnel.

2. Designate personnel authorized to enter affected area and provide this information to the OEM.

3. Provide a representative to the EOC, as requested.

4. Confirm and report the level, severity and extent of involvement.

5. Provide and coordinate public information through the EOC and Joint Information Center, if activated, in support of ESF 15 – External Affairs.

6. Coordinate with law enforcement personnel for maintaining security of facilities and supplies (ESF 13 – Public Safety and Security).

D. Recovery

1. Coordinate and organize long-term plans for the safe movement of the public and emergency service resources.

2. Provide documentation on injuries and/or deaths of persons resulting from the incident.

Security Concept of Operations

Activation of an Emergency Operations Center (EOC) may be required during an incident. The EOC may consist of one person, such as the Emergency Manager (in small events) or a full activation of the organizational structure for a large incident. All agencies will coordinate activity, maintain communication with and support the Office of Emergency Management (OEM) and EOC, if activated. An Incident Command System in compliance with the National Incident Management System (NIMS) will be established. This system will be utilized to coordinate on-scene incident response activity.

There are a locally developed and approved plans to provide for coordination, control and allocation of transportation assets in support of the movement of emergency resources including the evacuation of people and the redistribution of food and fuel supplies. Key participants in this endeavor are: Local municipality public works departments, Offices of Emergency Management (OEMs), Colorado Springs Internal Support Services, local law enforcement, Colorado State Patrol, County Emergency Services Divisions, State agencies, Federal agencies and military installations.

It is assumed that all agencies have emergency operations plans (EOPs) and will enact those plans in support of the emergency response, if necessary, and that all entities have established continuity of operations plans.

It is further assumed that all supporting agencies will ensure continual operational readiness. Agencies will develop inter-agency and inter-jurisdictional agreements with similar agencies to expedite resource mobilization when additional assistance is needed. Mobilization centers, staging areas, receiving and distribution sites, key operational support facilities and necessary staffing will be identified.

All agencies and organizations with transportation or emergency response responsibilities are responsible for developing internal procedures and standard operating procedures for carrying out the following functions:

1. Identify, train and assign personnel to maintain contact with and prepare to execute missions during periods of activation.

2. Coordinate activities and maintain communication with the EOC, if activated, during all emergency operations.

3. Provide an agency representative to the EOC, as requested.

4. Provide information and coordinate any public announcement, statement or press release through the OEM or the EOC and Joint Information Center, if activated.

5. Provide program assistance and expertise as appropriate and in coordination with other agencies.

6. Activate continuity of operations and recovery plans, as needed. Establish emergency supplies including food, water, blankets, electrical generators, communications, etc. to provide continued operations and shelter employees as necessary.

7. Provide all requested information prior to, during and following any incident to the OEM.

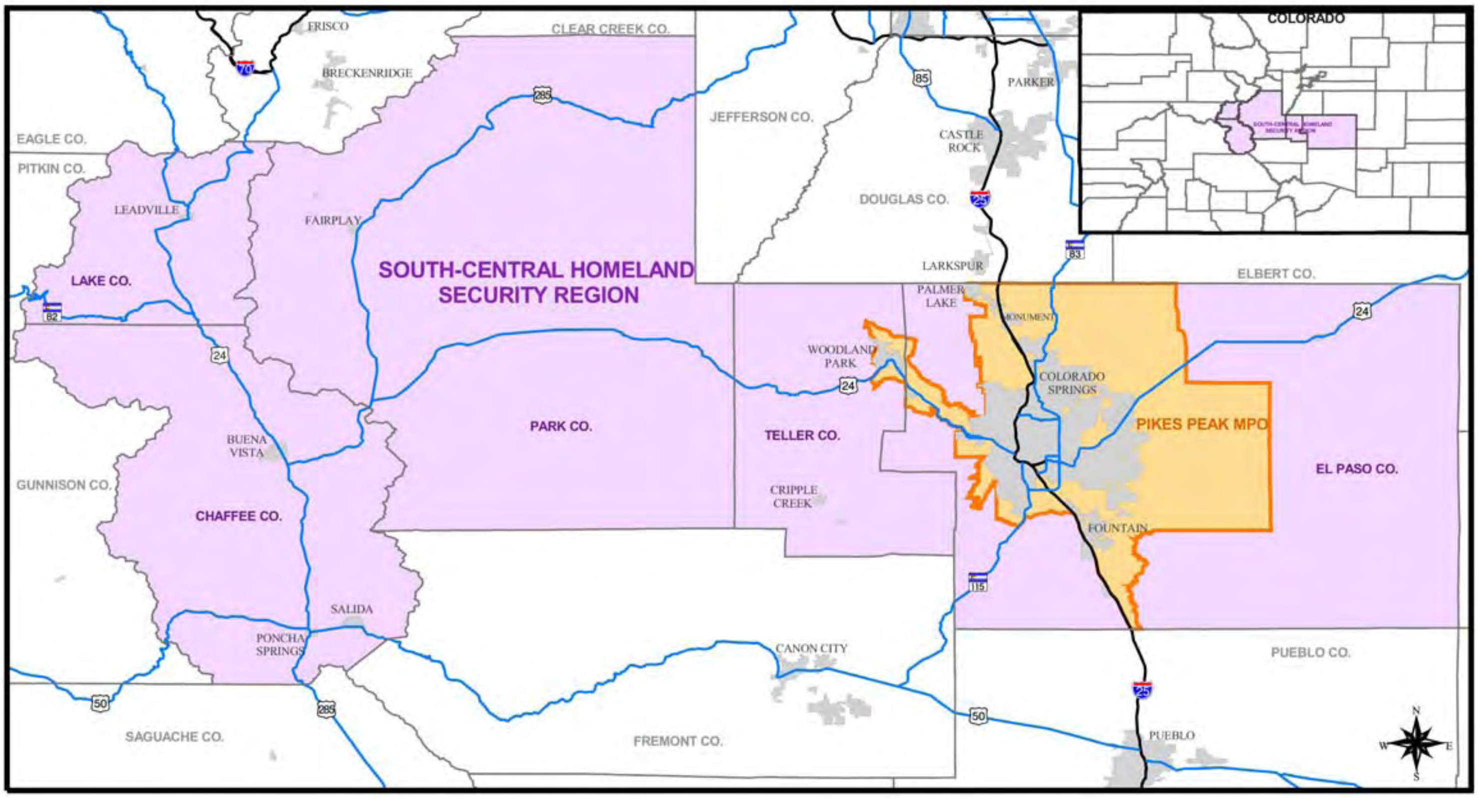
State of Colorado Emergency Operations Plan

The purpose of the State of Colorado Emergency Operations Plan (SEOP) is to identify the roles, responsibilities and actions of State government in disasters. Emergency operations plans address the ability to direct, control, coordinate and manage emergency operations. Each level of government should respond to an incident using its available resources, to include the use of mutual aid, and may request assistance from the next higher level of government, if required (i.e., municipality to county; county to State, State to Federal government). When local government capabilities are taxed, state government has resources and expertise available to provide emergency or disaster assistance. The State will modify normal operations and redirect resources to assist and support local governments in saving lives, relieving human suffering, sustaining survivors, protecting property, and reestablishing essential services. Federal government resources and expertise can be mobilized to augment emergency or disaster efforts beyond the capabilities of state government.

The SEOP identifies fifteen Emergency Support Functions (ESF) that spell out the types of assistance activities that local government may need regardless of the nature of the disaster or emergency. ESF 1 is Transportation - Department of Transportation Activities include: processing and coordinating requests for State, local, and civil transportation support as directed under the State Emergency Operations Plan (SEOP); reporting damage to transportation infrastructure as a result of the incident; coordinating alternate transportation services; coordinating the restoration and recovery of the transportation infrastructure; and coordinating and supporting prevention, preparedness, mitigation among transportation infrastructure stakeholders at the state and local levels.

The Colorado Division of Emergency Management (CDEM) provides financial and technical support to local governments throughout the state with both out-stationed and in-house staff. The Pikes Peak Area is in the South-central Region of this Division.

FIGURE 10-1: PPACG WITHIN THE HOMELAND SECURITY REGION



State of Colorado Homeland Security Strategy

The State of Colorado Homeland Security Strategy was prepared by the Colorado Department of Local Affairs with extensive cooperation and input from the Governor's Office, the Colorado Department of Public Safety, the state's County Emergency Managers, the regional Homeland Security Coordinators, and the Center for the Study and Prevention of Violence at the University of Colorado-Boulder. This report reflects the data collected by all local jurisdictions during the 2003 Homeland Security Assessment and input from state agencies. In 2002, legislation was enacted to create the Office of Preparedness, Security, and Fire Safety within the Colorado Department of Public Safety to coordinate Colorado's response to the threat of terrorism. House Bill 02-1315 includes a number of specific duties for the office, including the creation and implementation of terrorism preparedness plans.

Colorado's Homeland Security Strategy provides a framework for enhancing the State's ability to prevent, respond to, and recover from an act of terrorism. The plan furnishes state and local officials with the means to develop interlocking and mutually supporting emergency preparedness programs. The plan focuses on preparedness for acts of terrorism and addresses disaster planning that is supplemented by local strategic and operations plans. This coordinated effort by federal, state, and local governments identified needed resources, developed strategies, and created partnerships throughout the public and private sector that serve as a foundation for homeland security efforts now and in the future.

State Homeland Security / Emergency Management

Colorado's Multi-agency Coordination Center (MACC) offers the ability for state, federal, and local agencies to come together in a central location to coordinate the response to emergencies and disasters throughout the state. The MACC is a state-of-the-art center developed specifically to help Colorado respond to any type of disaster or emergency it may face in today's world. The Center is housed with South Metro Fire & Rescue in Centennial, Colorado. The Colorado Information Analysis Center was added to the Center with the disaster "prevention" focus, and strong links to federal and local agencies. The MACC is linked to the CDOT's Transportation Operations Center (TOC) which provides highway surveillance camera displays to monitor state roadways and weather throughout Colorado. The center also provides us general intelligence on all transportation systems including railroads and airports. The TOC has command and control over all state road systems, bridges, and underpasses, provides avalanche analysis and control, and acts as the command and control center in the event of an emergency.

CDOT

CDOT's role in emergency management consists primarily of safeguarding and maintaining the state transportation system in the affected area and facilitating and coordinating evacuation routes that utilize the state transportation system. CDOT maintenance staff are the primary responders for both damage to CDOT infrastructure and assistance to others, but staff from other areas may be utilized as needed.

Colorado State Patrol

The Colorado Information Analysis Center (CIAC) is designed to be a cross-jurisdictional partnership between local, state, and federal agencies - including private sector participation when appropriate. This center provides for one central point in Colorado for the collection, analysis, and timely dissemination of terrorism-related information. Information is distributed from the CIAC in the form of daily reports, special reports, and bulletins to numerous agencies representing a multitude of disciplines.

PPACG Involvement in Security and Emergency Management

The role of any MPO in security and emergency management efforts varies based upon the political and institutional context of their region. Clearly, emergency management, public safety and transportation operating agencies have the primary responsibility for responding to such incidents. However, outside of the immediate urgency of response, the opportunity to converse about coordinating responses to potential incidents and how to handle the subsequent demands on the transportation system is an area where the MPO can assist in multiple ways, including as a forum for cooperative decision making, as an advocate for funding of regional transportation strategies, and by providing technical analysis on the transportation network regarding the impacts of and needs related to security and emergency management efforts.

Given the relative infancy of NIMS implementation, the role of PPACG is limited to support of preparation through evacuation modeling.

KEY PARTNERS

The Public Works Departments of Colorado Springs and El Paso and Teller Counties are key partners in the PPACG planning process. They are also managers of key portions of the existing roadway network in the area and so have key emergency management responsibilities during the response and recovery phase of any incident. These responsibilities include:

- Inspect bridges, roads, signs, lighting, airports, and sidewalks for damage.
- Coordinate and repair damaged transportation structures, including roads, traffic control systems and signage.
- Maintain rights-of-way for emergency vehicles.
- Assist in traffic management during incidents.
- Help secure geographic areas with roadblocks or other physical measures.
- Establish short term and long term detours and signage
- Remove debris and clean streets and roadways.
- Set priorities for restoration of transportation systems.

Colorado Springs Transit System

Mountain Metropolitan Transit should work with the Colorado Springs Police Department and Emergency Management Director to coordinate issues including controlling and dispatching buses as needed in emergency management response activities. By law, the emergency management director has the authority within 72 hours of an incident to commandeer local transit vehicles to aid in response and recovery operations. In looking at transit assets, the MMT has conducted the following assessment and training activities:

PPACG POLICY

Moving Forward includes limited policy language related to the issue of the security of the transportation system. Policy directions in the plan focus on the need to consider improvements that facilitate the timely provision of emergency response services.

Planning Principle *6:*
Increase the security of the multi-modal transportation system.

Goal:
Minimize infrastructure and organizational barriers that hinder the timely response to and/or from emergency services during and after a natural or human caused disaster.

Measurements:

1. Quantitative: Average response time using isochrones of fire station locations. (Note: need future locations of fire stations)

2. Qualitative: The extent to which an alternative integrates the operations of and communications between traffic control systems and first responders.

Actions: P*erform vulnerability and threat assessments to determine what, when and how to protect transportation infrastructure.*

Develop and implement operational tools and technologies to enable secure interoperable communications, and to enhance existing traffic management and traveler information capabilities. This includes exploring how to deliver both emergency traveler information coordinating with regional traffic management centers

KEY TRANSPORTATION ASSETS

Key transportation system assets in the PPACG Planning Area include:

- Interstate Highway System
- National Highway System Routes (NHS)
- Strategic Highway Network Routes (STRAHNET) – the STRAHNET is the road system deemed necessary for emergency mobilization and peacetime movement of heavy armor,

fuel, ammunition, repair parts, food, and other commodities to support U.S. military operations of the five installations in the region.
- Transit System – the transit system is particularly important relative to the issue of security relative to its potential important contribution to evacuation of areas.
- Colorado Springs Airport
- The BNSF Rail line corridor

Most of these facilities are linear in nature and while risks exist across these networks due to a potential incident, there is built-in redundancy from the supporting network of state, county and city roadways that can serve, if necessary, as alternative routes for the movement of vehicles in the case of incident. However, there are elements of these networks, such as key bridges, that if damaged would have a more significant effect on the operation of the system. Using guidelines developed in the report

National Needs Assessment for Ensuring Infrastructure Security

(SAIC/Parsons Brinkerhoff, October 2002), an assessment to identify potentially important bridge facilities should be carried out. The key criteria for this analysis include:

- Casualty Risk
- Economic Disruption
- Military Support, and
- Emergency Relief.

Responsible Agencies

Agencies primarily responsible for major highway security in the Colorado Springs metropolitan area include the Colorado State Patrol and local law enforcement. Effective coordination and communication among these agencies is crucial during emergency situations. Security is provided through the following techniques: Routine road patrols, Traffic Management/Operations Center, Flight patrols, Crash and criminal investigations.

The joint City of Colorado Springs / CDOT Traffic Operations Center is located near downtown Colorado Springs. The Traffic Operations Center uses ITS technology including electronic message signs, traveler information hotline, and video surveillance cameras. Traffic management information is streamed directly to the district office for real-time monitoring.

INTERMODAL SECURITY

Intermodal transportation security is developed and implemented by the Transportation Security Administration. The TSA strategy focuses first on identifying areas of high risk and then establishing baseline security standards to address those risks. Once baseline standards are established, they assess the actual status of security in the transportation industries, and in close coordination with stakeholders, devise strategies for bringing actual practices up to the established standards. They are also developing advanced systems of security through a coordinated research and development program, to further enhance security beyond the baseline standards. They are implementing this strategy through cooperation with stakeholders where appropriate, regulation and inspection where necessary, and through the distribution of grants to assist the industry to implement these objectives.

TSA recognizes that in striving to improve the security of the intermodal network they must not forget the principles that make the freight, rail and aviation systems viable and efficient. Many of these systems were designed with mobility and ease of access as an enabling fundamental underlying their operational success. Security efforts must work within the framework of these systems and not hamper them. That inherent openness and mobility also presents the greatest security challenge.

Freight

The Colorado State Patrol and the county sheriff are primarily responsible for providing security on the PPACG area freight network. The Colorado Department of Transportation has a Statewide Plan that includes a discussion on safety and security. Many of the security measures found on highways coincide with freight security measures. Freight Security initiatives include:

- State permitting for haulers;
- Mandatory freight check-points (roadside);
- Commercial vehicle requirements;
- Restricted travel times;
- Specific restrictions for hazardous material haulers;
- Background checks;
- Carrier safety ratings & assessments;
- Preferred hazmat routing;
- Safety audits & surveys; and
- Security training program

Transportation Security Administration Highway (Trucking) Baseline Standards

TSA has been working closely with a number of chemical shippers to develop a series of baseline security standards for both TIH and hazardous chemicals of concern. Those standards will address specific areas such as vehicle tracking, vehicle attendance, vehicle alarm systems, truck cab access controls, locking fifth wheel on tank trailers and security route and stop areas.

Aviation

The Colorado Springs Municipal Airport is owned and operated by the City of Colorado Springs as a unit of the City's Colorado Springs Companies Group. The FAA's National Plan of

Integrated Airport Systems (NPIAS) classifies the Colorado Springs Airport as a primary commercial service airport.

TSA utilizes a multi-layered, high-tech, industry-cooperative approach including canine teams, TSA and airline inspectors, and physical screening of a sizable portion of air cargo. TSA also is responsible for background checks, specifically on cargo employees. TSA is partnering with industry to increase security domain awareness so that individuals are empowered to detect, deter, and report potential or actual security threats.

Security measures installed at COS include monitored surveillance of airport property by airport security, video surveillance cameras, fenced grounds, and luggage and passenger screening by Transportation Security Administration (TSA) personnel. The Authority invested $570,000 in 2006 to upgrade airport security. Also part of the airports safety and security measures is the Aircraft Rescue & Fire Fighting unit, charged with serving and protecting the aviation users at the facility 24 hours a day, 365 days a year.

TSA Air Cargo Strategic Plan

The Transportation Security Administration regulations to enhance and improve the security of air cargo transportation requires airport operators, aircraft operators, foreign air carriers, and indirect air carriers to implement security measures in the air cargo supply chain. These requirements include:

Provide for screening of all property, cargo, carry-on and checked baggage, and other articles, that will be carried aboard a passenger aircraft operated by a domestic or foreign air carrier; and Establish a system to screen, inspect, or otherwise ensure the security of freight that is to be transported in all cargo aircraft.

The objectives of the these requirements are to address two critical risks in the air cargo environment: (1) The hostile takeover of an all-cargo aircraft leading to its use as a weapon; and (2) the use of cargo to introduce an explosive device onboard a passenger aircraft.

TSA Air Cargo Strategic Plan sets forth TSA's commitment, as a component of the Department of Homeland Security's Border and Transportation Security Directorate, to working closely with our federal, state, local and industry partners to ensure that 100% of cargo that is deemed to be of elevated risk is inspected, and ensuring that the entire air cargo supply chain is secure. In so doing, this plan addresses the security and functionality of a critical element of the nation's aviation transportation system. Like other elements of the aviation system, air cargo presents a potential risk to air travel and simultaneously underpins the economic vibrancy not just of the aviation industry, but also of the nation's high-value, just-in-time supply chain that services countless industries.

TSA has tailored the air cargo security program through the implementation of a layered solution that includes:

- Screening all cargo shipments in order to determine their level of relative risk,
- Working with our industry and federal partners to ensure that 100% of items that are determined to be of elevated risk are inspected,
- Developing and ensuring that new information and technology solutions are deployed, and,
- Implementing operational and regulatory programs that support enhanced security measures.

Rail

In the United States, a large percentage of hazardous materials are transported over rail. The rail line through the PP region is a potential route for many types of hazardous material from chemicals through radioactive waste.

Freight rail does not offer terrorists high densities of passenger targets, but it does provide terrorists with some opportunities that passenger rail does not afford. In particular, freight rail is used to transport hazardous materials and dangerous cargoes. An estimated 40% of inter-city freight occurs by rail, including half of the nation's hazardous materials.

In the aftermath of the September 11 attacks, the leadership of the freight rail industry generated more than 100 action items, a multi-stage alert system, and round-the-clock communications with homeland security and national defense officials. These action items were based on the results of a strategic review of the transportation of hazardous materials, the security of the industry's information infrastructure, freight rail operations and infrastructure, and military needs relating to the rail network. The critical action items included the need to:

- Integrate protective housings, valves and fittings into hazardous transport infrastructure to prevent tampering and facilitate emergency response.

- Increase surveillance of freight equipment, through training of staff on observation and the installation of video surveillance equipment. Improve operations by monitoring for signal tampering; requiring crews and dispatchers to verify communications for train movements and dispatches; and locking locomotive doors to prevent hijackings.

- Secure the information infrastructure that terrorists could use to enhance attacks or cause systemic shutdowns. Collaborate with the Department of Defense (DoD) to ensure the viability of STRACNET (Strategic Rail Corridor Network)-designated rail lines that are capable of meeting unique DoD requirements, such as the ability to handle heavy, high or wide loads.

Improved security elements for rail facilities within the PPACG region could include:

- Repairing gaps in fencing to provide more control around the perimeter of rail facilities.
- Improving lighting, both to deter terrorists and to improve facility observation.

- Installing close-circuit television to provide stationmasters and security personnel with better visibility throughout the facilities.
- Training of personnel and passengers to have a role in security by reporting suspicious behavior, and improving readiness for evacuation and emergency actions.
- The use of public communication strategies to advise on threats, service disruptions and the availability of alternate routes and transportation methods.
- It is also important to prepare for hoaxes and false alarms, both of which can disrupt rail operations.
- Develop policies and procedures for dealing with hoaxes and false alarms so that these would not unduly burden rail operations.

It should be noted that it is not clear how much should be spent on rail security relative to security at other potential targets and that the cost effectiveness of the above rail measures has not been assessed. It should also be noted that the freight rail system is in the hands of the private sector. At the same time, freight rail competes with trucks and other transport modes for business.

The rail corridor which travels through the Pikes Peak region is heavily used and suffers from a lack of alternative routes. Attacks on critical freight nodes or functions could therefore create substantial bottlenecks and throughput pressures.

Transportation Security Administration Freight Rail Baseline Standards

Because the potential risk posed by unattended TIH rail cars in high threat urban areas was identified as the highest risk area in rail, TSA developed a risk reduction goal of reducing the objectively-measured risk of TIH cars in high threat urban areas by 25% per year, starting in 2007. That risk factor takes into account car hours, the population of urban areas and the proximity to residential and commercial structures.

TSA has also identified 24 other focus areas (see sidebar) as security action items for the rail industry to begin to address. The actions items were released to the industry in June and November 2006. The action items focus on security awareness training, security focused inspections, suspicious activity reporting, control of sensitive information and employee identification. TSA is assessing conformity with the security action items to evaluate how implementation of the action items reduces objectively measured risk.

Hazardous Materials Response Program

There are five Chemical Response Teams in the Pikes Peak Region that provide support for each other. They are housed within the Colorado Springs Fire Department, the El Paso County Sheriff, in Teller County and at Peterson Air Force Base and Fort Carson.

US DEPARTMENT OF HOMELAND SECURITY

FREIGHT RAIL SECURITY ACTION ITEMS (FEBRUARY 12, 2007)

The following are recommended security action items for the rail transportation of materials poisonous by inhalation, commonly referred to as Toxic Inhalation Hazard (TIH) materials. Adoption of these measures is voluntary. Movement of large quantities of TIH materials by rail in proximity to population centers warrants special consideration and attention. These materials have the potential of causing significant numbers of fatalities and injuries if intentionally released in an urban environment.

1. Designate an individual with overall responsibility for hazardous materials transportation security planning, training, and implementation.
2. Conduct exercises, at least annually, to verify the effectiveness of security plan(s).
3. Develop and conduct an audit to independently verify that the security plan is being effectively implemented.
4. Identify and then annually review company-designated critical infrastructure.
5. Maintain a communications network to receive timely government notices of current threat conditions and available intelligence information.
6. Make use of opportunities to establish liaison and regular communication with federal, state, and local law enforcement, emergency responders, security agencies, and industry partners.
7. Establish liaison and collaboration with other railroad security offices to promote information sharing and security enhancements.
8. As with industry safety programs, regularly reinforce security awareness and operational security concepts to all employees at all levels of the organization.
9. Reinforce the need for employees to immediately report to the proper authorities all suspicious persons, activities, or objects encountered.
10. Have contingency plans in place to supplement company security personnel to protect company-designated critical infrastructure as threat conditions warrant.
11. Restrict access to information controlled by the railroad that it determines to be sensitive, in particular information about hazardous materials shipments and security measures.
12. Make available emergency response planning materials, and when requested, work with local communities to facilitate their training and preparation to deploy and respond to an emergency or security incident.
13. Cooperatively work with the federal, state, local, and tribal governments to identify through risk assessments those locations where security risks are the highest.
14. Focus proactive community safety and security outreach and trespasser abatement programs in areas adjacent to company-designated critical infrastructure to reduce the likelihood of unauthorized individuals on company property and to enhance public awareness of the importance of reporting suspicious activity.
15. To the extent feasible and practicable, utilize photo identification procedures for company-designated critical infrastructure.
16. To the extent feasible and practicable, and as threat conditions warrant, restrict the access of contractors and visitors at non-public areas of company-designated critical infrastructure and monitor the activities of visitors in or around such infrastructure.
17. Establish employee identification measures for all employees.
18. Implement measures to deter unauthorized entry.
19. Utilize interlocking signals and/or operating rules to prevent trains from occupying moveable bridges until they are locked in place.
20. Maintain systems to locate rail cars transporting TIH materials in a timely manner.
21. During required on-ground safety inspections of cars containing TIH materials, inspect for any apparent signs of tampering, sabotage, attached explosives, and other suggested items.
22. Provide local authorities with information on the hazardous materials transported through their communities consistent with AAR Circular OT-55.
23. Consider alternative routes when they are economically practicable and result in reduced overall safety and security risks.
24. In rail yards, to the extent feasible, place cars containing TIH materials where the most practical protection can be provided against tampering and outside interference.

Pikes Peak Area Communications Network

Communication resources are critical to any incident response effort. In an effort to improve emergency response communications in the region there is an 800 MHz trunked digital radio system deployed by all governments in El Paso and Teller Counties. Over the next few years the system may be expanded into the 900 MHz range in order to allow non-governmental entities access to emergency communications. Another important communication tool recently deployed by the City of Colorado Springs is the Geocaste Automatic notification system, which can send 2,800 one-minute messages per hour in standard mode and 11,000 in full evacuation mode.

Emergency Alert System

Emergency Alert System, or EAS, is an all-hazard warning tool used whenever an emergency event requires quick dissemination of emergency public information that affects a large percentage of the population in any given community. Local and regional EAS is a voluntary service provided by local and regional broadcasters and cable television operators. FCC regulations only ***mandate*** the use of EAS for ***national emergencies***. Part of function for which the EAS can be utilized is the broadcasting of important follow-up information that needs to be disseminated to the general population through local broadcasters. These broadcasts take the form of an Administrative Message, or ADR, which are an effective way of passing along information traditionally provided by press conferences, but in a more efficient and timely manner. Types of messages that can be distributed by an ADR through the EAS can include:

- Location of displaced persons;
- Location of the evacuated elderly;
- Location of school children;
- Location of Health/Med Centers;
- Location of feeding centers;
- How to get debris clearance;
- Projected road openings; and
- How to get public assistance.

TRANSPORTATION RESOURCES AVAILABLE

1) More information is contained in ESF 1-Transportation Annex. The Contract Compliance supervisor for Mountain Metropolitan Transit maintains a list of local transportation resources.

2) The listed resources (Table 10-1) are available to transport citizens who are unable to transport themselves during an emergency. This may include:

   a) Elderly, infirm or disabled individuals;
   b) People who do not own vehicles;
   c) Out of town travelers;

d) Homeless;
e) People in assisted living centers;
f) Students in universities; and
g) Families separated during an event with no access to a vehicle.

3) You must request a driver for the vehicle.

4) Vehicle personnel capacity will be reduced approximately 50% due to luggage, pets etc.

TABLE 10-1: TRANSPORTATION RESOURCES

Ambulances	Phone Number	Resource	Capacity	On-Board Communications	Business Hours
American Medical Response	636-2333	1400 watt inverter on each veh; med staff on board	10 patients per hour	Radio	24/7
Wheelchair Lift Buses					
Mountain Metro Transit	ENL	100 buses	40 passengers + 2 wheelchairs per bus	Radio	5am-10pm
Mountain Metro Para-Transit	ENL	42 vans	10-14 passengers; 1-3 wheelchairs per van	Radio	5am-10pm
Amblicab Para-Transit Service	633-4677	1 van 6 mini-buses	3-5 wheelchairs each	Nextel	Mon-Fri 7am – 4:30 pm
American Medical Response	636-2333	6 vans No med staff on board	2 passenger + 1 wheelchair	Radio	24/7
Silver Key	884-2380	15 buses	10-32 passengers (all wheelchair accessible)	Radio	8am-5pm
Goodwill Industries	785-9226 332-7397	6 van	12 passenger + 2 wheelchairs	Cellphone	8am-4:30 pm Mon-Fri
		3 vans	7 passenger + 1 wheelchair	Cellphone	
		4 mini-vans	4 passenger + 1 wheelchair	Cellphone	
		3 mini-vans	3 passenger + 1 wheelchair	Cellphone	

Ambulances	Phone Number	Resource	Capacity	On-Board Communications	Business Hours
The Resource Exchange	574-3370	4 buses	15 passenger + 2 wheelchairs	Cellphone	6am-5p Mon-Fri
		5 vans	12 passengers + 2 wheelchairs	Cellphone	
		1 van	10 passenger + 2 wheelchairs	Cellphone	
City Buses					
Mountain Metropolitan Transit	ENL	100 buses	40 passengers (all have wheelchair lifts; can accommodate ~ 2 wheelchairs per bus	Radio	5am-10pm
		30 vans	12-16 passengers		
School District Buses					
Harrison Dist 2	ENL	31 buses	48 passengers	Radio	
		14 Special Needs Buses	1-5 wheelchairs ea		
Colorado Springs Dist 11	ENL	55 buses	66 passengers	Radio	
		55 buses	12/16/25 passenger (2 or 3 buses are wheelchair accessible)	Radio	
Cheyenne Mountain Dist 12	ENL	5 buses	71 passengers	Radio	
		1 bus	42 passenger	Radio	
		6 vans	14 passengers (1 or 2 vans are wheelchair accessible)	Radio	
Academy Dist 20	ENL	97 buses	65-78 passenger	Military & 800 MHz radios	
		39 buses	8-29 passenger; most accommodate ~2 wheelchairs	"Military & 800 MHz radios	
Falcon Dist 49	ENL	55 buses	48 passengers	Radio	
		19 Special Needs buses	1-3 wheelchairs ea		
Private Buses & Vehicles					
Brookdale Village at Skyline	339-7637			Cellphone	
Colorado College	ENL	3 buses	36-40 passengers	Cellphone	
		1 bus	25 passenger	"	

Ambulances	Phone Number	Resource	Capacity	On-Board Communications	Business Hours
		7 vans	15 passenger	"	
UCCS	ENL	4 buses	24-33 passenger	UCCS has a few spare radios (must request)	
		1 vans	14 passenger		
		1 van	6 passenger		
Broadmoor Hotel					
Cheyenne Mountain Conference Center					
US Air Force Academy	333-2633	18 buses	44 passenger		
Ft. Carson (Army)	ENL	12 buses	40 passenger	Must request common person	
Peterson Air Force Base	556-4555 or 4610	Not releasable	at this time pending legal	review	
Gray Line Tours	633-1181	11 buses	Fire buses only – they may charge for use	Cellphone	24/7
Ramblin Express	590-8687	Numerous vans, mini-buses, and large buses	See website for most up to date fleet info http://www.ramblin.com/fleetPhotos.html		
Yellow Cab	634-5000	150 cars & vans. None are wheelchair accessible (slide transfer only)		Radio	24/7

RECOMMENDED FUTURE ACTIVITIES

The following transportation tasks are included in this plan:

- **TASK #1:** Identify and collaborate with other state and local agency efforts and/or private sector efforts to enhance security planning for the transportation system.

- **TASK #2:** Work to provide safe and secure facilities and transportation infrastructure for residents, visitors and commerce in the PPACG planning area through efforts to reduce injuries, fatalities and property damage for all modes of transportation, and to minimize security risks at airports, rail stations, rest areas, on roadways and bikeways, and public transportation facilities

- **TASK #3:** Work with Emergency Management Officials and other agencies and organizations involved in emergency management and homeland security on the following transportation related issues based on priorities established in cooperation with the local emergency management / homeland security officials to:

  - Complete a risk and vulnerability assessment of transportation assets;

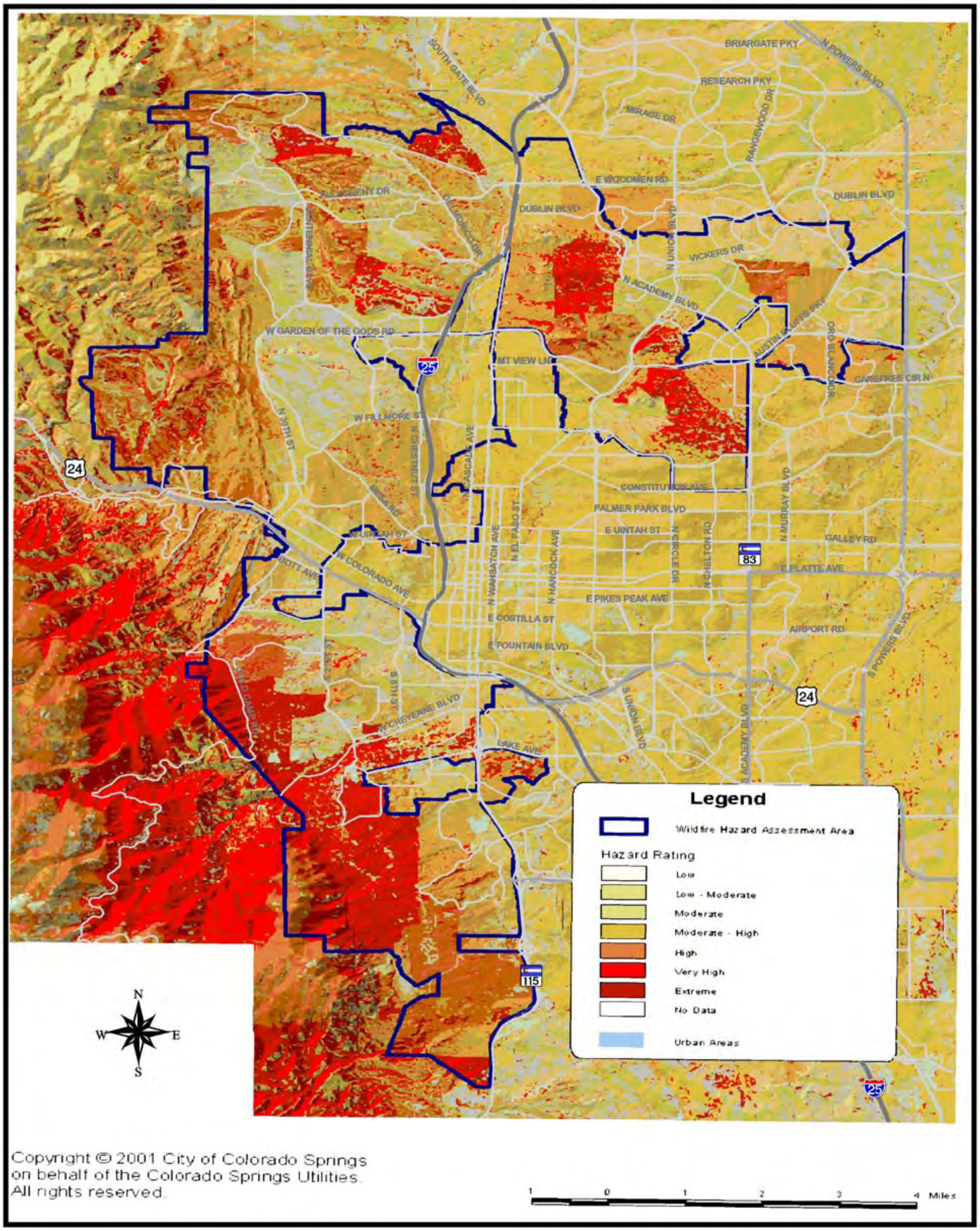
  - Assist in development of key evacuation routes from important activity areas, and include an assessment of improvement needs in future Long-Range Plan Updates;

  - Assist in preparation of alternate route / detour planning to facilitate response to closing major transportation arteries;

  - Provide assistance in analyzing the transportation network for redundancies in moving large numbers of people in response to events such as closure of major highway links through various means, including use of alternate routes, adaptive signal control strategies and dissemination of information through traveler information systems; and

  - Assist in preparation of demographic profile information and a geographic inventory of transportation-disadvantaged populations that may need assistance during a disaster to facilitate evacuation and determine if current deployable assets will be available and are adequate. This could include assessment of the number of people who may not be able to self-evacuate, planning of staging areas for pickup and drop-off, and assisting in targeted community outreach on emergency preparedness to populations such as those with limited English proficiency.

REGIONAL WILDFIRE HAZARD RATING



CHAPTER 9: SYSTEM SAFETY

OVERVIEW

Automobile accident fatalities are the leading cause of death among Americans up to 34 years of age. In 2005, 43,443 people died in crashes on American roads (and nearly 3 million were injured). When the over four million property damage crashes are added to this, the USDOT estimates that the total cost of crashes to our society is over $230 billion every year.

SAFETEA-LU, which was signed into law in 2005, places a much greater emphasis on safety than its predecessor, TEA-21. SAFETEA-LU almost doubles on an annual basis the $3.97 billion allocated to safety under TEA-21. However, MPOs just recently developed well-defined safety goals and strategies as part of the recent national SAFETEA-LU compliance effort.

Safety is traditionally viewed as a concern to be addressed during project design or left to enforcement agencies. A traditional engineering approach might be to simply improve the geometric design of a road or to change the operation of an intersection. Under SAFETEA-LU, this approach is viewed as too narrow in scope. Safety should be more broadly defined as an issue to be addressed through a combination of engineering, enforcement, education, and emergency services, the four E's.

Traditionally, at the MPO level statutory limits on the use of funds, a focus on the programming of infrastructure projects, and an analytical framework focused on capacity analysis put limits on how safety could be addressed. This approach has proven to be inadequate. A recent report of the National Highway Cooperative Research Program points out why an MPO is an important forum for dealing with safety issues:

- Travel safety is affected by how the transportation system is designed, constructed, operated, and maintained.

- Crashes (non-recurring congestion) represent a major source of congestion. The time it takes police and/or emergency services to reach a site, clear vehicles from travel lanes, collect data, and remove disabled vehicles can lead to substantial traffic delays on critically important roads. By some estimates, between 50 and 70% of urban congestion is due to crash-related incidents.

- A comprehensive safety program involves diverse groups and combined efforts. The transportation planning process presents an excellent opportunity to enhance collaboration where separate initiatives have failed.

- The dramatic public health and societal costs described above are intrinsic to the MPOs mission to support safety and prosperity, among other goals.

Federal Law and Funding

During the late 1970s and early 1980s, the Federal Highway Administration issued a series of regulations known as the Highway Safety Improvement Program (HSIP). Designed to ensure an organized approach to safety, this set of rules required that states develop and implement their own HSIPs with the objective of reducing the number and severity of crashes and decreasing the potential for crashes on all highways. Major requirements of the HSIP included the following:

- **PLANNING:** A process of collecting and maintaining a record of crash, traffic and highway data; analyzing data to identify hazardous locations; conducting engineering studies of those locations; conducting benefit-cost analysis.

- **IMPLEMENTATION:** A process for scheduling and implementing safety improvement projects and allocating funds according to the priorities developed in the planning phase.

- **EVALUATION:** A process for evaluating the effects of transportation improvements on safety, including the cost of the safety benefits derived from improvements and a comparison of the pre- and post-project crash numbers, rates, and severity.

The HSIP was formerly a separate set of regulations drawing from different funding categories, but has now become a core program within SAFETEA-Lu-LU. The new program includes funding increases, greater flexibility, new safety set-asides, and the requirement that each State develop a Strategic Highway Safety Plan (SHSP).

TEA-21 authorized $3.97 billion in safety spending over six years; SAFETEA-LU authorizes $5.06 billion over only four years, a dramatic increase. The amount authorized goes up during each of the four years (Table 9-1).

TABLE 9-1: SAFETEA-LU SAFETY SPENDING LEVELS

Fiscal Year	2006	2007	2008	2009
Authorization	$1,236 M	$1,256 M	$1,276M	$1,296 M

These dollars are apportioned to the states using a formula of three equally-weighted factors.

- 1/3: Total lane miles of federal aid highways
- 1/3: Total vehicle miles traveled on lanes on federal aid highways
- 1/3: Number of fatalities on federal aid system

The previous apportionment formula did not consider fatalities.

- Depending on the type of improvement, the federal share of a highway safety improvement project is 90 or 100%; it may be 80% for other types of funds.

- SAFETEA-LU also broadened the definition of a highway safety improvement project, taking into account safety innovations and planning initiatives that were previously ineligible. The best way to take advantage of this flexibility is to be aware of the alternatives available and to study the safety problems at particular locations in order to find the most appropriate solution.

- The new authorization also creates substantial set-asides for certain safety target areas including high risk rural roads (HRRR), Railway-Highway Crossing Safety, and Safe Routes to School. $90 million per fiscal year is set aside for HRRR; Railway-Highway Crossing Safety gets $220 million; Safe Routes to School gets an average of $120 million.

SAFETEA-LU defines a High Risk Rural Road as “any roadway functionally classified as a rural major or minor collector or a rural local road:

- on which the accident rate for fatalities and incapacitating injuries exceeds the statewide average for those functional classes of roadway; or

- that will likely have increases in traffic volume that are likely to create an accident rate for fatalities and incapacitating injuries that exceeds the statewide average for those functional classes of roadway.”

Two-thirds of all traffic fatalities occur on rural roads. Safe Routes to School is intended to accomplish the following:

- Enable and encourage children to walk and bicycle to school;

- Make walking and bicycling to school a safer and more appealing transportation alternative; and

- Facilitate planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity of schools.

The amount authorized for Safe Routes increases over each year of SAFETEA-LU (Table 9-2) and is allotted based on states' total K-8 enrollment, with a minimum of $1 million.

TABLE 9-2: SAFE ROUTES TO SCHOOL FUNDING

Fiscal Year	2005	2006	2007	2008	2009
Authorization	$54 M	$100 M	$125 M	$150 M	$183 M

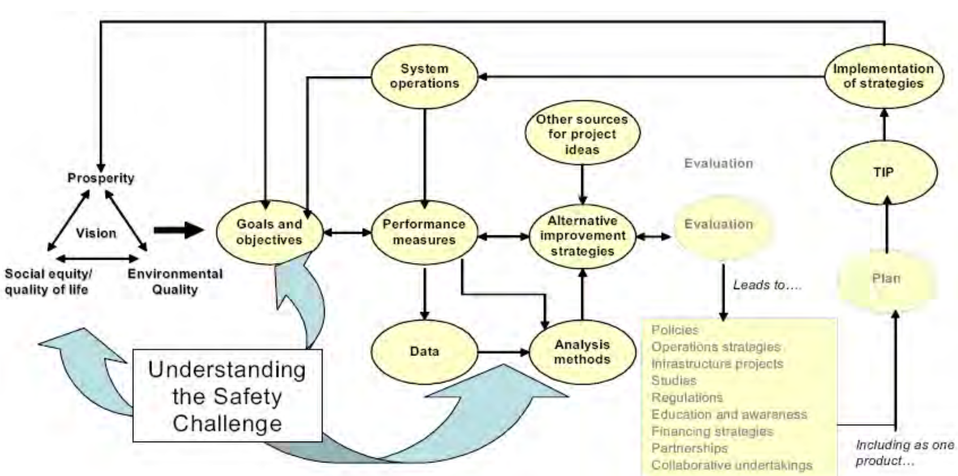
In Colorado, CDOT administers the Safe Routes program, allocating federal dollars to local jurisdictions.

Safety Conscious Planning

Finally, SAFETEA-LU also authorizes that funds be spent on safety improvements for older drivers and pedestrians, incentives for the use of seat belts, the prevention of drunk driving, work zone safety, and assisting non-profit organizations dedicated to improving public roadway safety.

As an approach to all of these opportunities, the Federal Highway Administration recommends a new framework called Safety Conscious Planning. This framework will ideally replace the fractured, narrow approach to safety as a purely engineering or enforcement concern by integrating safety concerns into planning at all levels. Safety Conscious Planning is:

- A comprehensive, system-wide, multimodal, proactive process;
- Comprehensive because it considers all aspects of transportation safety - engineering, education, enforcement, and emergency medical response;
- System-wide because it considers corridors and entire transportation networks at the local, regional and state levels as well as specific sites;
- Multimodal because it includes transit, bicycle, and pedestrian safety improvements; and
- Proactive, because it addresses current safety problems and prevents future hazards and problem behaviors.



PPACG supports the approach and framework of Safety Conscious Planning, and as the forum for cooperative decision-making in the Colorado Springs area, will strive to implement and support the process.

Colorado and CDOT

To ensure an organized approach to state-level safety planning, the new HSIP requires that states develop State Highway Safety Plans. The SHSP:

- Analyzes and makes effective use of state, regional or local crash data;
- Addresses engineering, management, operation, education, enforcement, EMS in evaluating highway projects;
- Considers safety needs and high fatality segments of, public roads in the state;
- Considers results of state, regional or local transportation and highway safety planning processes; and
- Describes a program of projects or strategies to reduce or eliminate hazards.

The Colorado Department of Transportation completed its Strategic Highway Safety Plan, called the Strategic Plan for Improving Highway Safety, or SPIRS, in October of 2006. SPIRS defines CDOT's safety mission, vision, and goals, as well as discussion of safety focus areas chosen during the collaborative planning process.

The mission and vision defined in SPIRS is below:

Mission: reduce the incidence and severity of motor vehicle crashes and the associated human and economic loss to fellow Coloradoans.

Vision: create and further develop a safe and efficient roadway system that will serve all users of Colorado's roadways.

These general statements are focused by the specific goals of the plan:

- *Reduce the fatal crash rate per 100 million vehicle miles traveled to 1.00 by 2008 and maintain 1.00 through 2010.*

SPIRS MISSION AND VISION DEFINED

Mission

Reduce the incidence and severity of motor vehicle crashes and the associated human and economic loss to fellow Coloradoans.

Vision

Create and further develop a safe and efficient roadway system that will serve all users of Colorado's roadways.

These general statements are focused by the specific goals of the plan:

- Reduce the fatal crash rate per 100 million vehicle miles traveled to 1.00 by 2008 and maintain 1.00 through 2010.
- Reduce the injury crash rate per 100 million vehicle miles traveled to 67.5 by 2008 and 65.3 by 2010.
- Increase seat belt usage to 82.5% by 2008 and 85.0% by 2010.
- Reduce alcohol-related fatal crashes as a percentage of all fatal crashes to 29.5% by 2008 and 29.0% by 2010.

- *Reduce the injury crash rate per 100 million vehicle miles traveled to 67.5 by 2008 and 65.3 by 2010.*
- *Increase seat belt usage to 82.5% by 2008 and 85.0% by 2010.*
- *Reduce alcohol-related fatal crashes as a percentage of all fatal crashes to 29.5% by 2008 and 29.0% by 2010.*

How these goals compare to current conditions in the Pikes Peak Region and elsewhere will be discussed below.

The core strategies of SPIRS mirror the federal guidance on safety, focusing on the four E's: Education, Enforcement, Engineering, and Emergency Services. From these CDOT developed 18 focus areas:

- Locations with Potential For Crash Reduction
- Rockfall
- Railroad Crossings
- Access Management
- Roadway Engineering Safety
- Traffic Crash Data Systems
- Work Zones
- Wildlife
- Occupant Protection
- Impaired Drivers
- Young Drivers
- Aggressive Drivers (Distracted Drivers)
- Aging Drivers
- Motorcycles
- Bicycles and Pedestrians
- Safe Routes to School
- Large Trucks
- EMS Vehicles

Arguably, the best tool for combating transportation safety problems is collecting and maintaining good crash data. States collect this data in order to meet federal reporting requirements, but state DOTs, MPOs, and other jurisdictions may use the data for safety analysis. In Colorado, crashes are reported by local police and sheriff's departments and disseminated through the Department of Revenue. The main shortcoming of this system is that the data tends to be compiled slowly and are rarely available for the current year. Individual accident reports also vary in detail and accuracy from place to place, and location descriptions may be too general (e.g. "intersection of") to be suggestive of a specific safety problem or improvement. Establishing data collection standards and streamlining data processing could lead to major gains in safety.

Once a jurisdiction in Colorado has arrived at its own safety priorities, it has an opportunity to apply to CDOT for Hazard Elimination Projects. Applications are sent every third October to public works directors, traffic engineers, street superintendents, mayors, and anyone else in a position responsible for roadway safety. CDOT then prioritizes these projects using benefit-cost ratios and statistical measures of crash frequency and severity. Urban jurisdictions are encouraged (but not required) to send a copy of their applications to their MPOs, which must program selected projects into their TIPs for them to receive funding. A requirement to notify MPOs of applications for Hazard Elimination Projects could benefit MPO safety planning. Applications were last sent out in 2005.

Traditionally, Region 2, the CDOT Engineering Region that contains PPACG's metropolitan area, has received 16.26% of statewide Hazard Elimination funding, an amount based on the number of accidents.

Projects on the State Highway System are eligible for 100% state funding, while off-system projects must provide 10% matching funds against the state's 90%. Hazard Elimination funds may be used on any road or any publicly owned bicycle and pedestrian pathway or trail.

Safety Topics

Speeding and Speed Limits

Education and Enforcement are two of the four E's that make up both the national and Colorado state core safety strategy. They specifically address human behavioral elements of safety including, but not limited to, occupant protection, impaired driving, speed enforcement, aggressive driving, pedestrian and bicycle safety, elderly mobility, drowsy driving, and distracted driving. Given the frequency and severity of crashes in which speeding is a major factor, this aspect of safety tends to be understated and often overlooked.

Speeding is involved in up to a third of all motor vehicle crashes in the United States. The National Highway Traffic Safety Administration (NHTSA) lists speeding as the third leading contributing factor in traffic fatalities, and state crash data for local and collector roads points to even more speeding-related injury and fatal crashes, carrying a national price tag of about $40 billion per year. As listed in a 2005 national report by the Governors Highway Safety Association, speeding:

- Reduces a driver's ability to negotiate curves or maneuver around obstacles in the roadway;
- Extends the distance necessary for a vehicle to stop;
- Increases the distance a vehicle travels while the driver reacts to a hazard;
- Compromises the integrity of the vehicle structure;
- Decreases the effectiveness of vehicle design features such as airbags and restraint systems;

- Decreases the ability of roadway hardware such as guardrails, barriers and impact attenuators to protect occupants;
- Increases tread wear on tires and wear on braking systems; and
- Increases the risk of crashes because other vehicles and pedestrians may not be able to judge distance accurately.

Some of these effects, such as negotiating curves and sight distance, are especially noticeable because speed limits are set based upon the design of roads. The only exception to this is when legislative speed limit standards are enacted or repealed, as with the National Maximum Speed Limit (NMSL) policy during 1973-1994. This law set the national speed limit at 55 miles per hour (65 in rural areas) and was designed to conserve energy and reduce foreign oil dependency; however, it also had the effect of reducing crash and especially fatality rates, as shown in an Insurance Institute for Highway Safety special report released in 2003. The report examined the effects of the repeal of the NMSL in 1995, finding that injury and death rates increased in states that chose to increase speed limits. States that increased the speed limit to 75 experienced a 38% increase in speed-related deaths per million vehicle miles traveled, while states that increased the limit to 70 miles per hour experienced a 35% increase in deaths per million vehicle miles. This has left many concerned that the gains made in safety restraint usage and impaired driving is being offset by speed-related (not just speed*ing*-related) mortality. While speed and speeding are not directly the province of MPO safety planning, they are certainly worth noting.

Of the 33,611 crashes investigated by the Colorado State Patrol in 2003, fully 50% were caused by aggressive driving behavior. Seventeen percent of that aggressive behavior was reported as exceeding safe or legal speed; another 8% involved following too closely at speed. To put this in perspective, the actual number of these crashes was 8,557. Accordingly, the Colorado State Patrol defines aggressive driving (i.e. speeding, as a public threat).

Access Management

Access management is one of the cornerstones of traffic safety. Conflicts created by driveways, intersections, and other access points create the most complex challenges drivers face every day, sometimes unsuccessfully. Intersection crashes, for example, account for more than 45% of all reported crashes and 21% of all fatalities.

In general, as the number of access points per mile increases on a facility, the number of accidents increases proportionally. This situation becomes increasingly dangerous on higher-speed, higher-volume roads that are sometimes accessible directly by residential driveways or choked by closely-spaced commercial drives (Figures 9-1 and 9-2).

The key to safety on arterial roads is local road networks. Having an appropriate hierarchy of facilities with local-to-major roadway connections leads to improved traffic safety as well as reduced congestion on major facilities (Figure 9-3). Although some businesses can be reluctant to participate in access management plans, studies show that appropriate access management increases traffic flow on major facilities, thus expanding business market areas (Figure 9-4). Congestion due to crashes is also reduced.

FIGURE 9-1:

FIGURE 9-2:

Source: Parametrix

FIGURE 9-3:

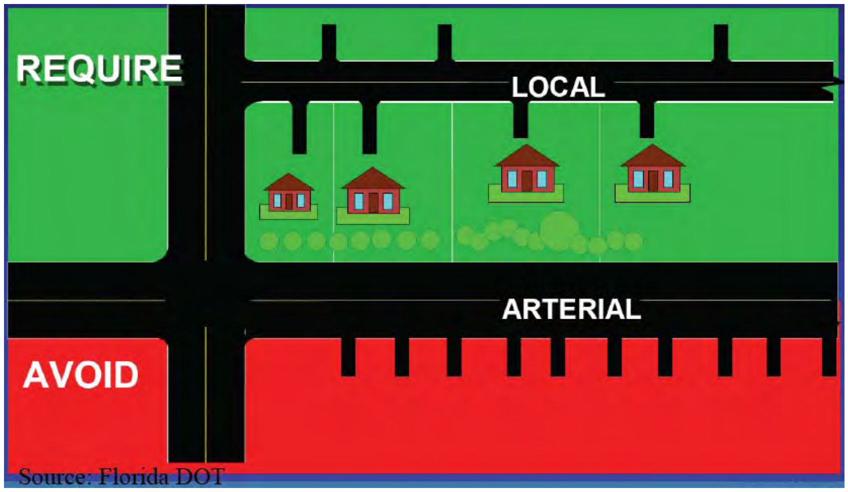
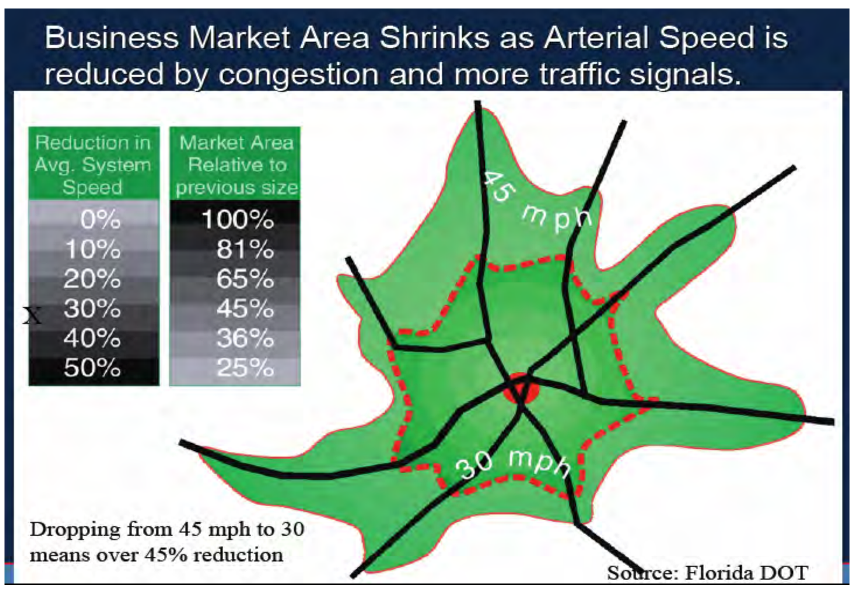


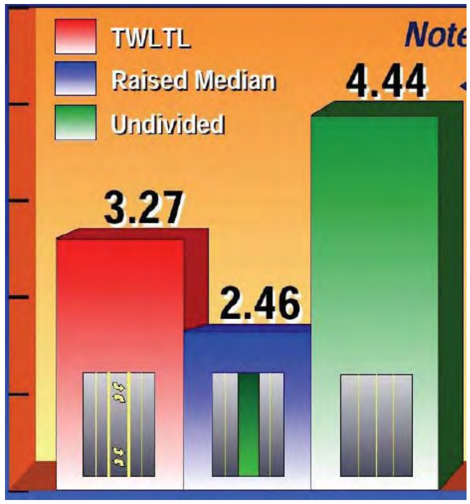
FIGURE 9-4:



Source: Parametrix

Although the foundation of access management is having a good hierarchy of roads, other strategies include reducing signalized intersections (which experience more than four times as many crashes as unsignalized intersections, on average), installing raised medians, increasing signal spacing, and installing roundabouts, among others (Figure 9-5). When four traffic signals were replaced with roundabouts on a corridor in Golden, Colorado crashes per million vehicle miles were reduced by 60%, and injury crashes by 94%.

FIGURE 9-5:



Source: Florida DOT

Non-Motorized Safety

"Although walking is a legitimate mode of transportation, it needs to be improved in every community in the United States. It is no longer acceptable that close to 5,000 pedestrians are killed in traffic every year, that people with disabilities cannot travel without encountering barriers, and that a desirable and efficient mode of travel has been made difficult and uncomfortable." –Federal Highway Administration

Although detailed bicycle and pedestrian design guidelines are available in **Appendix F, Regional Non-Motorized Plan**, a few of the key statistics involving non-motorized transportation safety are noted below.

Nationally, nearly 5,000 pedestrians were killed in traffic in 2005, and about 64,000 were injured. This represents a 13% decrease in deaths over 1995, though the actual improvement in safety performance is uncertain because of the falling rate of pedestrian travel over the same period. The crash statistics paint a fairly clear picture of the conditions under which most of these fatal and injury accidents occurred. The majority of deaths happened in urban areas, at non-intersection locations, in normal weather conditions, and in the evening. Pedestrian crashes are more likely on Friday, Saturday, and Sunday than during the week.

People 40-54 years of age suffered the most pedestrian deaths in 2005; however, the rate is highest for children under 10 years of age. One fifth of children 5-9 years old killed in traffic accidents were pedestrians. Older pedestrians are also disproportionately affected; pedestrians over 70 are killed at over twice the rate of those under 70.

The rate of alcohol involvement in pedestrian crashes is abnormally high. In 2005 fatal pedestrian crashes, either the pedestrian or the motorist had a blood alcohol level in excess of the legal limit 32% of the time. The proportion of crashes in which any amount of alcohol was involved is 44%. The proportion is far lower for bicycle crashes.

FIGURE 9-6: BICYCLE COLLISIONS

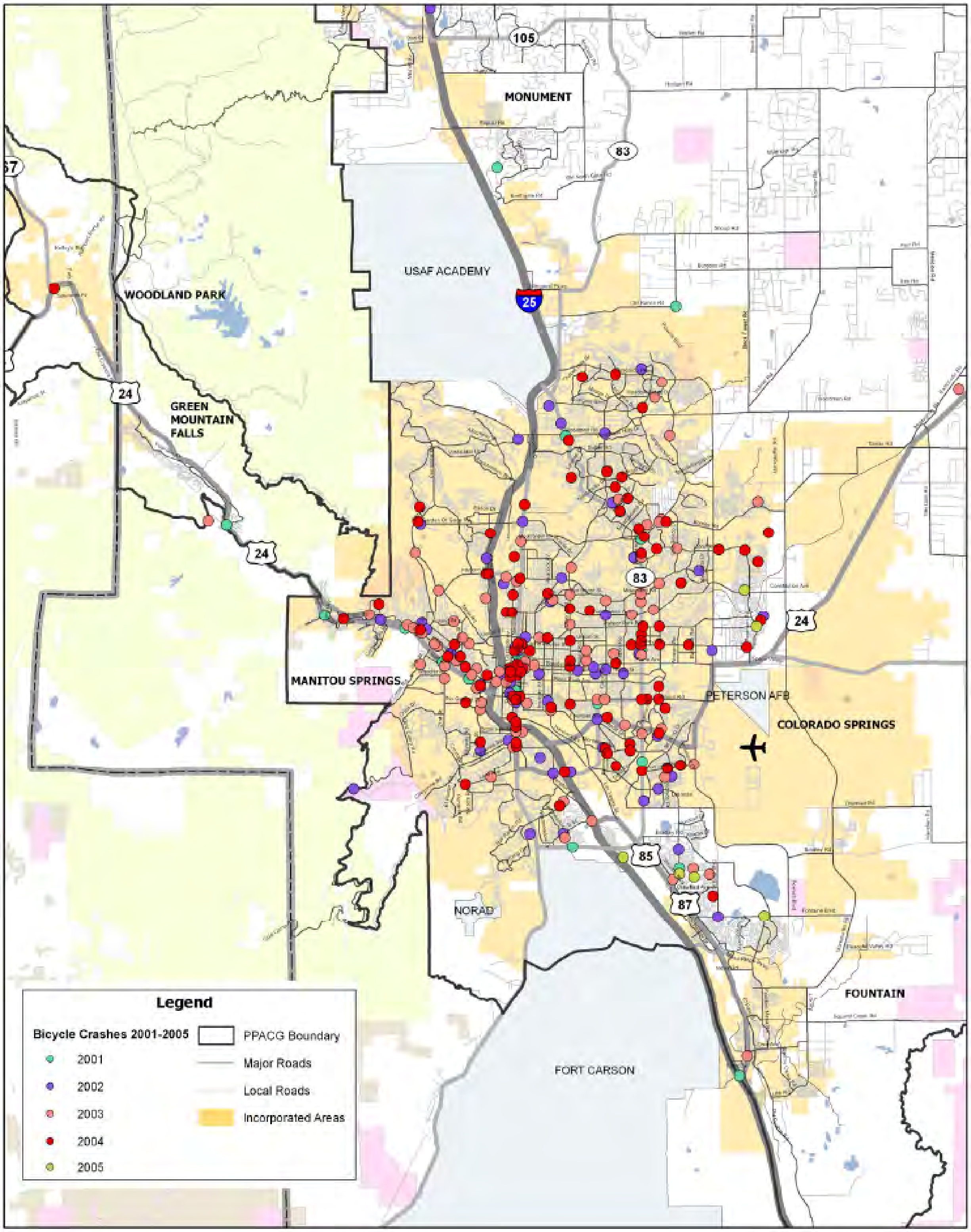


FIGURE 9-7: PEDESTRIAN COLLISIONS

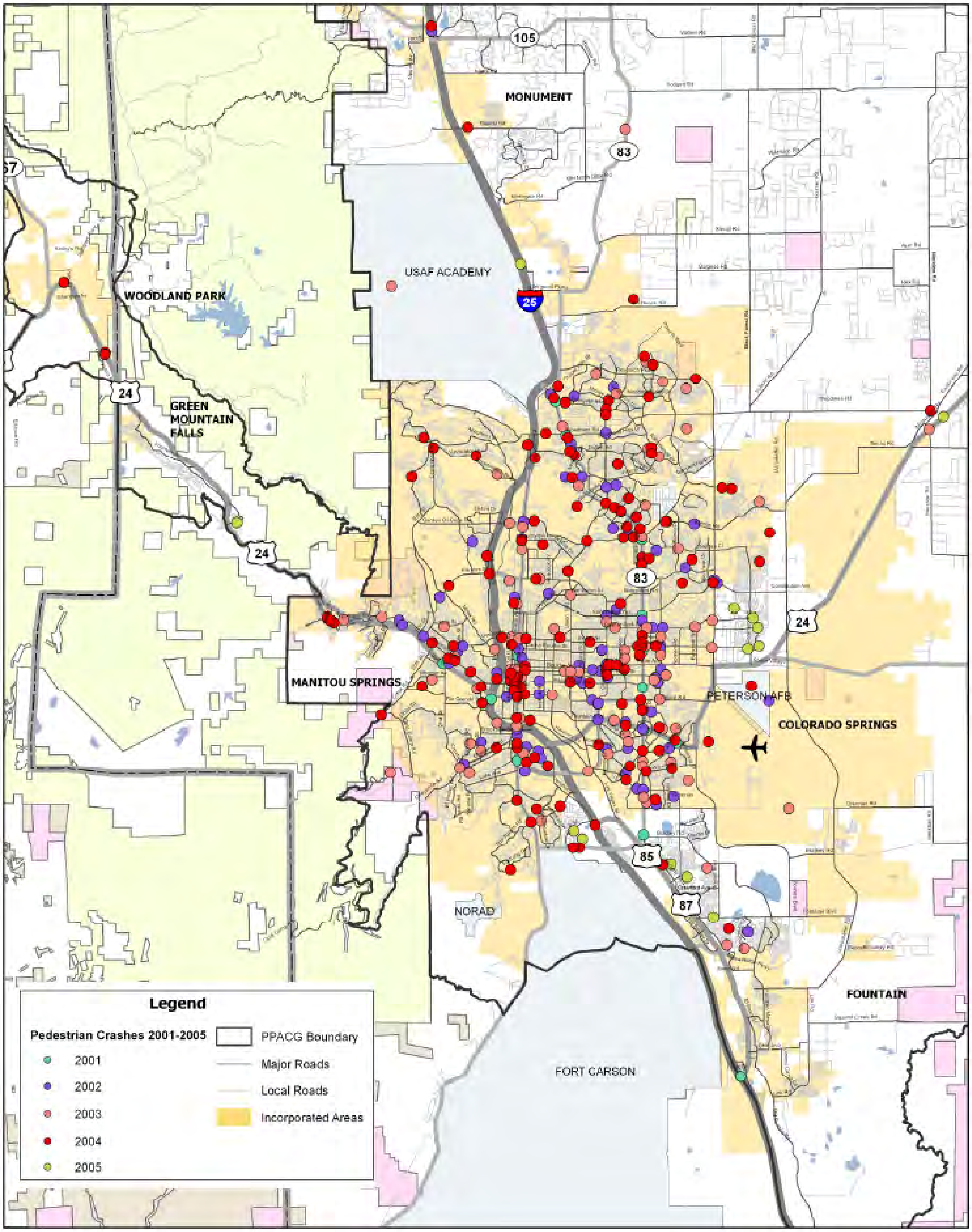
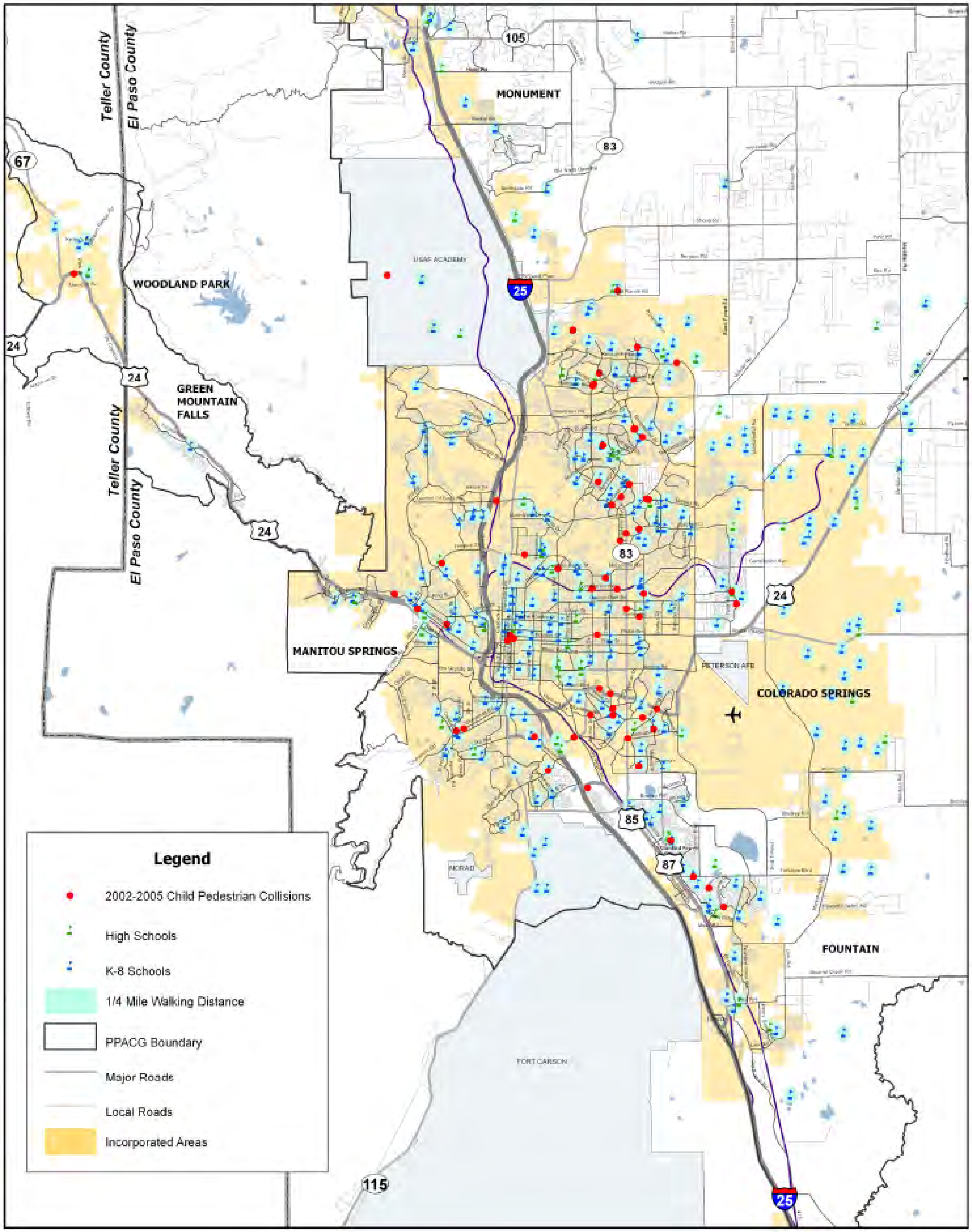


FIGURE 9-8: SCHOOL LOCATIONS AND CHILD PEDESTRIAN COLLISIONS



Cyclist (bicycles and other types) crashes represent 13% of all non-motorized traffic fatalities. The 784 cyclist deaths in 2005 compares favorably to the 833 in 1995 (a non-linear trend), yet as with walking, the reason for this drop is unknown – it may be due to increased safety spending or countermeasure effectiveness, or to a decline in cycling or certain types of cycling.

Although the greatest numbers of cycling deaths occur among those 35-54 years of age, children are once again disproportionately affected, with the highest rate of cycling fatalities occurring in those between 10 and 15 years of age. About one fifth of cyclists killed in cycle crashes in 2005 were between 5 and 15 years old. About 2% of both yearly fatalities and yearly injuries are suffered by cyclists.

Alcohol plays a smaller role in cycling fatalities than in pedestrian fatalities but is still a factor. Some amount of alcohol in either the driver or the cyclist was involved in over one quarter of all cyclist deaths in 2005.

Exceptions to some of these general rules occur among older drivers and pedestrians. For the population over sixty-five, the rate of involvement of alcohol in fatal crashes is far lower than average, most notably in pedestrian crashes. Another exception is that older pedestrians are struck and killed at intersections 69% of the time, while younger pedestrians are overwhelmingly struck and killed at non-intersection locations. In general, the research and recommendations in FHWA's Highway Design Handbook for Older Drivers and Pedestrians should be taken into account during design and operational improvement projects.

One caveat to all of the data in this section is worth mentioning: the actual rates for all non-motorized crashes may be far higher than reported, since according to hospital data, only a small fraction of non-motorized crashes are reported to the police, some studies say less than 10%.

Large Truck Crashes

In 2006, the Federal Motor Carrier Safety Administrations (FMCSA) completed a major national study of large truck crashes. The study included a large sample of crashes with researchers on-site (rather than receiving data at second hand), and has received the endorsement of Congress and the National Highway Traffic Safety Association. In the report, a few clear trends emerge.

First, the study attempts to distinguish between the critical events and critical reasons for large truck crashes. The critical event can be thought of as the event after which a crash becomes inevitable. The critical reason is the main contributing factor to the critical event. To follow this logic, the study found that the most common critical event was the truck drifting over a lane line or off of the road (32% of all truck crashes), followed closely by loss of control of the vehicle (29%). Of the critical reasons leading to these critical events, "driver decision," or speeding/aggressive driving, is the clear leader (38%).

In truck crashes involving a passenger vehicle, the trends are even clearer. On the part of the truck, driver decision and inattention are the prevalent critical reasons, but driver performance issues are far less common. On the part of the passenger vehicle, the same trend is present but is much weaker—driver performance issues contribute to crashes almost as often as driver decision.

The FMCSA study also performed a large survey of all truck drivers to determine the relative risks posed by factors such as fatigue, break problems, and legal drug use. Of these, the greatest risk tends to be driving "too fast for conditions," followed by "inadequate surveillance," and fatigue.

Stakeholders and Political Support

According to a 2006 report of the Transportation Research Board (TRB), the key to safety-conscious planning is collaboration. The key to successful collaboration is, in turn ."..identifying for each participant what benefit each receives through participation."

Briefly, the TRB report included a survey of MPOs and State DOTs asking which entities have the most influence over their safety planning efforts (Figure 9-6).

FIGURE 9-9:

Agency	MPO Rank	DOT Rank
Governor's Office of Highway Safety	10	3
Metropolitan Planning Organization	2	4
State Department of Transportation	1	1
Local departments of transportation	4	6
Departments of Public Health	8	11
Departments of Public Safety	6	8
Local police agencies	5	5
Department of Education/School Boards	9	9
Federal Highway Administration	3	2
Federal Transit Administration	7	7
Area Agency on Aging	11	12
American Automobile Association (AAA)	12	10

It also included an additional list of potential partners—the more the better (Figure 9-7).

FIGURE 9-10:

- Citizen's transportation advisory committees
- Special transportation authorities
- Transit agencies
- Insurance companies
- School districts and universities
- Business community
- Civic groups
- Local media
- Contractors
- Special advocacy groups, such as motorcycle, pedestrian and bicycle organizations
- Private transit providers
- Traffic engineers
- Engineering design consultants
- Hospitals
- Emergency service responders
- Homeowners' Associations
- Parents' groups
- Elderly groups
- Local lobby groups

It would be a worthwhile effort to identify stakeholders locally and to organize a focused safety planning effort. Again, PPACG, as the forum for local decision-making, would be happy to lead this effort. Ideally, the effort would be spearheaded by an elected official "champion" who would keep the safety issue at the forefront of planning discussions and encourage participation and analysis.

Safety Modeling

Safety models tend to be explanatory, micro-level tools used to establish crash causation and suggest location-specific safety improvements. Although a regional agency such as an MPO would not be the best user of such a tool, according to a 2006 TRB report, the use of an aggregate safety model as a practical planning tool is supported by research.

Safety research has shown that accidents have a large random component; they often cannot be explained or prevented by specific road segment or intersection characteristics. Much of this is due to poor driver decisions such as tuning a radio, talking on a cell phone, following too closely, or speeding, all of which may happen independently of road or intersection characteristics.

On the other hand, crashes are strongly related to certain aggregate predictors—different average safety characteristics between groups. In terms of demographics (at the TAZ level, specifically), certain "high risk" populations have been identified. Younger drivers suffer from inexperience and aggressiveness; older drivers experience reduced reaction and perception times as well as reduced vision and flexibility. In terms of facility types, while interstates have relatively low crash rates, high-speed rural roads are associated with high injury and fatality rates.

The list of useful aggregate predictors is quite extensive. For example, emergency response times tend to be better for urban than for rural areas; school zones are associated with elevated bicycle and pedestrian crash rates; complex intersections are prone to very high crash rates; traffic congestion lowers crash severity.

A mathematical model, PLANSAFE, has already been developed by the NCHRP to predict crash rates and types based upon these relationships at the TAZ level. If PLANSAFE is not used, PPACG should develop its own aggregate safety model based on TAZ-level data. Such a model could start simple and grow more sophisticated as time goes on. The more relationships that are included, the more useful the model's predictions will become. Best of all, much of the data needed for such safety analysis is already produced during PPACG's small area forecasting process.

CRASH ANALYSIS

Crash data collected by local police and sheriff's departments and maintained by the Department of Revenue is the cornerstone of PPACG's regional safety planning effort.

Of all the types of crashes – crashes in which there is property damage only, possible injury, evident injury, severe injury, or a fatality – fatal crashes are obviously the most important since human life is involved. Yet in many cases, the same critical event can lead to either an injury or a fatality, with little analyzable difference. Fatalities have been reported at speeds as low as 15 miles per hour, while some motorists have walked away from 70-mile-an-hour wrecks. This analysis therefore considers fatalities and injuries together, ignoring only property damage and possible (as opposed to evident) injury crashes.

Because the largest number of crashes tends to occur on roads with the greatest traffic, simply looking at raw crash numbers is not an efficient way to search for safety improvement opportunities. Looking at crash *rates* is a better approach because it provides a weighted view of crashes that can be used to compare information across different functional classes of roadway. Using crash rates also provides information about the more preventable crashes. That is, while more crashes occur on interstates than local roads, an individual is still far less likely to be involved in a crash on an interstate, and the opportunity for reducing crashes there by spending safety dollars is smaller. The crash rate will therefore be higher on the local road, and the prevention opportunity greater.

This analysis looks at crashes from two perspectives: the micro perspective, or crash rates on individual road segments (Figure 9-8); and the macro perspective, or crash rates on functional systems, or aggregate crash rates on different types of facilities (Table 9-3). The first approach can lead to suggested site improvements, while the second may lead to suggested refinements of design guidelines or other broad changes.

The unit of measure for crash rates is crashes per 100 million Vehicle Miles Traveled (VMT). VMT is typically given in millions or hundreds of million miles, so that a very small number of crashes per vehicle (e.g. 0.000001 crashes per vehicle mile traveled on a road segment) can be reported meaningfully, and refers to the distance times the number of vehicles using a road segment. The period that will be examined is a five-year aggregate from 2001-2005.

FIGURE 9-11: FATAL AND INJURY CRASHES PER AADT

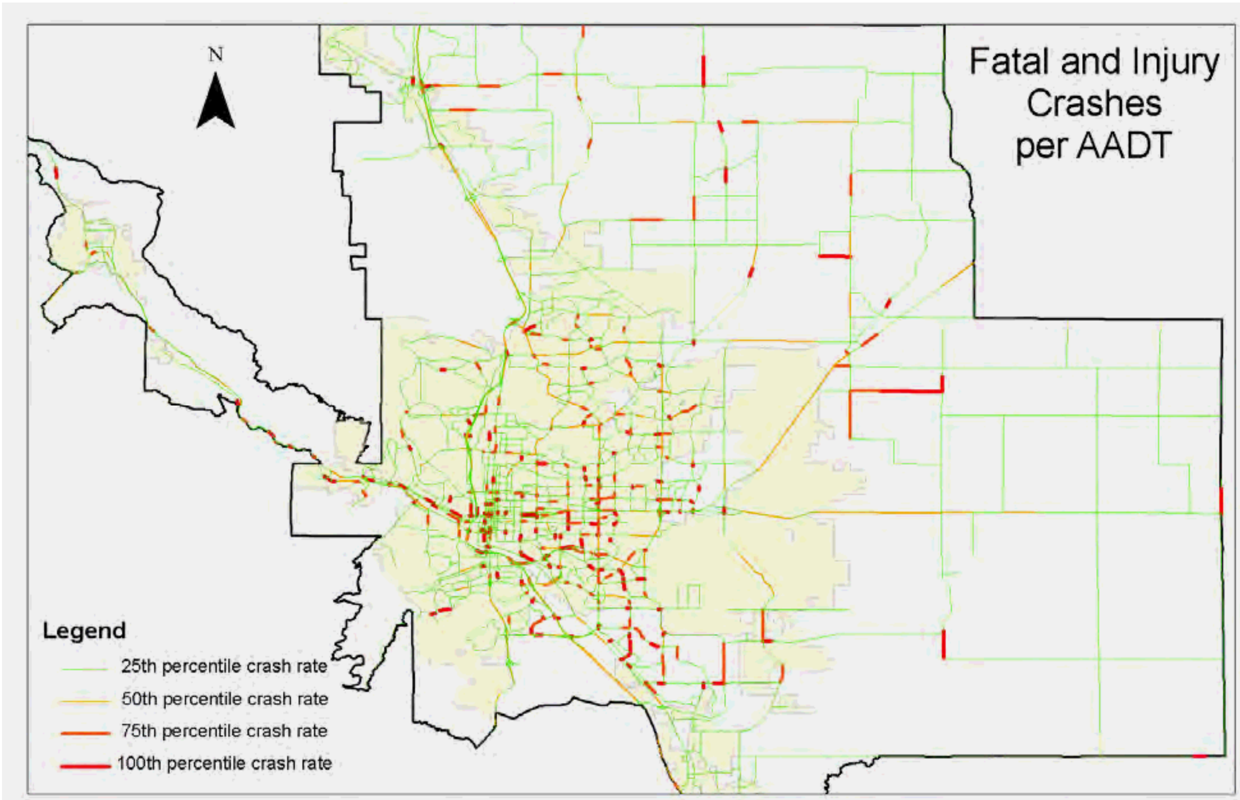


TABLE 9-3: CRASH RATES BY FACILITY TYPE

Facility Type	Lanes	Miles	AADT	Total Crashes	Per 100mil VMT
Collector	1	464.10	2,922,530	248	4.84
	2	11.22	227,226	21	5.27
Minor Arterial	1	574.28	3,810,183	310	4.64
	2	84.50	4,049,463	275	3.88
	3	1.06	70,587	5	4.04
Principal Arterial	1	125.77	2,002,510	77	2.19
	2	127.31	11,034,270	541	2.80
	3	41.05	5,722,387	263	2.62
Expressway	1	26.98	603,938	55	5.20
	2	48.56	3,020,171	120	2.27
	3	11.31	1,243,342	101	4.64
Interstate	2	53.11	2,607,222	174	3.81
	3	7.23	949,697	18	1.08
	4	0.75	78,583	1	0.73
	5	0.46	135,252	0	0.00
Ramp	1	24.30	898,972	21	1.33
	2	2.61	161,830	0	0.00

Regionally, crash rates seem to be higher in rural areas and in older areas of Colorado Springs. Since this analysis did not include a detailed examination of crash conditions, a high accident rate means simply that an area should be investigated further. It should be noted that higher crash rates in places like the Colorado Springs CBD and Academy Boulevard may be partially due to large numbers of bicycle and pedestrian crashes in those areas, since these types of crashes were not excluded from the analysis. Widening lanes to improve vehicle safety, for example, may therefore worsen an existing pedestrian safety problem.

Different functional classifications of road displayed widely varied safety characteristics. Two-lane collectors proved the most dangerous of all facility types, with 5.27 fatal or injury crashes per 100 million VMT, followed closely by one-lane sections of expressways and one-lane collectors. At the other end of the spectrum, interstates and interstate ramps are the safest roads. Principal arterials tend to be relatively safe, minor arterials less so (Table 9-4). Considering this alongside AADT traveled on the different facility types, it may be broadly stated that the least amount of travel occurs on the safest types of roads. These safety issues may be addressed through different design guidelines for the different functional classes of roads, or by slowly changing the character of the system to include more of the safer road types.

TABLE 9-4: ROAD SAFETY CHARACTERISTICS

Facility Type	Per 100mil VMT
2-Ln Collector	5.27
1-Ln Expressway	5.20
1-Ln Collector	4.84
1-Ln Minor Arterial	4.64
3-Ln Expressway	4.64
3-Ln Minor Arterial	4.04
2-Ln Minor Arterial	3.88
2-Ln Interstate	3.81
2-Ln Principal Arterial	2.80
3-Ln Principal Arterial	2.62
2-Ln Expressway	2.27
1-Ln Principal Arterial	2.19
1-Ln Ramp	1.33
3-Ln Interstate	1.08
4-Ln Interstate	0.73
2-Ln Ramp	0.00
5-Ln Interstate	0.00

RECOMMENDATIONS

1) PPACG should provide safety support for member jurisdictions, including geographic data and analysis; design standards and guidelines; and consolidated, easy-to-follow guidance for applying for safety projects. Writing a "Regional Safety Plan" that would be adopted by the policy Board should be strongly considered.

2) PPACG should develop an aggregate safety model that would be integrated with the Small Area Forecast and/or the travel demand model, and that would use demographics and travel patterns to create safety scenarios for future years.

CHAPTER 8: TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

TRANSPORTATION SYSTEM MANAGEMENT & OPERATIONS

Rapidly increasing congestion, constraints on capacity expansion and limited financial resources nationally and locally, are causing concern for transportation agencies and their customers. The Pikes Peak Region metropolitan transportation planning process has traditionally focused on constructing new roadways and widening existing highways; however, current challenges associated with transportation system reliability, safety, and security now require developing new methodical strategies to improve operations of the existing system.

Commuters and freight shippers are increasingly sensitive to delays affecting tightly scheduled personal activities and/or manufacturing distribution procedures. Regional growth in traffic volumes often means that even small disruptions can have a significant ripple effect on transportation system performance. There is also an increasing recognition locally of the significance of road construction, weather conditions, traffic incidents, special events, and emergency situations on the reliability of the transportation system. It is estimated that about half of regional traffic congestion is caused by temporary disruptions that take away part of the roadway from use ("non-recurring" congestion).

What is Transportation System Management and Operations?

Transportation System Management & Operations (TSMO) is an integrated approach to optimize the performance of existing infrastructure by implementing multimodal, intermodal, and often cross-jurisdictional systems, services and projects. This includes regional operations collaboration and coordination activities among transportation and public safety agencies. TSMO is not routine road maintenance like mowing or resurfacing. TSMO strategies improve system efficiency, enhance public safety and security, reduce traveler delays, and improve access to information for travelers. The emphasis of TSMO is an outcome driven, performance based system. It is critical that regional operations objectives can be measured and that they have importance on a regional level. TSMO strategies include, but are not limited to the following:

- Traffic incident management,
- Travel information services,
- Roadway weather information,
- Freeway management,
- Automatic vehicle location,
- Traffic signal coordination,
- Work zone management,
- Electronic payment/toll collection,
- Transit priority/integration,
- Emergency response and homeland security,
- Freight management,
- Transportation demand management, and
- Transit fleet management and dispatching.

Linkages to NEPA, the Metropolitan Transportation Plan and TIP

While Moving Forward must include TSMO strategies, the TSMO planning factor is not intended to be viewed in isolation. In fact, a focus on improving transportation system management and operations can support the other planning factors. For instance, TSMO strategies can:

- Support economic vitality by improving system reliability, which is valued by the freight and business communities;

- Increase safety by focusing attention to operational strategies, such as driver education, speed enforcement, and technologies to improve pedestrian safety;

- Increase security by improving communication and coordination between transportation agencies and law enforcement;

- Increase accessibility and mobility by implementing strategies that reduce recurrent and non-recurrent congestion, and improve the efficiency of operations, such as transit bus priority, signal timing, and pricing;

- Enhance the environment, energy conservation, quality of life, and consistency with planned growth by implementing programs to reduce travel demand, providing traveler information to help avoid and reduce time stuck in traffic delay, and avoiding the need to develop new transportation infrastructure with negative impacts to the environment and communities;

- Enhance integration and connectivity by implementing strategies to allow seamless travel between transit service providers and modes; and

- Emphasize preservation of the existing transportation system by focusing resources toward optimizing existing capacity rather than building new capacity.

Operations Objectives

Regional operations objectives are specific, measurable statements of performance objectives describing the desired operations of the regional transportation system. They are specific, agreed-upon measures of system performance that are time-sensitive and can be tracked on a regional level over time. These objectives should relate to at least recurring and non-recurring congestion, access to traveler information, emergency response, and ease of movement across modes and jurisdictions. These measurable regional operations objectives focus attention on the operational performance of the transportation system and ensure that TSMO is integrated into the long range transportation planning process, along with helping address both short-term and long-term system performance. An increased focus on TSMO within *Moving Forward* will not only fulfill SAFETEA-LU requirements, but also address pressing issues facing the Pikes Peak area, such as congestion, air quality, and safety and security.

Regional Collaboration

Developing effective operations objectives requires regional collaboration among the Colorado Department of Transportation, the City of Colorado Springs, Mountain Metro Transit Agency, public safety officials, and the Pikes Peak Area Council of Governments metropolitan transportation planners. A framework that can facilitate different entities working together is needed.

Congestion Management Process

A major component of the TSMO is the Congestion Management Process (CMP). The CMP is a systematic process to identify the causes of congestion and develop solutions to address congestion problems.

A Congestion Management Process is required in metropolitan areas with populations exceeding 200,000, known as Transportation Management Areas (TMAs). Federal planning requirements stipulate that in all TMAs, a CMP must be utilized as part of the metropolitan planning process. Specifically, the Federal requirements (23 CFR Part 500 Sec.109) state that a CMP must include:

1) Methods to monitor and evaluate the performance of the multimodal transportation system, identify the causes of congestion, identify and evaluate alternative actions, provide information supporting the implementation of actions, and evaluate the efficiency and effectiveness of implemented actions;

2) Definitions of the parameters for measuring the extent of congestion and for supporting the evaluation of the effectiveness of congestion reduction strategies for the movement of people and goods;

3) Establishment of a program for data collection and system performance monitoring to define the extent and duration of congestion, to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions;

4) Identification and evaluation of the anticipated performance and expected benefits of appropriate traditional and nontraditional congestion management strategies;

5) Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy; and

6) Implementation of a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area's established performance measures.

7) Further monitoring efforts are found in Chapter 13, Mitigation and Monitoring.

In TMAs like PPACG, which are designated as ozone or carbon monoxide non-attainment areas, the CMP takes on greater significance. Federal guidelines prohibit projects that increase capacity for single occupant vehicles (SOVs) unless the project comes from a CMP. Moreover, the CMPs shall provide an appropriate analysis of all reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOVs is proposed. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor, the CMP shall identify all reasonable strategies to manage the SOV facility effectively.

At the core, a CMP should include a system for data collection and performance monitoring, performance measures or criteria for identifying when action is needed, a range of strategies for addressing congestion, and a system for prioritizing which congestion management strategies would be most effective.

The purpose of implementing CMP is to achieve maximum efficiency of the transportation system by improving its performance. Emphasis is placed on managing demand and reducing the number of trips. The intent is to maximize the use of existing facilities and to improve regional mobility through the implementation of relevant cost-effective strategies.

Because of its focus as a management tool, an implied goal of a CMP is to respond rapidly to avoid and/or correct identified problems. To address this goal, a broad grouping of prospective management strategies have been identified which can be accomplished within a relatively short period of time. These strategies involve short-range actions and normally require a low level of capital investment. These types of actions are similar to measures classified as traditional Transportation System Management (TSM) strategies.

The CMP will help the Pikes Peak Area Council of Governments:

- Develop a definition of congestion;
- Identify congested locations;
- Determine the causes of recurring and nonrecurring congestion;
- Develop a menu of choices of strategies to mitigate congestion;
- Evaluate the potential of different strategies;
- Propose alternative strategies to address specific occurrences of congestion;
- Develop performance measures to assess the effectiveness of implemented actions and evaluate the level of congestion of the system;
- Establish a program for data collection to measure system performance;
- Set priorities among projects for incorporation into the Transportation Improvement Program

Background of the CMP In the Pikes Peak Area

For previous planning processes PPACG developed a Congestion Management System (CMS). The 2030 CMS will serve as the backbone of the Congestion Management Process. The framework of the CMP includes the definition of congestion, identifying congested corridors, development of performance measures, a menu of potential solutions and identifying facility specific strategies, data needs and collection methods and evaluation of specific corridors. The current CMS accomplished the following:

- Selection of Congestion Management System corridors
- Determination of corridor congestion levels
- Identification of potential performance measures
- Recommendation of performance measures for specific corridors
- Development of data collection responsibilities

Definition of Congestion

One of the first tasks of the CMP is to identify congestion by determining the appropriate method of measurement. Congestion is a relative rather than an absolute condition, and a uniform measurement cannot be used for all facilities and cities. In the Pikes Peak Region roadway congestion is defined by a V/C ratio of 0.85 or greater. This corresponds to a LOS D for all regional roadways, although the V/C ratio range for LOS D varies by functional classification. For example, for freeway and expressway facilities a LOS D corresponds to the range of V/C ratios between 0.71 and 0.87, while for arterial facilities a LOS D corresponds to the range of V/C ratios between 0.79 and 0.90.

Levels of Service (Road Capacity)

The actual capacity of a given road cannot realistically be expressed in an absolute number such as 2,400 vehicles per lane per hour. This is because the traffic stream is not uniform, with regard to either weather conditions or driver behavior. The presence of friction from traffic entering or leaving a highway can also impact the through-put of traffic, as do operating speed, number of lanes, width of lanes, shoulder width, sight distance, horizontal (left or right) curvature, and vertical curvature (up and down, or grade) of the road.

What can be used instead is the assignment of Level-of-Service (LOS) to traffic facilities under various traffic flow conditions.[8] The concept of Level-of-Service is defined as "…A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers." [9] Traffic speed and flow on urban streets are determined primarily by intersection capacity, which is affected by traffic volumes on cross streets and left turn signal phases.

Level-of-Service measures the restrictive relationship between traffic speed/volume/density and provides an index to the quality of traffic flow in terms of travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Six Levels-of-Service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the Level-of-Service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of Levels-of-Service, depending on the time of day, day of week, or period of a year. See Photographs 1-5 below and Table 8-1.

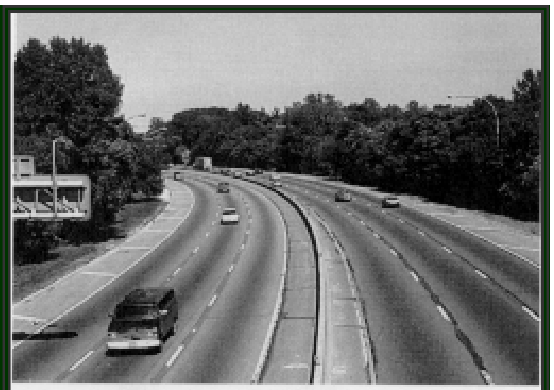


Photo 1

LOS "A"

Optimal vehicle operating conditions. This is a free-flow condition with little or no restrictions on speed or maneuverability caused by other vehicles.

[8]The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual 2000 (HCM2000)*, Special Report 209; Transportation Research Board; Washington, DC; 2000.

[9] Ibid

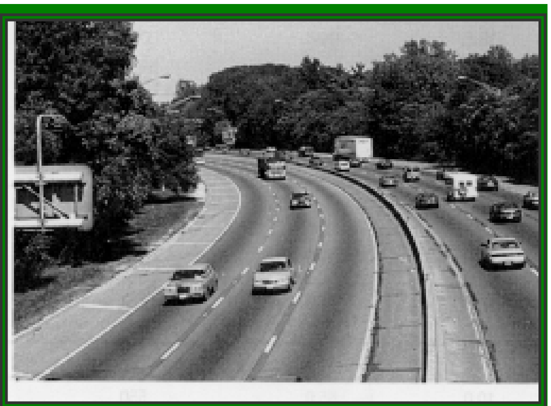


Photo 2

LOS "B"

This designation has a stable vehicle flow, where operating speeds may be restricted by other traffic. However, restrictions on maneuverability are negligible. There is little probability of a major reduction in vehicle speed or flow rate.

Photo 3

LOS "C"

This designation still maintains a stable vehicle flow, but at this volume and density most vehicles are restricted in their freedom to select speed, change lanes, or pass. Operating speeds are between 66% and 75% of maximum.

Photo 4

LOS "D"

This designation has unstable vehicle flow. Tolerable operating speeds are maintained, but are subject to considerable and sudden variation. Freedom to maneuver and driver comfort are low.

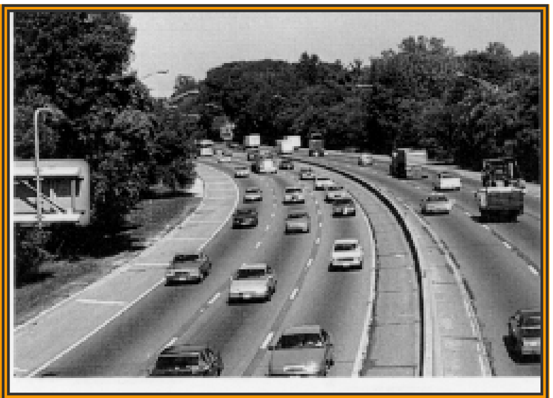


Photo 5

LOS "E"

This LOS reflects upper capacity limit of the facility. Operations on facilities with this LOS are unstable and speed will fluctuate wildly from point to point. There is little independence in speed selection and maneuverability.

Photo 6

LOS "F"

This is a 'forced-flow' condition. Travel speed and vehicle flow will drop to zero for short-time periods. Vehicle densities will continue to increase as long as the arrival rate exceeds the discharge rate.

Table 8-1: Typical Roadway Speed, Flow and Density Relationships

LOS	Speed Range (mph)	Flow Range (veh./hour/lane)	Density Range (veh./mile)
A	Over 60	Under 700	Under 12
B	57-60	700-1,100	12-20
C	54-57	1,100-1,550	20-30
D	46-54	1,550-1,850	30-42
E	30-46	1,850-2,000	42-67
F	Under 30	Unstable	67-Maximum

This table shows the speed, flow and density of traffic under each Level of Service (LOS) rating, a standard measure of traffic congestion.

Levels of Service (Intersections)

Levels of Service (Intersection Capacity)

Intersection Levels of Service can measure congestion for signalized intersections in terms of both control delay, which is a measure of driver discomfort or frustration, and increased travel time. The delay experienced by the motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions in the absence of traffic control, geometric delay, any incidents and any other vehicles. Specifically, LOS criteria for traffic signals is stated in terms of the average control delay per vehicle, typically for a 15-min. analysis period. Delay is a complex measure and depends on a number of variables, including the quality of the progression, the cycle length, the green ratio and the v/c ratio for the lane group.

LOS A describes operations with low delay, which is described as 10 sec/veh or less. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all.

LOS B describes operations with delay greater than 10 and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C describes operations with delay greater than 20 and up to 35 sec/ veh. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersections without stopping.

LOS D describes operations with delay greater than 35 sec/veh and up to 55 sec/veh. Congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths and high v/c ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes conditions with delay greater than 55 sec/ veh and up to 80 sec/veh. These higher delays indicate poor progression, long cycle lengths and high V/C ratios. Individual cycle failures are frequent.

LOS F describes operations with a control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Traditionally, the concept of LOS has only been applied to motor vehicles related to traffic congestion. This leads to ongoing pressure for traffic engineers to add lanes at intersections in order to reduce delays for motor vehicles traveling during peak travel periods. However, the decisions made about enhancing LOS conditions for vehicles during peak traffic periods changes the cross-section of the intersection during all hours of every day and night. Changing stakeholders' expectations about the physical and operational design of intersections and how a signalized intersection should perform for all travelers (bicycle and pedestrian) is leading to increasing the threshold V/C ratio for motor vehicles.

Careful consideration of the likely impacts of potential improvements on pedestrians, cyclists, and the adjacent land uses, prior to finalizing design decisions helps meet mobility and accessibility goals for all modes of transportation. Once the threshold of congestion is met and an intersection is listed as "saturated," the intersection should be evaluated as to the appropriate types of improvements that might be implemented and the potential impacts of those options (Table 8-2).

TABLE 8-2: TYPICAL DAILY INTERSECTION CAPACITY VALUES

Uninterrupted Flow Capacity Green/Cycle	40%	50%	60%
20,000/lane/day LOS = E	8,000	10,000	12,000
16,000/lane/day LOS = C-D	6,400	8,000	9,600

PPACG Congestion Management Corridors

The current PPACG Congestion Management System evaluated individual facilities. The principal arterials selected for inclusion in the Congestion Management System roadway are listed in Table 8-3 and will become the network for the CMP. The routes have been grouped into three categories; strategic, regional and other. Strategic corridors provide interregional and interstate travel, while the regional routes are significant but mostly service the Pikes Peak region, while the "other" category serves local needs.

TABLE 8-3: CONGESTION MANAGEMENT SYSTEM ROADWAYS

Strategic Regional Corridors	Regionally Significant Corridors	Other Congested Corridors
I -25	Garden of the Gods / Austin Bluffs / Barnes	Union Boulevard: Research Parkway to Powers Boulevard
US 24	Marksheffel Road	Union Boulevard Extension: Research Parkway to South Circle Drive
SH-21 (Powers Blvd)	SH 115	US 24 Bypass/Fountain Boulevard: I-25 to Powers Boulevard
Woodmen Road	Nevada Avenue	

Performance Measures

Performance measures are used to assess the effectiveness and efficiency of the transportation system. Measures such as speed, travel time and delay are often used to describe mobility in a less technical way. Performance measures are derived from the vision, goals and objectives established for the plan. The CMP is designed to put into action the visions and goals relating to congestion of the planning process by transforming the goals into specific objectives, identifying where goals are not being met and coming up with strategies to achieve the goals. Table 8-4 shows the 2035 Projected VMT for CMP Network. The goals of the Pikes Peak area related to operations and their identified measurements are:

- Increase trip per hour through at grade intersections to fully utilize current infrastructure measured by trips per hour entering intersection.

TABLE 8-4: 2035 PROJECT NETWORK

Route	Daily VMT	% of MPO traffic
I-25	4,956,512	24.5%
US-24	1,784,923	8.9%
Garden of the Gods	445,925	2.2%
Woodmen	780,124	3.9%
Union	344,236	1.7%
Marksheffel	317,359	1.6%

- Improve Travel time index measured by travel time index.
- Reduce total congested vehicle miles/hours of travel in the region measured by regionwide congested VMT/VHT.
- Reduce per person congested vehicle miles of travel in the region measured by per person congested VMT/VHT.
- Optimize the function of existing facilities through Intelligent Transportation System and surface condition improvements measured by speed.

Performance measures may be used either at a system-wide scale or at a corridor or transportation facility-level in order to determine where deficiencies exist and to prioritize strategies and funding to the most critical problems. For instance, by identifying locations with the greatest recurrent and non-recurrent traffic congestion using performance measures in the CMP, an MPO can help to direct funding toward facilities with the greatest scope, extent, or duration of congestion. Definitions of performance measures relevant to management and operations include[10]:

[10] See NTOC "Performance Measurement Initiative – Final Report," http://www.ntoctalks.com/ntoc/ntoc_final_report.pdf

- **TRAVEL TIME –** Travel time measures focus on the time needed to travel along a selected portion of the transportation system, and can be applied for specific roadways, corridors, transit lines, or at a regional level. Common travel time metrics include[11]:
  - Average travel time, which can be measured based on travel time surveys;
  - Average travel speeds, which can be calculated based on travel time divided by segment length or measured based on real-time information collection; and
  - Travel time index: the ratio of peak to non-peak travel time, which provides a measure of congestion.
- **CONGESTION EXTENT –** Congestion measures can address both the ***spatial*** and ***temporal*** extent (duration). Depending on how these measures are defined and the data that are collected, these measures may focus on recurring congestion or address both recurring and non-recurring congestion. Examples include:
  - Lane miles of congested conditions (defined based on volume to capacity (V/C) ratio, level of service (LOS) measures, or travel time index;
  - Number of intersections experiencing congestion (based on LOS);
  - Percent of roadways congested by type or roadway (e.g., freeway, arterial, collector);
  - Average hours of congestion per day; and
  - Share of peak period transit services experiencing overcrowding.
- **DELAY –** Delay measures take into account the amount of time that it takes to travel in excess of travel under unconstrained (ideal or freeflow) operating conditions, and the number of vehicles affected. These measures provide an indication of how problematic traffic congestion is, and can address both ***recurring*** and ***nonrecurring*** congestion-related delay. Examples of delay measures include:
  - Vehicle-hours of recurring delay associated with population and employment growth; and
  - Vehicle-hours of nonrecurring delay associated with incidents, work zones, weather conditions, special events, etc.

[11] See NTOC "Performance Measurement Initiative - Final Report," http://www.ntoctalks.com/ntoc/ntoc_final_report.pdf

- **INCIDENT OCCURRENCE / DURATION** – Incident duration is a measure of the time elapse from the notification of an incident until the incident has been removed or response vehicles have left the incident scene, and can be used to assess the performance of service patrols and incident management systems. Incident occurrence can also be measures used to assess the performance and reliability of transit services. Examples of this measure include:
    - Median minutes from time of incident until incident has been removed from scene;
    - Number of transit bus breakdowns; and
    - Average number of transit rail system delays in excess of X minutes.

- **TRAVEL TIME RELIABILITY** – Travel time reliability measures take into account the variation in travel times that occur on roadways and across the system. Examples of measures include:
    - Buffer time, which describes the additional time that must be added to a trip to ensure that travelers will arrive at their destination at, or before, the intended time 95% of the time;
    - Buffer time index, which represents the percent of time that should be budgeted on top of average travel time to arrive on time 95% of the time (e.g., a buffer index of 40% means that for a trip that usually takes 20 minutes, a traveler should budget an additional 8 minutes to ensure on-time arrival most of the time); and
    - Percent of travel when travel time is X% [e.g., 20%] larger than average travel time.

- **PERSON THROUGHPUT** – Examines the number of people that are moved a roadway or transit system, which can account for efforts to improve the flow of traffic, encourage high occupancy vehicle movement, or increase seats occupied on transit. Example measures include:
    - Peak hour persons moved per lane; and
    - Peak hour persons moved on transit services.

- **CUSTOMER SATISFACTION** – Examines public perceptions about the quality of the travel experience, including the efficiency of system management and operations. Customer satisfaction is typically measured through surveys and may include measures such as:
    - Percent of the population reporting being satisfied or highly satisfied with travel conditions;
    - Percent of the population reporting being satisfied or highly satisfied with access to traveler information; and

  - Percent of the population reporting being satisfied or highly satisfied with the reliability of transit services.

- **AVAILABILITY OF OR AWARENESS OF INFORMATION –** These measures focus on public knowledge of travel alternatives or traveler information.

Data Needs and Collection Methods

Once performance measures are selected real world data is needed to establish a baseline and evaluate the impact that the chosen strategies are having on the system. The acquisition of this data can be challenging. Classified vehicle counts and transit ridership are examples of routinely collected data. However, travel times, and length of congested periods are more challenging, especially as they related to ITS or non-recurring congestion.

There are a limited number of tools available to quantify the benefits of operational strategies. PPACG has acquired several helpful tools to forecast the effects of operational strategies on system performance.

- The ITS Deployment Analysis System (IDAS) works with the output of traditional transportation planning models, and enables planners to evaluate the costs and benefits of ITS investments relative to traditional infrastructure investment.[12]

- *DYNASMART-P* is a dynamic network analysis and evaluation tool that uses travel demand forecasting model output to evaluate future traffic flows for operational improvements.

- The first two PPACG software tools were chosen in part because they can be applied iteratively with available micro-simulation tools that can be used to evaluate and address future operational needs.

Moving Forward, the PPACG 2035 Regional Transportation Plan, is built upon databases and a Regional Modeling System (RMS) that describe the Region, its socioeconomic/demographic patterns, its travel patterns, and its transportation system, both currently and in the future. Travel patterns in the PPACG Region are changing continually. While this usually means that vehicular volumes are growing, growth rates can vary by location and time of day. To monitor the performance of the system data, such as vehicular counts, must be collected for roadway links represented in the regional modeling system. Basic data that is needed include:

- **TRAFFIC COUNTS –** Traffic counts are needed to monitor the changes in vehicular volume over time and to recalibrate the BPM traffic assignments. Counts are taken at locations around the PPACG and compared to the modeled vehicular volumes for all links on that same border to determine if the modeled volumes are reasonable. The

[12] For more information, see: http://idas.camsys.com/

collection of traffic data is organized and standardized. Counts are conducted for a minimum of 72 hours, to assure adequate statistical sampling.

- **VEHICLE OCCUPANCY RATES –** Vehicle Occupancy Rates are used to calculate Person Hours of Delay. This data will primarily be collected for major arterials and will include statistical sampling of vehicle occupancy rates during peak and off peak periods in addition to daily rates.

There is also a trend away from vehicle counts toward speed-based performance measures. Other information that is acquired is information that is updated includes:

- **VEHICLE SPEED –** Actual vehicular speeds are sampled along the major corridors. This data is used to calibrate the RMS speed estimates. Sampling is conducted by the City of Colorado Springs. In the future, PPACG will supplement these data using the TRANSMIT project on regular basis to calibrate and update the RMS every three years. PPACG and its member agencies may also utilize speed data collected by ITS equipments/sensors and also collect speed data using GPS based equipment on arterials not covered by ITS system to supplement ITS data. In general, travel time data are collected through two types of techniques:

  1) Roadside techniques, (radar/laser)utilizing detecting devices physically located along study routes that obtain travel time data from vehicles traversing the route at predefined checkpoints; and

  2) Vehicle techniques, utilizing detection devices carried inside the vehicle (these range from traditional stopwatch and clipboard techniques to use of distance measuring instruments (DMI) to use of global positioning system (GPS) techniques).

- **TRANSIT SERVICES –** Transit service data is needed to recalibrate the RMS making sure the model's multi-modal choice models are still adequate. This data is stored in GIS files attached to the RMS transit networks. A plan will be developed to collect the transit data from all private and public operators. Examples of data items include:

  - Routes or line changes,
  - Schedules,
  - Station and stop boarding/alighting counts,
  - Line ridership reports, and
  - Estimates of dwell time at high volume stations or bus stops.

- **COMMODITY FLOWS -** Data will be describing the flow of freight in the region. While the focus of the CMP will primarily be truck movements, the overall freight database will also include commodity-flow data. The BPM also produces a truck and commercial vehicle trip table, which distributes trips from each origin to all the destinations in the Pikes Peak Region.

Considerable coordination and collaboration between transportation operators such as the City of Colorado Springs, Mountain Metro Transit, and CDOT and PPACG is required. This includes mechanisms for archiving data, sharing data, and addressing data confidentiality issues. The current CMS has identified data collection requirements and responsibilities. Those requirements and responsibilities will continue until such time as all stakeholders can reevaluate the data collection plan.

Strategies and Solutions

TSMO strategies will be considered and analyzed in connection with all investments in the Plan either as individual "stand alone" projects or as part of another transportation project. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor, the CMP shall identify all reasonable strategies to manage the SOV facility effectively. Potential congestion management strategies for the Pikes Peak Area include:

Regional Signalization

The City of Colorado Springs has undertaken a regional traffic signalization project that will support computerized control of signals throughout the region. The traffic signal systems of six jurisdictions will be linked to a single master signal. Jurisdictions will then have on-line access to real-time data on signal operation. They will also be able to modify signal operation via a personal computer link. This can be done in the field from a laptop using cellular phone communication. State-of-the-art incident notification capabilities will also be incorporated in the system. Operations improvements for I-25 will be pursued, including the possibility of ramp metering if warranted. The City of Colorado Springs has also installed the initial phases of video signal detectors to replace the in-ground loops. The cameras allow a more responsive and easily maintained system to improve the efficiency of hundreds of intersections throughout the city

Intelligent Transportation Systems (ITS)

The vision for ITS is to: "Improve the mobility, safety, and comfort of the multi-modal transportation system and support economic development in the region while protecting the natural environment through real time management of the transportation system and providing reliable, timely and accurate traveler information to all users of the system."

ITS components can include:

- Computerized signal systems
- Traffic control and surveillance equipment
- Motorist information systems
- Roadway channelization
- Intersection improvements
- State-of-the-art incident notification capabilities
- Operations improvement for I-25 (including potential ramp metering)

Incident Management

The City of Colorado Springs' Incident Management project has ITS capability on the I-25 corridor. Key components of the system include video cameras and variable message signs used in the corridor linked to real-time communication and signal monitoring and adjustment capabilities of the system-wide program. US 24, Powers Boulevard, and Academy Boulevard are also included in the master plan for future ITS applications.

ITS operations are managed through the Colorado Springs Transportation Management Center (TMC) which performs traffic management, incident management, and event management. The TMC monitors traffic sensors, CCTV images, radar detectors and other devices.

The City of Colorado Springs' traffic signalization project includes dealing with effective incident management through linked communications systems, state-of-the-art incident detection capability, and the development of an incident management plan to effectively coordinate and expedite the removal of accidents and other incidents on I-25. US-24, Powers Boulevard, Academy Boulevard, and other CMS facilities will also be included in this plan over the next three to five years. The project provides cutting edge incident management capabilities to the region.

Ramp Metering

The principal behind ramp metering is to limit the access to a freeway segment to maintain an optimum level of service while minimizing resulting delays for all motorists accessing or already using the freeway. Signals are installed at on-ramp entries to manage freeway access time from on-ramps, which occurs when traffic demand exceeds the level that can be accommodated by the freeway. Because some users will not tolerate the periodically increased wait time at the freeway entrance ramp, some traffic will tend to shift to alternate routes. Minor shifts to high occupancy vehicle (HOV) modes may also occur if these modes are provided preferential bypass of ramp controls. Success of ramp control is largely dependent on the extent to which the following conditions are met:

- The reduction in freeway delay and congestion with ramp metering must be noticeable to the user, that is, elimination of recurring congestion on the facility results.
- Additional capacity strategies, such as alternate routes, time periods, or modes of travel, to accommodate demand shifts must be available in the corridor.
- Adequate storage space must exist, or be created, at the entrance ramps.
- Ramp signals must be utilized and timed appropriately to balance peak traffic demand with supply.
- Ramp metering is currently not being implemented in the Pikes Peak Area.

Transportation Demand Management

There are two sides to any transfer of services; Supply and Demand. Traditional TSMO strategies increase transportation supply by more effectively operating the roadway system. In contrast, travel demand management (TDM) strategies indirectly change the demand for travel by spreading the timing of travel to less congested periods; shifting the routing of vehicles, including trucks and single-occupant vehicles, to less congested facilities; and reducing the need to travel at all.

Managing demand means providing all travelers, regardless of whether they drive alone, with choices of location, route, and time, not just mode of travel. TDM strategies include parking pricing, transit and vanpool benefits, flexible work schedules, compressed workweeks, telecommuting, satellite work centers, dynamic message signs, and decreased transit fares.

Real-time information systems can help travelers make better decisions about how they travel (mode), when they travel (time), where and whether they travel (location), and which route they travel (path). These information systems can be used at employment centers and to manage critical shifts in demand such as occurs for special events, tourist activity, incidents and emergencies, schools, shopping centers, recreation areas, medical facilities, weather problems, and reconstruction projects.

21st Century Enablers of TDM

Information in an accessible and timely format for:

- Construction updates
- Incidents
- Emergencies
- Weather
- Real-time conditions
- Real-time schedules
- Transit-carpool availability

Via technologies such as:

- Navigation
- Internet
- GPS
- Networks
- Wireless Communications
- E-Payment

FUTURE DIRECTION

The Federal Highway Administration's (FHWA) Office of Operations has a two-pronged action agenda of awareness and guidance to promote a 21st century perspective on TDM.

- **Awareness:** A new *Commuter Choice Primer* has been prepared to help employers give their employees a wider range of opportunities for "getting to work." This primer is part of an ongoing joint initiative with the Federal Transit Administration and the U.S. Environmental Protection Agency, called Commuter Choice–Best Workplaces. To address non-commute travel, FHWA will showcase best practices of travel demand management techniques that make use of real-time information.
- **Guidance:** A new TDM reference manual and better technical analysis tools will be delivered over the next three years. They will provide the details to enable operations-oriented agencies to make demand management a key strategy to meet their 21st century operations needs.

The Pikes Peak Region has not yet taken full advantage of the informational, technological, and financial mechanisms available to deploy robust TDM programs. However, a number of trends will facilitate innovative TDM practices. For example, the technologies used for transportation systems and services enable operators to gather, share, and deliver information to travelers through more timely and useful ways. Recent changes in the Federal tax code have made financial mechanisms a more compelling feature of TDM, especially for influencing commuting behavior. Finally, as road-pricing strategies are implemented, TDM options will provide viable alternatives for those not willing or able to pay to travel on a priced facility.

- Carpooling
- Vanpooling
- Alternative work hours
- Encouraging alternative modes
- Telecommuting
- Parking management
- Transportation management associations
- Public outreach

Land Use Management

Land use management and activity center concepts should be advanced in local comprehensive planning documents with the respective local policy makers adopting them as goals and objectives.

Access Management and Corridor Preservation

Access Management has developed in response to congestion issues where expansion of roads is undesirable. It makes more efficient use of the existing roadway system while considering the context in which the improvements are needed. Consolidating access points and using frontage roads can protect the capacity of the road well beyond that of a similar road lacking access control, reducing the need for expansion or replacement. Access management is best incorporated into the initial project planning and design. This avoids costly future expenditures for road expansion or even repurchase of access rights.

Access management strategies for the roads in the Pikes Peak Region are determined by the responsible jurisdictions and are appropriate to the functional classification of the roadway. Dating back to approximately 1970, the local planning, public works, and transportation departments have vigorously sought to control access along new arterial corridors. Prominent among facilities subject to focused access control are the Powers Boulevard and Marksheffel Road corridors. A standing intergovernmental task force (Major Thoroughfares Task Force) was also formed with the sole mission of advising policy makers regarding access and transportation system capacity issues for new developments.

There are several different approaches that can be taken to balance property access and the need to move traffic through an area safely and efficiently. They are often utilized together to develop an area or corridor wide plan. Many of the approaches are physical changes that control the movement of vehicles. Several are standards or policy decisions that establish the conditions to make many of the physical improvements possible. The physical changes are typically related to managing how vehicles enter and exit driveways through appropriate numbers and locations of curb cuts, encouraging shared driveways, restricting turning movements, providing access roads connected to traffic signals, and turning lanes. When Access Management policies and techniques are combined, significant gains can be made in terms of improved traffic flow and reduced accident potential. There are six basic Access Management techniques that can be applied to roadways:

1) Limit the number of conflict points: This type of change looks to reduce the complexity of driving by limiting the information that drivers must process at any given time. Limiting the interaction between vehicles & between vehicles & pedestrians/bicyclists that are moving in different directions simplifies the driver’s task which in turn reduces the potential for accidents and improves traffic flow.

2) Separate conflict areas: This type of improvement attempts to increase the time or distance between decision points for drivers, allowing them to face potential conflicts one at a time, or at least in reduced numbers. This would include for example not allowing left turns from a driveway. In this case, the driver only has to focus on approaching traffic from one direction rather than two. As with #1, the intent is to simplify the driving task leading to reduced numbers of accidents and better flowing traffic.

3) Remove turning vehicles from through traffic lanes: The addition of turning lanes reduces the impact that vehicles slowing to make a turn have on traffic that is continuing in the same direction. In congested areas without turning lanes, all traffic stops behind vehicles waiting to turn. This leads to increased congestion and greater accident potential.

4) Reduce the number of turning movements: This technique focuses on the elimination of short distance, slow movement travel on the primary roadways. By interconnecting parking lots, providing access roads, and connections to side streets, vehicles can move between businesses without having to re-enter the roadway only to exit again shortly after. This results in less congestion and reduced accident potential.

5) Improve roadway operations: This technique uses a variety of methods to manage traffic operations on a corridor. This includes implementing long, uniform signal and intersection spacing,

6) Improve driveway operations: This type of improvement looks to improve the operation and safety of the roadway by making improvements to driveway intersections. Well defined driveways of appropriate width and adequate curve radii reduce the impact on through traffic by making the entering or exiting movement less difficult, and provision of adequate sight distance reduces accident potential.

A related issue that has recently received attention is corridor preservation. This entails preserving right-of-way for new or expanded roads in order to reduce amount of development near the property that is needed for construction. This can greatly reduce the cost of projects and shorten the time needed to construct the project. Federal legislation is specific in requiring that MPOs must, while developing transportation plans and programs, consider factors such as; *"preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way which may be needed for future transportation* they affect identified corridors *for which action is most needed to prevent destruction or loss".* of regional significance.

Construction of New Lanes

The addition of general-purpose lanes in response to inadequate arterial roadway capacity has been a mainstay in dealing with congestion in this region. There are still needs in the region, which need to be addressed by the addition of general-purpose lanes. The number of lanes that should be provided to meet anticipated traffic demands along an arterial roadway is a discrete number; e.g. 4, 6, or 8 through lanes. The volume-to-capacity comparisons should be rounded upward to determine number of lanes that are needed. For example, when 2.3 lanes are needed in each travel direction, the total number of necessary through lanes becomes 6.0. Hence, whether the V/C ratio results in 4.3, 4.4, or 4.6 lanes, the same number lanes should be provided. Therefore, in many situations, the average daily capacity per lane provides a reasonable basis for making design decisions. These average daily capacities should be based on actual operating experience.

In establishing future lane requirements, it is desirable to provide some capacity reserve. Accordingly, a value of about 16,000 vehicles per lane per day per hour of green is suggested for design purposes. The anticipated future daily volume can be compared with this number to estimate future lane requirements for any green-per-cycle ratio. Table 1 gives illustrative values for various green-per-cycle ratios. It indicates that additional lanes are needed when daily volumes exceed 8,000 to 12,000 vehicles per lane per day, (depending on the green/per cycle ratio). For design purposes, daily volumes that exceed 6,400 to 9,600 vehicles per lane per day will need additional lanes.

High-Occupancy Vehicle (HOV)

HOV lanes on freeways provide preferential service to buses, vanpools and carpools. The purpose of HOV lanes is to increase the person carrying capacity of freeways. HOV lanes can provide incentives for increased transit and carpooling if the user experiences reduced travel times and cost. In order for the HOV to be successful in achieving these goals, and therefore feasible, the following conditions should exist or be achievable:

- The existing corridor should be experiencing levels of service of E or F during the peak period. Level of service E or F denotes highly congested travel conditions.
- Average existing peak hour speeds on the existing corridor must be 25 mph or less.
- The corridor should be relatively long—a minimum ten miles is suggested.
- The HOV lane should be able to provide at least a five-minute travel time advantage, and preferably a ten-minute travel advantage. In general, the travel time advantage should be at least one minute per mile.
- The number of person trips projected on the HOV lane should at least equal the average number of person trips on a general-purpose lane.

- Person minutes of travel time saved by users of the HOV lane must exceed person minutes lost in the general-purpose lanes.

- For successful transit HOV implementation:

- Existing bus volumes should be at least 15 buses per hour in the current year peak period, and a minimum of 40 buses per hour in the design year peak period, with 750 and 2,000 passengers per hour, respectively. This compares to general purpose lane carrying capacities of 2,000 vehicles and 2,200 persons per hour.

- Commuter express bus service should be provided or expanded where it already exists.

- Park-and-ride lots should be provided at a distance of at least five, and preferably ten miles from the destination. Capacity of park-and-ride lots should total 1,000 spaces now and should be expanded to 2,500 spaces along the corridor. The *Regional Park-and-Ride Plan* prepared by the City of Colorado Springs determined optimum locations for park and ride facilities to serve transit, carpool, and vanpool users.

Implementation Program

PPACG, as the metropolitan planning organization (MPO) for the Colorado Springs metropolitan area, recognizes that implementation of the majority of congestion management strategies must rest with local operating agencies. In fact, most actions can be initiated and implemented without the involvement of the MPO. However, there is much to be gained from coordinating these efforts so that they reinforce one another and are aimed toward the resolution of regional problems.

Through the metropolitan transportation planning process, PPACG will continue refinement of congestion performance measures. Threshold levels of congestion will trigger implementation of selected strategies. Details of data collection geography and temporal frequency will also be refined.

PPACG and associated local governments in the metropolitan planning area will participate in the identification of activities to address congestion problems on individual facilities through established planning processes: the transportation improvement program (TIP), long range plan development, congested corridor feasibility studies, and the Congestion Mitigation Air Quality (CMAQ) program. Appropriate strategies will be selected and implemented. Selected strategies will be drawn from available strategies, which are specifically suited for the given level of geography. Potential strategy “action packages” are listed by geographic level in Table 8-5.

TABLE 8-5: CONGESTION MANAGEMENT ACTION PACKAGES

Location	Action Packages
Downtown Colorado Springs	• Traffic operations • Transit improvements • Ridesharing • Parking incentives for alternative modes • Auto restricted zones • Bike storage sites • Pedestrian facilities • Traffic signal improvements • Concrete pavement • Variable work hours
Strategic Regional Corridors	• Ramp metering • Incident management • Provision of storage space for disabled vehicles • Provision of traffic condition information • Selective on-ramp closures • In-vehicle and highway system technology • Direct access to park and rides for transit • Bus/HOV bypasses at ramp meters • Completing gaps in the transportation system • Addition of general-purpose lanes
Regionally Significant Routes	• Trip reduction ordinance • Ridesharing • Parking policies to encourage use of HOV • Transit improvements • Telecommunications • Development consistent with transportation infrastructure
Regional Activity Centers	• Variable work hours • Traffic signal and operations improvements • Ridesharing • Parking management to encourage ridesharing • Access to park-and-ride lots • Provision of bike storage facilities • Longer-term land use policies to encourage multiple uses at employer concentrations and to provide nearby affordable housing

Location	Action Packages
Other Congested Routes	• Traffic signal improvements • Turn prohibition using medians • Remove unnecessary multiple access points • Retrofit shopping center access to reduce delays on arterials • Provide continuous pedestrian facilities • Provide direct pedestrian pathways from subdivision to bus routes • Provide bike routes and/or crossings where accident potential may be high • Bus pullouts where feasible • Bus shelters • Concrete intersections and bus pads at stops to reduce pavement wear • Bicycle racks and storage facilities at suburban park-and-ride locations • Completing gaps in the transportation system • Addition of general-purpose lanes
Other Principal Arterials	• Traffic signal improvements to reduce delay • Provision of off-street parking • Reversible lanes • Turn prohibitions • Improve curb radii for bus movements • Bus shelters • Completing gaps in the transportation system • Addition of general-purpose lanes
Intersections	• Add lanes • Regional Timing

Proposed Actions

1) The Congestion Management Program should get 25% of the available CMAQ and 100% of the Congestion Relief funding annually.

2) An Incident Management Project should be developed and implemented on I-25 to succeed the COSMIX project.

Conclusion

The Pikes Peak Area can improve performance and reduce congestion using an objective driven and performance based transportation planning process that specifically considers TSMO strategies that address safety, security, mobility recurring and non recurring congestion and other issues. These TSMO strategies will result in a mix of infrastructure and operational strategies founded on measurable, performance based regional-operations objectives.

Chapter 7: System Maintenance and Preservation

Overview

Road and Bridge infrastructure deteriorate at known predictable rates, taking into account materials, craftsmanship, weather conditions, traffic type and volume, along with several other factors. Preventive maintenance, if institutionalized, can extend the deteriorating point, pushing off major rehabilitation / reconstruction for a decade or more. Just as private cars deteriorate under heavy wear and tear and many miles of service, so do transit vehicles and assets. However, the condition of transit assets has a much greater influence over the success of the transit system than the condition of the roads do on vehicular traffic. Compounding the issue is that vehicular deterioration, both public and private, is increased when the roads themselves are in poor condition.

The cost of neglecting maintenance is not limited to simply repairing roads and vehicles. Poorly maintained transportation systems cost the local economy by deterring private investment, creating unsafe conditions for travelers, adding unnecessary delays due to mechanical failure, and potential limitations for emergency vehicle services. The condition and aesthetic quality of the Region's infrastructure is a reflection of regional values and community pride. Continuing to keep preservation of the transportation system as the top priority can mitigate these undesirable consequences of poor maintenance.

Adequately maintaining the transportation system is a major challenge for the Pikes Peak Region, the state of Colorado and the entire country. Many metropolitan areas have neglected their maintenance responsibilities in lieu of policies heavily favoring expansion. With increasing demand for construction materials around the globe, and energy costs continuing to rise, the high rate of construction cost increases will persist in coming years. The maintenance investment levels identified in *Moving Forward* increases maintenance funding over current levels to maintain the condition of the region's pavement, bridge and transit assets over the term of the plan. The current condition of the transportation system provided a basis for developing investment targets to accomplish that goal. The condition of these regional assets is summarized below.

FEDERAL REQUIREMENT

"Sec. 450.306 (a) The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that…(8) Emphasize the preservation of the existing transportation system."

"(f) The metropolitan transportation plan shall, at a minimum, include:… Assessment of capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure."

FEDERAL OBJECTIVES

Transportation investment planning should consider all of the costs incurred by investment decisions. Transportation investments are required to provide service for many years. The ability of a transportation asset to provide service over time is predicated on its being appropriately maintained. Thus the investment decision should consider not only the initial activities that construct a public good, but also all future activities that are required to keep that investment available to the public. Those future activities are part of the alternative as much as the initial action because without periodic maintenance and rehabilitation, the investment will not provide continued use to the public.

PUBLIC INPUT

The importance of maintaining existing transportation infrastructure was a continuing theme of public comments received throughout the *Moving Forward* planning process. During the October 2007 roundtables participants formulated transportation investment strategies for 20-year programs to be funded alternatively by $1.5 billion and $2.0 billion. Participants were told that an additional $250 million per year is required to maintain the transportation system at current levels and an additional $750 million is required to fully fund long range maintenance needs.

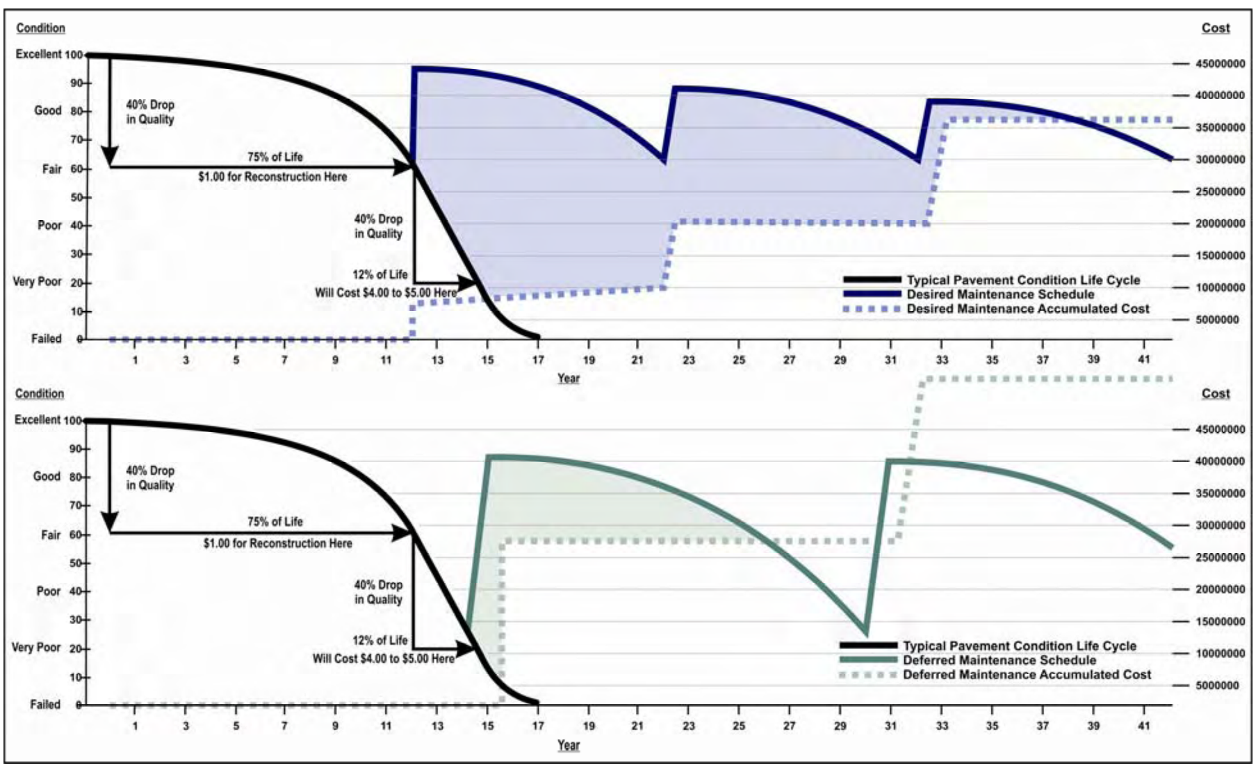
In the first round of the exercise, with $1.5 billion available, an average of $554 million was allocated to funding maintenance needs by the roundtable teams; in the second round, with $2.0 billion available to fund transportation investments, an average of $298 million was allocated to funding maintenance. In both cases roundtable teams overwhelmingly opted in favor of providing increased funding (in the first round more than twice current funding levels) for maintenance.

During the three focus groups, the participants of which were selected to accurately represent the regional population, they were asked to determine the relative importance, as well as the relative performance of ten factors associated with effective transportation systems:

- Pavement Conditions – effective maintenance of roads and paths
- Safe Bridges – effective bridge maintenance
- Efficient Intersections – good movement of vehicles through intersections
- Timely Travel – minimal delays, efficient connections
- Safe Travel – minimal crash rates for motorized and non-motorized travel
- Reduced Impact on Neighborhoods and Cultural and Historic Resources
- Reduced Impact on Natural Areas
- Reduced Fuel and Emissions
- Effective Freight Movement – efficient trucking of goods.

Participants ranked the importance of pavement conditions to effective transportation as the second most important factor and currently the third poorest performer. That maintaining existing transportation facilities is viewed by residents of the Pikes Peak Region as highly important to achieving the goal of providing a high quality transportation system confirms a similar affirmation made by of the voters of the Pikes Peak Region through approving the PPRTA with system maintenance and operations set-asides.

FIGURE 7-1: PREFERRED VS DEFERRED PAVEMENT MAINTENANCE LIFE-CYCLE



Aside from prevailing public perceptions, neglecting the preservation needs of the Pikes Peak region is not a rational policy choice; deferring maintenance due to fiscal pressure would necessitate spending substantially more on transportation investments in the future. As shown in the figure below, the worse the condition of a roadway surface, the exponentially greater the cost to repair it.

PAVEMENT CONDITIONS

Figure 7-2 below shows the pavement condition of all regional roads. Pavement conditions data was gathered in June and September of 2007. Conditions are categorized as very good, good (no visible signs of deterioration), fair (moderate deterioration) poor (severe deterioration) and very poor.

Regionally, 55% of vehicle miles of travel are carried by roadways with pavement condition of very good/good. Another 38% of regional VMT is carried by roadways with a pavement condition of fair, and only 7% of regional VMT is carried on roadways with poor or very poor pavement condition. This distribution results from the prioritization of high-level facilities within the region to receive limited maintenance funding resources.

	Pavement Condition Distribution by VMT Share		
	Good	**Fair**	**Poor**
Percent of Regional VMT	55%	38%	7%

It follows that regional pavement condition varies by roadway classification, with 67% of high-level functional classification roadways (interstate/freeway) in good/very good condition, and only 19% of the Region's collector roadways in good/very good condition. Pavement condition policies for the State highways focus on improving the condition of Interstates first, since that portion of the system supports a majority of regional travel (VMT), such that interstate/freeway maintenance investment provides the most benefit per dollar invested for travelers.

	Pavement Condition Distribution by Functional Classification		
	Good	**Fair**	**Poor**
Collectors	19%	54%	27%
Minor Arterials	39%	49%	12%
Principal Arterials	43%	47%	10%
Interstate/Freeway	67%	24%	8%

Because of past investment practices, pavements on the state-maintained highways in the Region are in reasonably sound condition, with approximately 46% of the pavement rated as good/very good, 46% fair, and only 8% in poor/very poor condition. Similarly, in the City of Colorado Springs where investment has historically focused on maintenance, 83% of its roads are in good or fair condition, and only 18% are in poor condition.

	Pavement Condition Distribution by Jurisdiction		
	Good	**Fair**	**Poor**
CDOT	70%	27%	3%
El Paso County	46%	46%	8%
City of Colorado Springs	25%	58%	18%
City of Manitou Springs	1%	25%	74%
Town of Monument	24%	51%	26%
City of Fountain	31%	44%	22%

Although the conditions do vary along the roadway system, most drivers are currently minimally impacted by poor pavement conditions. Even with the great strides made towards improving roadway surface conditions, the demand for investment in this focus area is still high as evidenced by public comment from the roundtable and focus group sessions. Highway preservation needs are a moving target that requires constant attention. As improvements are made in one portion of the system, another area is falling into disrepair.

Part of the preservation and maintenance needs assessment for PPACG included developing roadway system data in a format consistent with the Highway Performance Monitoring System (HPMS) for analysis in the Highway Economic Requirements System (HERS-ST) asset management software made available by the Federal Highway Administration (FHWA).

Actual International Roughness Index (IRI) for all roadway segments within the PPACG planning area was collected and incorporated into a single geo-database for analysis of existing and future system conditions, preservation needs and improvement costs. This inventory, along with other data gathering, makes it possible for PPACG to forecast both the amount and cost of future preservation needs. It also makes it possible to forecast resulting conditions with different investment levels.

The maintenance of local roadways is a priority not necessarily because they support large amounts of travel, but they are important to connecting neighborhoods, attracting local business, and making the overall traveling experience better. Sometimes maintaining local roads is an even greater challenge than maintaining state highways and Interstates because they often include sidewalks and other amenities that accommodate foot traffic, a necessity for providing mobility and accessibility to local businesses and services and to the transit system. Nonetheless, there is a need to track conditions to understand the level of investment, and to measure performance over time. Future highway preservation investments should continue placing emphasis on further improving conditions of major arterials as well as minor arterials, collectors and other local roads while maintaining the overall integrity of the highway system.

BRIDGE CONDITIONS

Bridges are another critical element of the transportation system that requires constant upkeep and maintenance. The Pikes Peak region currently has 457 bridges to maintain. The State maintains 209 or 46% of those bridges; the rest are the responsibility of local governments. Overall, approximately ___% of the bridges, carrying ___ vehicles daily are deficient (either structurally deficient or functionally obsolete). Structural deficiencies are characterized by deteriorated conditions of significant bridge elements and reduced load-carrying capacity. Functional obsolescence is a function of the geometrics of the bridge not meeting current design standards. **Neither type of deficiency indicates that a bridge is necessarily unsafe.**

To be categorized as poor, a bridge must have a sufficiency rating of less than fifty, and be either structurally deficient or functionally obsolete. The sufficiency rating is a numerical rating for bridges that takes into account structural adequacy and functionality and is based on a 100 point scale where 100 is a perfect rating. The criteria for determining the sufficiency rating, structural deficiency, and functional obsolescence is established by the Federal Highway Administration and used by all state Departments of Transportation.

- A bridge is structurally deficient when the structural condition or weight-bearing capacity of the bridge is less than fully adequate. Elements of the bridge need to be monitored and may also need maintenance, rehabilitation, or replacement. Monitoring of the bridges condition is accomplished by maintenance patrols. Structurally deficient bridges may have load restrictions to ensure their safe use.

- A bridge is functionally obsolete when its size or geometric clearances are less than fully adequate. Bridges that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demands are categorized as functionally obsolete. Bridges used for water crossings that have inadequate openings for floodwaters are also categorized as functionally obsolete.

Bridges in Poor condition do not meet all safety and geometry standards and require reactive maintenance to ensure their safe service. Thirty (30) or 7% of the bridges in the region are in Poor condition. These bridges carry ___ vehicles daily. For the purpose of determining bridge-funding needs it is assumed that bridges in poor condition have exceeded their economically viable service life and require replacement.

Bridges in Fair condition marginally satisfy safety and geometry standards and require preventative maintenance or rehabilitation. Eighteen (18) or 4% of the bridges in the Pikes Peak region are in Fair condition. These bridges carry ___ vehicles daily.

Bridges in Good condition typically adequately meet all safety and geometry standards and typically only require preventative maintenance. Four hundred and nine (409) of the bridges in the Pikes Peak Region are classified in Good condition. These bridges carry ___ vehicles daily.

Based on an average 75 year service life for bridges and only using bridge program funds to address needs, there will be ___ of bridges in Good and Fair condition over the next 28 years. The ___ is a rough estimate and should only be used to determine required annual funding levels over the next 28 years.

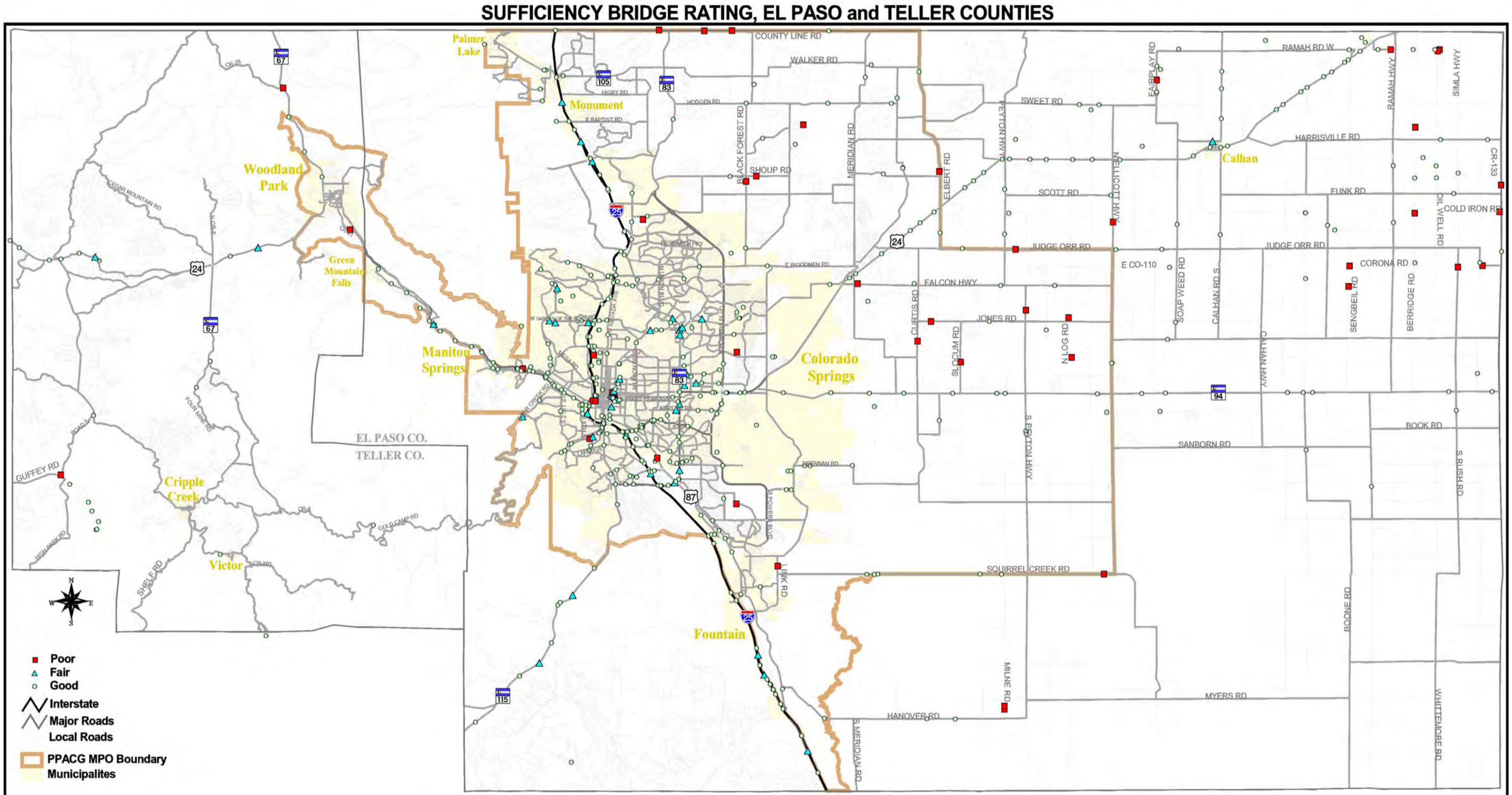
Similar to pavement conditions, data shows the region's dedication to preservation has begun to improve the condition of both state and locally maintained bridges. ___% of locally maintained bridges are deficient compared with ___% of State-maintained bridges. Preservation of the local system is a particular challenge in today's fiscal environment, in which all local governments in the Pikes Peak region are faced with extremely tight budgets, an aging system, and growing investment needs. A compounding factor is that older areas are experiencing a loss in tax base as development moves further away from the central core of the Region. A limited amount of Federal funds are made available through the Transportation Improvement Program. Local governments must compete against one another on a statewide basis for the relatively small amount of funds. Given the great level of investment needs throughout local communities in the region, competition for the funding is intense. Figure 7-2 shows the location and condition of bridges in the Pikes Peak Region.

	Bridge Conditions		
	Good Bridges	**Fair Bridges**	**Poor Bridges**
CDOT			
El Paso County			
City of Colorado Springs			
City of Manitou Springs			
Town of Monument			
City of Fountain			

TRANSIT

The highway system and transit system are distinct, but integral to providing a system that serves all of the Region's transportation needs. Improving the condition of highways and bridges also benefits the transit system. Managing the transit system, however, includes managing and maintaining its buses (fixed-route), paratransit (demand-responsive) vans and other supporting infrastructure.

FIGURE 7-2: LOCATION AND CONDITION OF BRIDGES IN THE PIKES PEAK REGION



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Mountain Metropolitan Transit (Mountain Metro) has been proactive in managing their capital assets over time. As shown in Table 7-1, None of Mountain Metro's buses and vans are beyond their useful life. On average, the age of Metro's current fleet is 51% of its useful life. Mountain Metro has retired aging vehicles in recent years. At the same time, they have been proactively replacing buses and vans at the end of their life cycle with new vehicles with upgraded technologies to meet today's service needs. This has reduced costs and improved service. The asset management programs that Mountain Metro has in place are critical to creating an increasingly attractive and comfortable transit system. Up-to-date technologies, that run efficiently and breakdown less, make service more attractive to current and potential riders. Continuing to support the Region's transit asset management programs is critical to the Region.

TABLE 7-1: TRANSIT FLEET CONDITION 2006

Vehicle Type	Number of Vehicles	Useful Life (Years)	Actual Average Age	Percent of Useful Life	Number Beyond Useful Life
Mountain Metro					
Bus	97	15	6.4	43%	0
Demand Response	72	5	3.0	60%	0
Total	169			51%	0

Data Source: 2006 National Transit Database

PAST ACTIONS AND FUTURE DIRECTIONS

With the passage of the Pikes Peak Rural Transportation Authority (PPRTA) the voters of the Pikes Peak Region demonstrated an understanding that a high quality transportation system is essential to maintaining the social and economic vitality of the Region. At the same time, by dedicating 45% of the PPRTA one cent sales tax to road maintenance and 10% to transit maintenance and operations, the importance of maintaining the existing transportation system to developing and preserving a high quality transportation system was also recognized.

Since the PPRTA became operational, the Region has made great strides in not only maintaining, but improving the condition of the existing system. It has taken steady investment and an unwavering commitment to make such improvements. With increasingly scarce funding, and rising costs for steel and energy, it is more important than ever to continue the focus on improving the system through preventative maintenance, rehabilitation, and reconstruction of the existing system as a means to get the most out of our past and current infrastructure investments.

The public comments received during the *Moving Forward* public process indicated a desire to emphasize preservation needs in the programming of state and federal funds, encouraging CDOT to commit more funding to road and bridge rehabilitation, and using preservation as the top priority in the selection of local projects using suballocated Surface Transportation Program funds.

Preserving the system now and in the future will require continuing the region's dedication to this goal. Regional collaboration will be critical, particularly as the needs arise to undertake major reconstruction efforts. Major reconstruction projects will require significant coordination and costly mitigation to mitigate impacts for travelers. With the Cosmix Project, CDOT undertook upgrade and reconstruction of I-25 between Cimmaron/ US 24 and North Academy Boulevard (formerly SH 85), which is the main artery through the heart of the Pikes Peak Region. This I-25 reconstruction project is the largest reconstruction project, in both scope and cost, in Colorado Springs history. As for the Denver TRex Project before it, a design-build approach was implemented. Additional projects are underway, supported by the PPRTA to upgrade other primary regional corridors including; Woodmen Road, Powers Boulevard, Drennan Road/Proby Parkway and Austin Bluffs Parkway. Many of the lessons learned through the implementation of the Cosmix/I-25 reconstruction project, as the first completed project, will set precedent for future projects of similar size that will inevitably arise as the system ages over time.

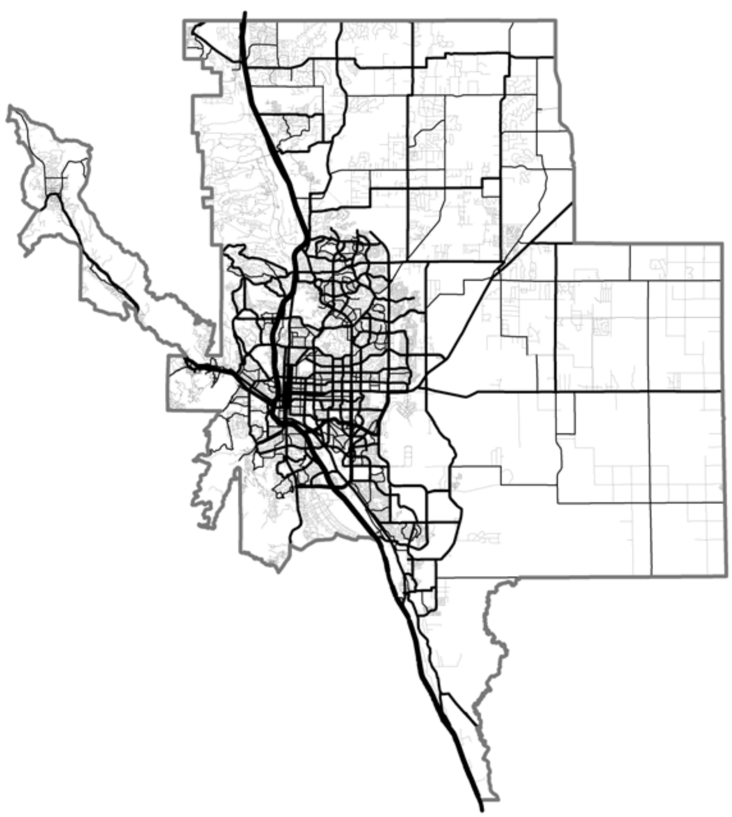
For the 2008-2013 TIP PPACG has programmed $___ million in federal, state, and local funds for road, bridge, and transit preservation needs, representing ___% of the total program. Nearly __% or X Dollars of the investments identified in the 27 year *Moving Forward plan* are dedicated to maintenance, rehabilitation, and reconstruction of existing highways, bridges, and transit assets. Maintaining a progressive approach to management of the Region's transportation system is critical to continue improving their condition. Deferring this responsibility due to the increasingly tight fiscal environment is not a feasible option. Preservation of the existing system is fiscally responsible, and will remain the basic tenet of the transportation planning and programming process now, and in years to come.

CHAPTER 6: THE REGIONAL TRANSPORTATION SYSTEM

ROADWAY SYSTEM

The roadway network is composed of Interstate 25; freeways, such as US 24 Bypass; arterials, such as Woodmen Road, collectors, such as Squirrel Creek Road; and local roads. Each of the "classes" of roadways forms part of a hierarchy of facilities for moving people and goods. The following graphics illustrate the distribution of each of these classes of roadways and indicates the classes' role in moving traffic.

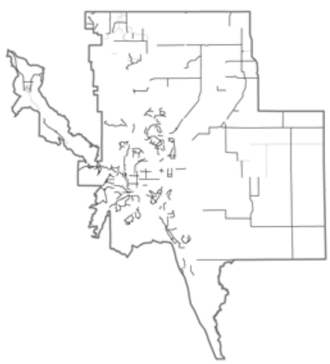
FIGURE 6-1: ROADWAY NETWORK



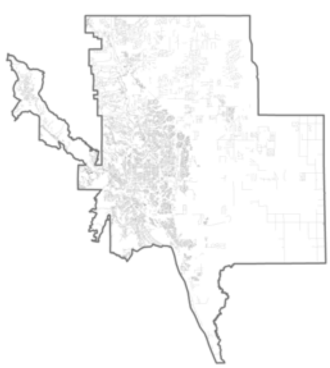
See the following page for Roadway Network details.

Interstates and freeways are designed to facilitate fast travel between regions or across the region. Generally, they are designed to handle high volumes of traffic at a high rate of speed. In order to maintain safety at these higher volumes and speeds, access to interstates and freeways are limited. Interstates and freeways account for about 4% of the Colorado Springs metropolitan area roadway system.

Arterials are designed for travel within a region or city and link business districts, major activity centers, and outlying suburban residential areas. Arterials serve trip of moderate length at lower speeds than interstates or freeways. Like interstates and freeways, arterials trade-off property accessibility for increased mobility and safety. Arterials account for about 14% of the regional roadway system.



Collectors are designed to connect neighborhoods to one another or connect local roads to arterials by collecting traffic from local subdivision areas and channel it into the arterial system. These streets provide both property access and traffic circulations within residential neighborhoods. Collectors account for about 14% of the regional roadway system.



Local roads are the streets most people live on. They are typified by many residential driveways, on-street parking is generally permitted, and the posted speed limits rarely exceed 25 MPH. These streets provide a very high level of property access, but are poor routes for fast, long-distance travel. Indeed, through traffic is deliberately discouraged on local roads. Local roads account for about 68% of the regional roadway system.

Roadway Improvements

Roadway improvements account for approximately 70% of the fiscally constrained projects and 100% of the proposed projects for which no funding source is identified.

FIGURE 6-2: 2005 ROADWAY CONGESTION LEVELS

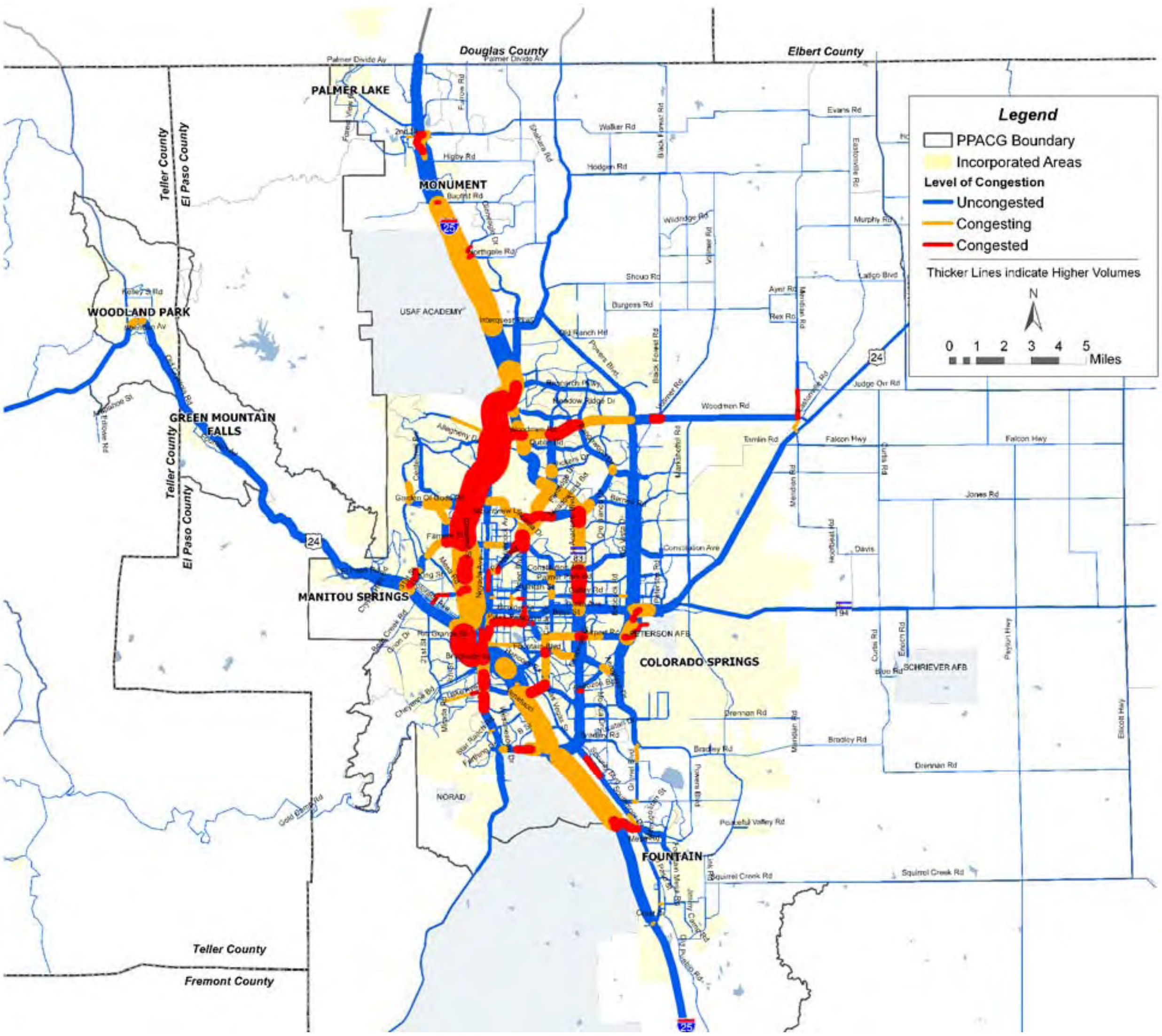
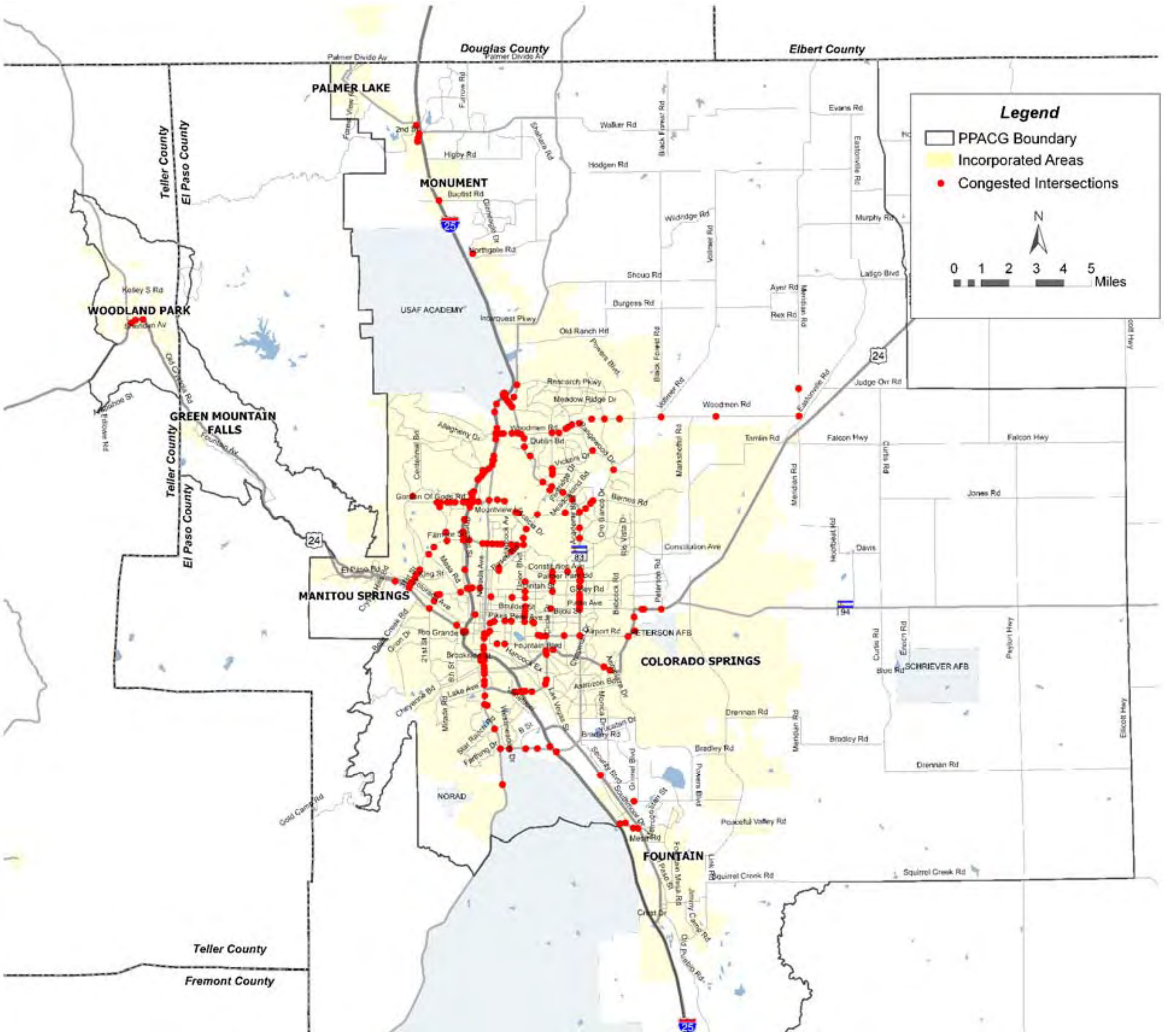


FIGURE 6-3: 2005 CONGESTED INTERSECTION LOCATIONS



The 2007 condition of roadway pavements is listed in Table 6-1 below.

	Good	Fair	Poor
Regional Vehicle Miles of Travel	55%	38%	7%
By Classification			
Collectors	19%	54%	27%
Minor Arterials	39%	49%	12%
Principal Arterials	43%	47%	10%
Interstate/Freeway	67%	24%	8%
By Jurisdiction			
El Paso County	46%	46%	8%
City of COS	25%	58%	18%
CDOT	70%	27%	3%
City of Manitou Springs	1%	25%	74%
Town of Monument	24%	51%	26%
City of Fountain	31%	44%	22%

PUBLIC TRANSPORTATION SYSTEM

Public Transportation plays a key role in providing an alternative to driving and operating a vehicle. It also provides for the basic transportation needs for many who either cannot afford a private vehicle or are unable to drive themselves. Indeed, according to the 2002 PPACG Regional Travel Survey, 49 percent of transit users did not have any private vehicles available to their household. This section discusses public transportation available to the general public. The next section, Specialized Transportation, describes services restricted to specific populations.

The following borrows from the City of Colorado Springs' 2030 Public Transportation Plan. The Transit Services Division of the City of Colorado Springs prepared the 2030 Public Transportation Plan in coordination with the development of *2030 Regional Transportation Plan*. As the operator of Mountain Metropolitan Transit, the region's fixed-route bus system, the City of Colorado Springs has the primary responsibility for planning, developing, and managing the public transportation system that serves the Colorado Springs metropolitan area. The full text of the Colorado Springs 2030 Public Transportation Plan is included as Appendix G.

Mountain Metropolitan Transit has operated the region's fixed-route bus service since the 1960s. In 1973, the City of Colorado Springs assumed operation of the municipal bus service from a private firm. Mountain Metropolitan Transit is currently operated by a private contract firm, via a management contract, with oversight from the Transit Services Division. Mountain Metropolitan Transit provides service within Colorado Springs, Manitou Springs, Fountain, Security, Widefield, and some unincorporated areas of El Paso County. The City of Colorado Springs also provides Americans with Disabilities Act (ADA) paratransit service, Metro Mobility, which is described in Section 6.2. Figure 6-2 illustrates Spring Transit routes as of May 2004. On July 6, 2004, the free Downtown Shuttle began a three-year trial operation and has proven very successful.

Mountain Metropolitan Transit includes 65 buses operating on 23 daily routes, 6 limited daily routes, and 8 night routes that operate until approximately 10 p.m. The daily routes operate six days a week from approximately 6 a.m. to 7 p.m. The Saturday routes operate from 6:40 a.m. to 7:00 p.m.

Mountain Metropolitan Transit routes are laid out in a hub-and-spoke service system. The main hub (transfer station) is in downtown Colorado Springs and serves as a transfer point for most daily and limited routes. The routes start and end at this downtown hub. Secondary hubs are located at the Citadel Mall at Platte Avenue and Academy Boulevard, and at Pikes Peak Community College on South Academy Boulevard, and at the University of Colorado at Colorado Springs on Austin Bluffs Parkway. The secondary hubs each service 5 to 7 of the 23 daily routes.

FIGURE 6-2: MOUNTAIN METROPOLITAN TRANSIT BUS ROUTES

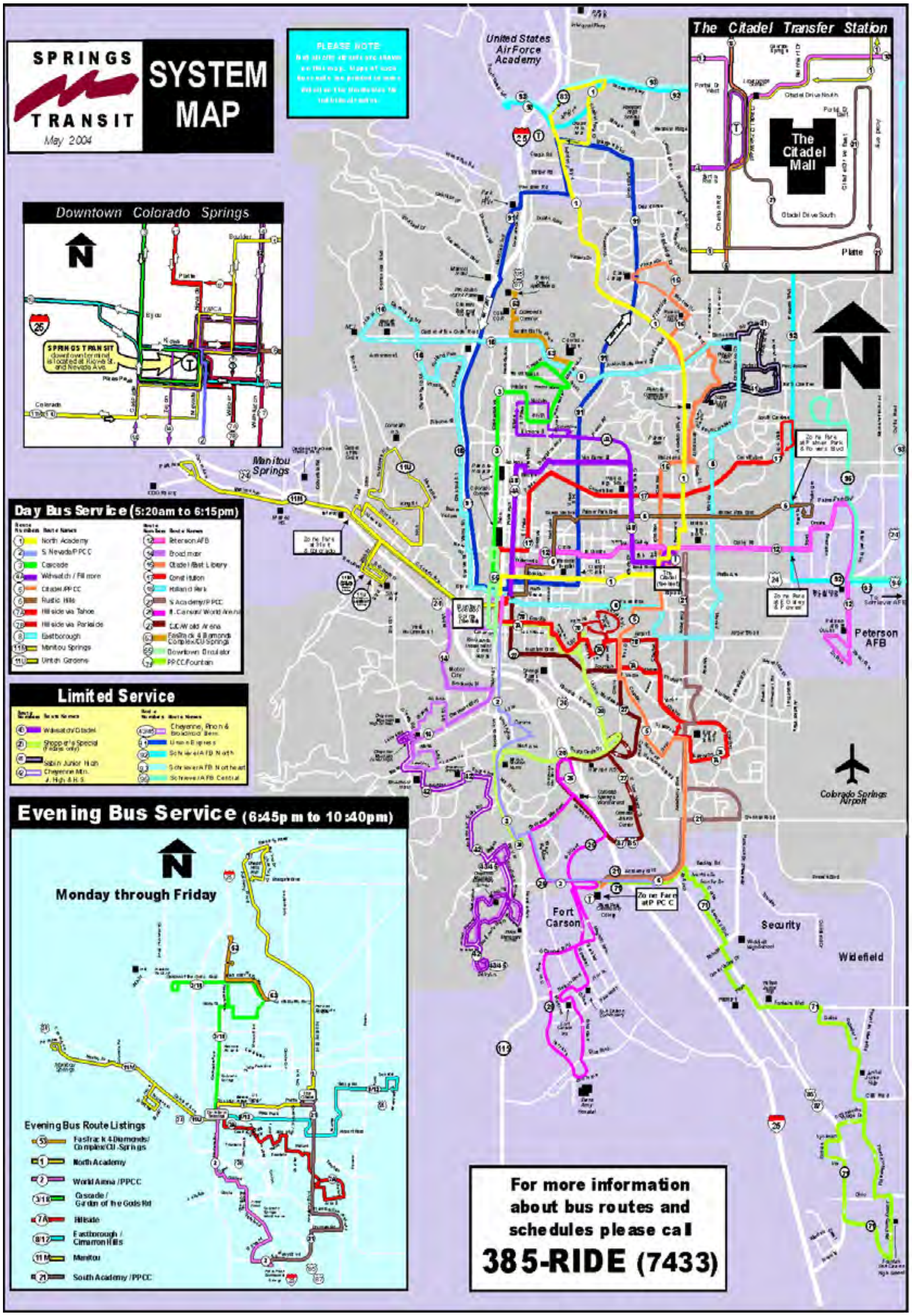


TABLE 6-1: MOUNTAIN METROPOLITAN TRANSIT FARE STRUCTURE

Fare Category	Price
Basic Fare – ages 12 through 59	$1.25
Child Fare – ages 11 and younger	$.60
Student Fare - ages 12 through high school	$.95
Senior Fare	$.60
Disabled Fare (ADA)	$.60
Monthly Pass	$35.00
Zone Fare	$.85
Transfers	Free
Summer Youth Pass	$18.00
Punch card – Adult	$25.00
Punch card – Student	$18.75
Punch card – Child/Senior/Disabled	$12.00

Mountain Metropolitan Transit charges a basic cash fare of $1.25 and offers a variety of prepaid fares options. A zone structure is used, with a $0.85 additional fare for passengers crossing zone boundaries outside the Colorado Springs city limits. Table 6-1 illustrates the fare categories and corresponding prices.

Mountain Metropolitan Transit owns and/or manages various facilities in order to operate the transit system. Facilities for transit and rideshare services consist of the Downtown Transfer Station, Pikes Peak Community College Transfer Station, Woodmen Road Park-and-Ride facility, Citadel Transit Facility, and Mountain Metropolitan Transit operations and maintenance facility. In addition to these facilities, transit shelters and benches are located throughout the fixed-route service area. These shelters and benches are placed at bus stops through a public/private partnership contract.

Park-and-ride facilities exist at the Woodmen Road/I-25 interchange, at the I-25/US 85 interchange in the City of Fountain, in the central business district of Woodland Park on US 24, at the I/25/SH 105 interchange in Monument and at the I-25/South Nevada interchange. The park-and-ride facilities along I-25 are served by FREX, the intercity commuter bus service.

Americans with Disabilities Act, Paratransit and Human Service Transportation

The Pikes Peak Area Council of Governments prepares the *Specialized Transportation Plan for Persons with Disabilities and Elderly Persons* for the Colorado Springs metropolitan area. The *Specialized Transportation Plan* was prepared in 2001, and a limited update was prepared in 2004 as part of the overall *2030 Regional Transportation Plan* development process. The update is included as Appendix D and contains both short- and long-range strategies to meet the needs of persons with disabilities and elderly persons in the region. The following summarizes the current specialized transportation services available in the Colorado Springs metropolitan area.

Disability Services, Inc.

Disability Services, Inc. (formerly Amblicab) is a non-profit agency operated by the Pikes Peak Partnership. Disability Services provides curb-to-curb, door-to-door, and door-through-door service for individuals with disabilities. Drivers are authorized to go into houses or buildings and assist passengers with entering and exiting their homes and the service vehicles (door-through-door service). Disability Services provides service outside Metro Mobility's Americans with Disabilities Act paratransit service areas. Disability Services charges a one-way fare of $2.00 within the Colorado Springs City limits and $3.10 outside of the City of Colorado Springs. A reduced fare pass of $0.65 is available contingent upon the income level of qualified individuals. Disability Services has a fleet of five vehicles and provided 8,387 trips in 2003.

Community Intersections

Community Intersections is a local division of Commonworks, a private non-profit human services agency. Community Intersections provides many services, including transportation, to assist adults who have disabilities in becoming more self-sufficient. Transportation services are provided to adults age 18 and up with physical, cognitive, and/or developmental disabilities. The services are demand-responsive and are provided in coordination with The Resource Exchange, Colorado Division of Vocational Rehabilitation, and school districts in the Pikes Peak Region. Community Intersections provides door-through-door service weekdays from 8:30 a.m. to 5 p.m. Personal care is provided as needed in order to prepare the individual to make a trip. The agency operates two vehicles. No fare is charged. Approximately 26 trips per week are served.

Fountain Valley Senior Services

Fountain Valley Senior Services provides a variety of social service programs (including transportation services) to seniors over the age of 60 that reside in southeastern El Paso County. Fountain Valley Senior Services receives funding support, both in the form of cash and in-kind services, from El Paso County. To keep operating costs low, volunteer drivers provide much of the transportation services. Operating costs are also offset by donations received by Fountain Valley Senior Services. The transportation services provided by Fountain Valley Senior Services are based on the requirements of the Older Americans Act. Fountain Valley Senior Services coordinates with Mountain Metropolitan Transit and Silver Key to provide linked trip service from the City of Fountain into the Colorado Springs metro area. Fountain Valley Senior Services provides curb-to-curb, door-to-door, and door-through-door services. The number of annual passenger trips for 2003 was 18,801.

Silver Key Senior Services

Silver Key Senior Services is a non-profit agency that provides services for senior citizens in the Colorado Springs area. Some funding support is provided by the City of Colorado Springs. Silver Key provides door-to-door services. No fares are charged for Silver Key services, although $1.00 minimum donations are requested. Silver Key uses volunteer drivers to the extent that volunteers are available to reduce operating costs. Silver Key has a fleet of 24 vehicles. In 2003, Silver Key Senior Services provided 109,053 one-way rides.

Metro Mobility

Metro Mobility provides demand-responsive service for individuals with mobility needs that prevent them from using Mountain Metropolitan Transit. Metro Mobility services are provided during the same days and hours that Mountain Metropolitan Transit operates. Metro Mobility service is provided in a 1.5 mile corridor (three-fourths of a mile on each side) along all routes on which Mountain Metropolitan Transit operates. Customers of Metro Mobility are required to be certified as ADA paratransit eligible in order to receive this curb-to-curb service. The demand for paratransit service has steadily risen over the years. The service averaged approximately 1,000 trips per month in 1993. Through the first four months of 2004, the service averaged approximately 9,000 rides per month. Metro Mobility's fare for a one-way trip is $2.00 within the Colorado Springs City limits and $3.10 outside the City of Colorado Springs.

Teller Senior Coalition

Teller Senior Coalition provides transportation services to seniors and disabled persons in Teller County and Western El Paso County. Formerly, Teller Senior Coalition administered transportation services for Teller County with actual services being delivered by a private provider. In mid-March 2003, Teller Senior Coalition began operations as the service provider. Travel is available Monday through Friday from 8:00 a.m. to 5:00 p.m. Trips to nutrition sites and grocery shopping are grouped to cost-effectively serve as many clients as possible. In 2003, 865 fixed-route trips (including vendor-supplied trips through mid-March), and 3,520 demand-response trips were provided by Teller Senior Coalition.

The Resource Exchange

The Resource Exchange provides human services-related transportation service in the Colorado Springs metropolitan area. Through use of state developmental services funding, Medicaid, and other funding, The Resource Exchange serves developmentally disabled individuals in El Paso, Park, and Teller Counties (outside of the Metro Mobility service area). No fares are charged for curb-to-curb transportation services provided by The Resource Exchange. Many customers of The Resource Exchange are encouraged to be self-sufficient, using public transit when possible. The Resource Exchange provides passes for Mountain Metropolitan Transit and Metro Mobility to individuals who are able to ride and have access to the fixed-route system or who are eligible to receive paratransit services. The Resource Exchange operates a fleet of 18 transit vehicles.

A comparison of the service attributes of the specialized transportation providers in the Colorado Springs metropolitan area is provided in Table 6-2.

TABLE 6-2: SERVICE ATTRIBUTES OF AREA ADA, PARATRANSIT AND HUMAN SERVICE TRANSPORTATION PROVIDERS

Service Provider	Service Attributes			
	ADA Eligibility Required	Curb-to-Curb Service	Door-to/ through-Door Service	Services to Individuals Over Age 60
Disability Services	✓		✓	✓
Community Intersections		✓	✓	✓
Fountain Valley Senior Services		✓	✓	✓
Silver Key		✓	✓	✓
Metro Mobility	✓	✓		✓
Teller Senior Coalition	✓	✓		✓
The Resource Center		✓	✓	✓

Other Transportation Services

In addition to managing Mountain Metropolitan Transit and Metro Mobility, the Transit Services Division of the City of Colorado Springs operates Metro Rides. In existence since 1979 as RIDEFINDERS, this program promotes alternatives to single-occupant driving through visits to employers, media advertising, community activities, and promotional events. Metro Rides is a one-stop shop for the public to access vanpools, school pools , which includes bike and walk pools for children, bicycle and pedestrian resources, tele-working consultation, and the Guaranteed-Ride-Home program. All of this information can be accessed by one phone number, 719-385-RIDE. Approximately 2,500 calls are received annually. Metro Rides also operates a fleet of 13 vans that provide commuters traveling between Colorado Springs and Denver an alternative to driving alone.

NON-MOTORIZED TRANSPORTATION

It is generally accepted that walking and bicycling, as opposed to driving a personal vehicle, promote physical health and lower stress, reduce harmful emissions, and save money and energy. Walking and cycling reduce obesity, and significantly, child obesity, which is targeted by federal transportation programs such as Safe Routes to School. Non-motorized facilities increase the mobility of people with disabilities, young people not yet old enough to drive, and senior citizens who no longer drive. Safe, convenient bicycle and pedestrian facilities also foster vibrant communities and attractive neighborhoods.

Non-Motorized Transportation Programs

Federal transportation programs increasingly stress the importance of non-motorized transportation for all of the above reasons. There is also non-motorized transportation programs developed by the State of Colorado and by the Pikes Peak Area Council of Governments.

CDOT developed its Colorado Guide for the Development of Local and Regional Bicycle and Pedestrian Plans, which states:

> *"The State of Colorado recognizes the benefits of walking and bicycling and highly recommends their use for commuting to work, errands, and recreation. Bicycling and walking provide many benefits such as improved health, less stress, and reductions in air pollution, traffic congestion and energy consumption. In addition, walking is free, bicycles are affordable and inexpensive to maintain…."*

The Guide also draws attention to the link between lack of opportunities for non-motorized transportation and a distinctive rise in obesity in America. It suggests that non-motorized transportation become an integral part of community design in order to effectively combat this alarming trend.

> *"It has been shown that poor community design, where the transportation infrastructure makes it difficult to walk or bicycle promotes physical inactivity, which in turn increases the incidence of overweight Americans (up from 47% in 1976 to 61% in 1999). The federal government is calling on planning and health professionals, elected officials, and citizens to partner to create active community environments by creating opportunities to safely walk and bicycle.*
>
> *To achieve these goals, all roadways should be designed and constructed under the assumption that bicyclists and pedestrians will use them. Bicycles and pedestrians should be considered in all phases of transportation planning, roadway design, engineering, new construction, reconstruction, capacity improvements and transit projects."*

Finally, the Guide reminds us that facilities are only one of several elements essential to building a successful bicycle and pedestrian transportation system. Safety education and training, encouraging walking and bicycling, and law enforcement are also critical.

SHARE THE ROAD

CDOT provides non-monetary support for improving non-motorized transportation with a variety of programs. It holds events around the state in June to promote Bike to Work Month, and especially Bike to Work Day, each year. It has also initiated an add campaign called "Share the Road" that promotes tolerance of all modes of transportation on Colorado roadways. "Walk to School Colorado" is another campaign that promotes children walking to school instead of being driven by their parents, and provides resources such as a walkability checklist, brochures, and posters. Non-motorized facility design and engineering support is also provided.

PPACG

As part of the overall long-rage planning effort, PPACG has performed a major update to the Regional Non-Motorized Transportation Plan (NMP), drafted originally in 1994. This chapter will comprise key elements of the NMP.

The NMP provides a comprehensive approach to identifying bicycle and pedestrian needs, reviewing improvements, and prioritizing implementation strategies and viable funding sources by jurisdiction. The Plan looked for opportunities to connect and integrate existing facilities, though precise alignments may be determined during the implementation process.

Existing Conditions

Before considering which projects should be most strongly considered for funding, a review of existing conditions was deemed appropriate. This involved reviewing existing non-motorized transportation facilities and safety, and more briefly, the needs schools and military installations (Figures 6-4 through 6-8). A few up-front comments can be made about the existing non-motorized facilities as a system:

1) The network of bicycle trails and lanes are very limited in serving as a system of facilities to accommodate regional bicycle travel within the PPACG area.
2) Many existing trails have missing links and/or difficult, unsafe crossings at major arterials.
3) Trails and lanes begin and end erratically.
4) Many of the trails have obstacles, such as terrain or railroad crossings.
5) Many of the facilities are in need of repair and basic maintenance such as sweeping.
6) Bike lanes are often depositories for snow, making them unavailable to bicyclists during winter conditions.

In short, the bicycle network in the Pikes Peak Area does not function as a system, major improvements are needed to provide reliable connections between one area of the region and another.

FIGURE 6-3: INVENTORY OF EXISTING AND PROPOSED NON-MOTORIZED PROJECTS IN EACH REGIONAL JURISDICTION

FIGURE 6-4: INVENTORY OF EXISTING AND PROPOSED FACILITIES

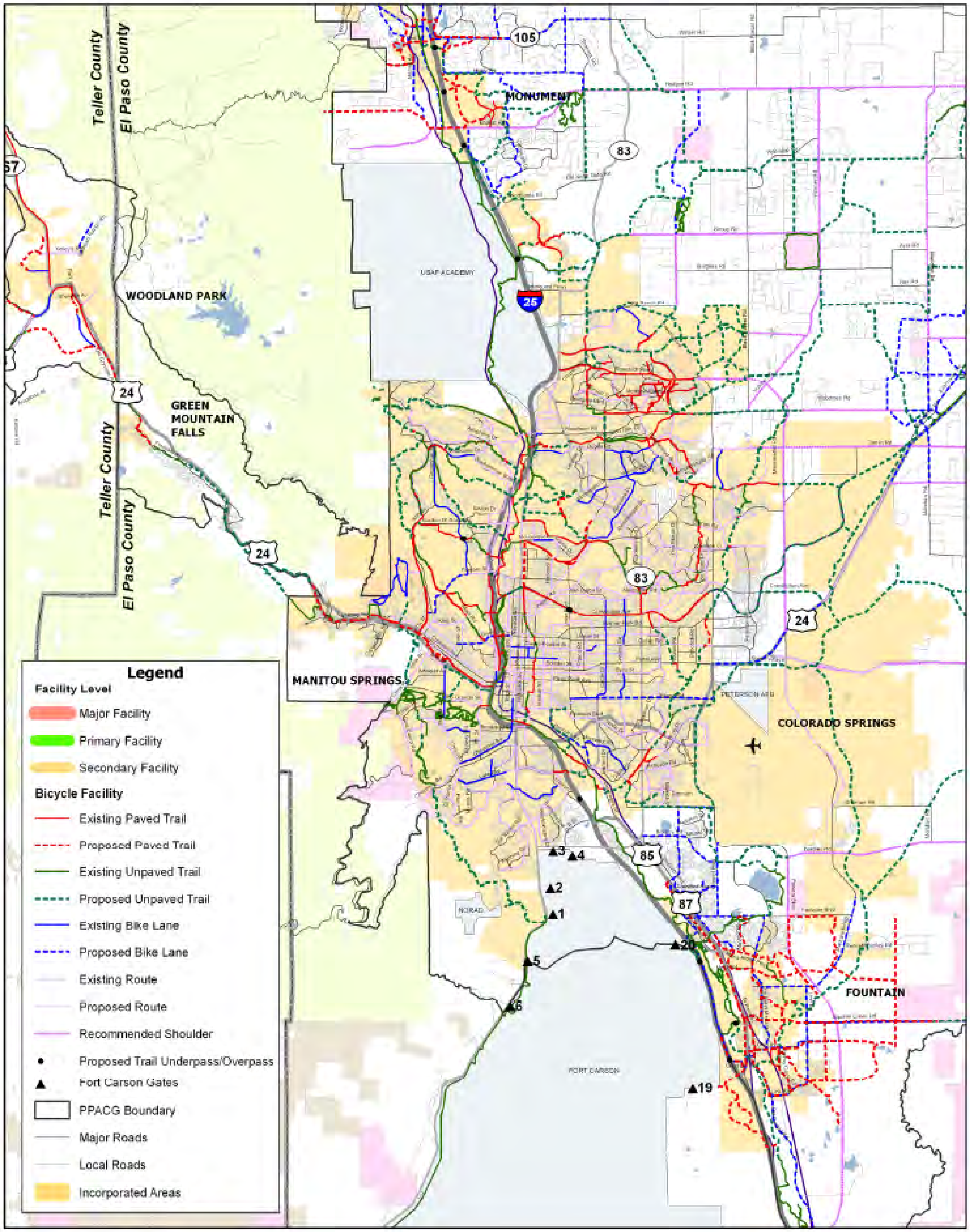
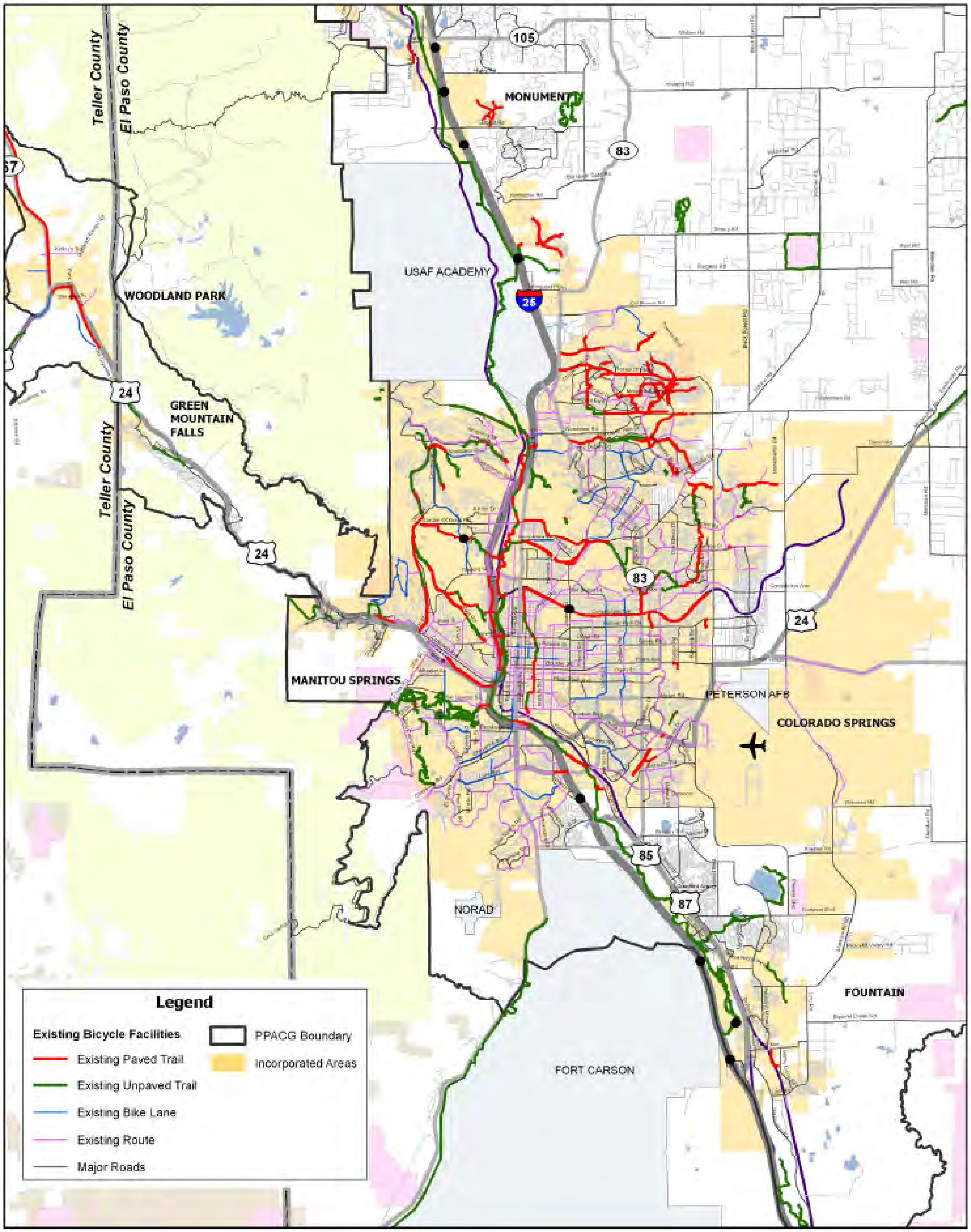


FIGURE 6-5: EXISTING FACILITIES



In review of safety conditions, it is evident that bicycle crashes occur throughout the region. Many of these bicycle crashes occur in areas that lack bicycle facilities. Crashes that occur along bicycle trails and lanes are typically resulting from poor street crossings. Locations of high pedestrian crashes are at locations with high pedestrian utilization, such as the Colorado Springs downtown area or Manitou Springs.

One of the important areas for examining pedestrian safety is around schools. Schools become major attractions for pedestrian activity and should be a focus for pedestrian safety. Presented in Figure 5 are locations of elementary/junior high and high schools. Also included on this map are typical one-quarter mile walking areas around each school and child pedestrian crashes for the years 2002 to 2005. In the three plus years of available data, there have been 79 child pedestrian crashes within the PPACG area.

For more information about non-motorized safety, see the Safety chapter.

INTERMODAL TRANSPORTATION PLANNING (FREIGHT, AIR AND RAIL)

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 anew area because of the cost savings and increased economic competitiveness these regions provide.

The Colorado Springs area 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.

Intermodal 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 Colorado Springs 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 Pikes Peak area transportation system. The Moving Forward 2035 Regional Transportation Plan's modal system plans represent a comprehensive effort to build a multi-modal 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.

Freight Movement

The transportation of freight in the Colorado Springs metropolitan area is primarily through commercial vehicles, or trucks. A commercial vehicle is defined as any vehicle with a gross vehicle weight of over 10,000 pounds and used primarily for transporting freight. Virtually every type and quantity of freight is moved by commercial vehicles. On average, every product in Colorado travels five to seven times in a truck during its manufacturing and distribution cycle. Certain sectors of Colorado's economy, including agriculture, oil and gas production and manufacturing, depend heavily on commercial vehicles for interstate and intrastate movement. With this reliance on commercial vehicles, it is essential that the region provide an adequate highway system to ensure efficient transport of goods.

Trucks account for approximately 11 to 12% of the daily inter-regional traffic. They carry more than five million tons of goods between Denver and Colorado Springs each year, typically handling more valuable, time-sensitive cargo than that carried by rail. Inter-regional truck freight demand is expected to increase at a rate proportional to that of the overall traffic flow.

Within the City of Colorado Springs, truck traffic is limited to those truck routes adopted by the City of Colorado Springs City Council with recommendations from its Truck Route Advisory Committee. El Paso County does not specifically designate truck routes; rather, the County allows truck traffic on all roadways within the County except those roads that have weight-restricted bridges. Other governmental agencies in the Colorado Springs metropolitan area typically follow this policy. Figure 6-10 illustrates the truck routes in the Colorado Springs metropolitan area.

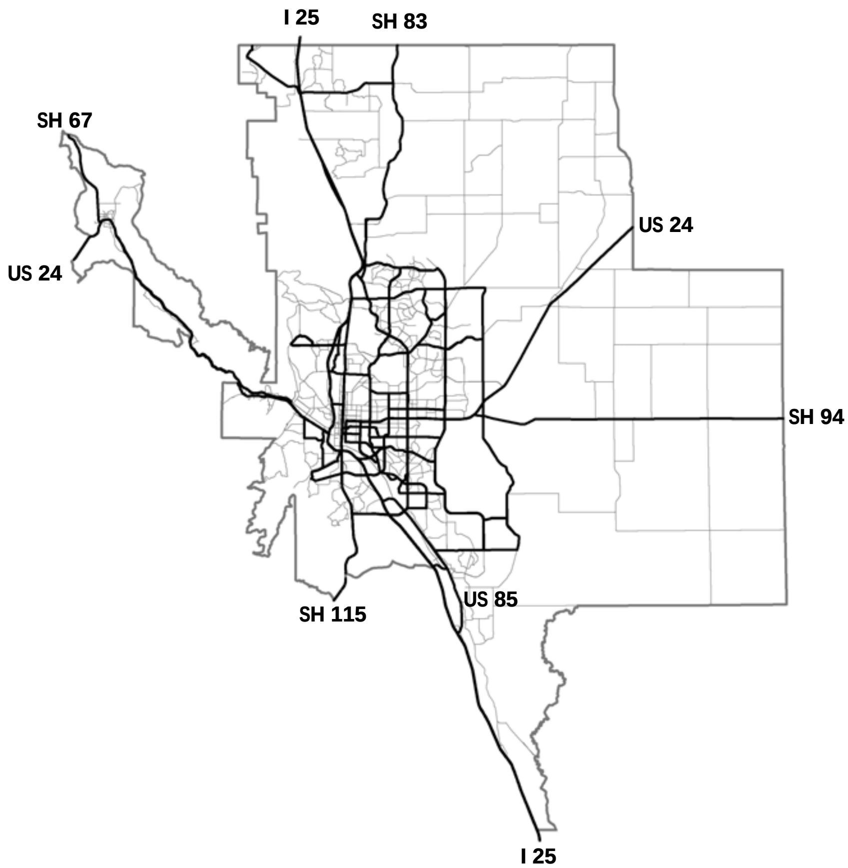
In Colorado truck traffic is expected to grow significantly over the next 20 years. Currently, highways and then rail carry the greatest tons, with 142 million tons by road and 51 millions by train. Table 6-4 Shows anticipated freight shipments to, from and within Colorado in 1998, 2010, and 2020.

TABLE 6-4: FREIGHT SHIPMENTS

	Tons (millions)			Value (billions $)		
	1998	2010	2020	1998	2010	2020
By Mode						
Air	<1	1	2	33	84	147
Highway	142	208	257	90	178	296
Rail	51	67	76	9	17	26
By Destination						
Domestic	190	270	327	127	268	447
International	4	6	8	5	11	22
State Total	**194**	**276**	**335**	**132**	**279**	**469**

SOURCE: 2030 STATEWIDE TRANSPORTATION PLAN FREIGHT TECHNICAL REPORT, CDOT FEBRUARY 2005

FIGURE 6-10: TRUCK ROUTES



As described above, the City of Colorado Springs has identified specific truck routes throughout the City. The adequacy of the Truck Route Network is monitored on a regular basis by the City's Trucking Issues Subcommittee (TISC). The TISC has been meeting since September 2005 to discuss possible changes to the City's Truck Route Network and truck operations regulations. The TISC is reviewing 41 road segments that fall into two categories:

1. Road segments that are classified as freeways, expressways or principal arterials but are not currently designated as truck routes (21 roadways).

2. Road segments that are currently designated as truck routes, but are classified as a minor arterial or below (20 roadways).

The TISC is developing its preliminary findings/recommendations and has presented them to CTAB and City Council. Based on input from the Council, the TISC is refining its preliminary findings/recommendations and will report back to Council before setting public meetings to get citizen input.

Freight Improvements

Operations

The key operational improvement for truck freight movement is maintaining or improving the capacity and operations of the key truck routes within the Pikes Peak region. Improvements could include capacity improvements that address gaps in the existing roadway system and/or eliminating bottlenecks through congestion management improvements such as intelligent transportation systems (ITS), national real-time system information programs.

Aviation

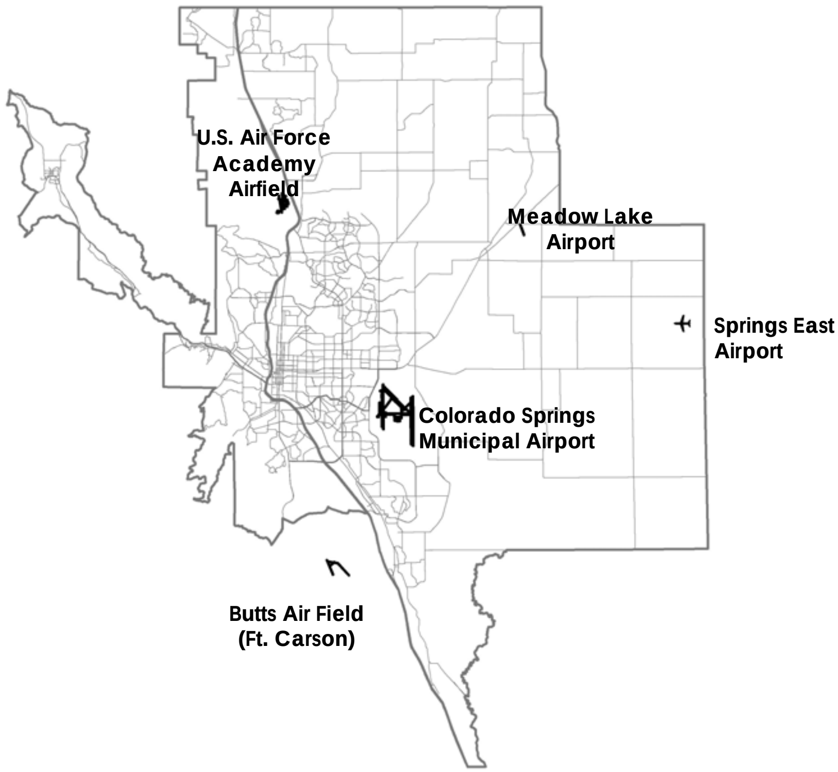
The Colorado Springs Metropolitan Area is served by three general aviation and/or public use airports: Colorado Springs Municipal Airport, Meadow Lake Airport, and Springs East Airport. Three military use airports are also located within the region. These military airports include:

- United States Air Force Academy (USAFA) Air Field
- USAFA Training Field East of Ellicott
- Ft. Carson – Butts Air Field
- Peterson Air Force Base
- Schriever Air Force Base

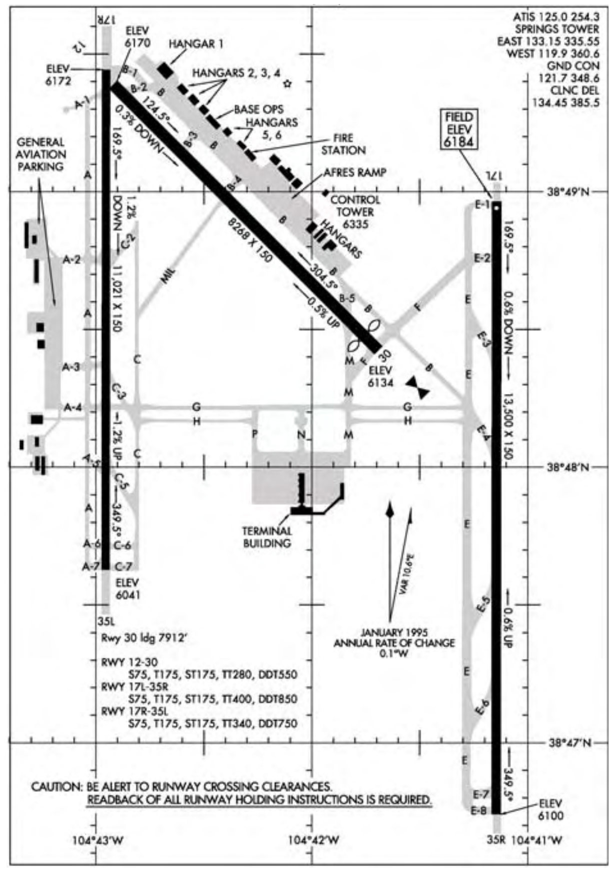
These airports are not open to the public, but are important to note due to the traffic they generate and the airspace they control. With the exception of the USAFA training field east of Ellicott, the locations of the three general aviation airport and two military airports are illustrated in Figure 6-11.

Following are descriptions of the three general aviation and/or public use airports in the Colorado Springs metropolitan area; Colorado Springs Municipal Airport, Meadow Lake Airport, and Springs East Airport.

FIGURE 6-11: AIRPORTS



Colorado Springs Municipal Airport



The Colorado Springs Municipal Airport is owned and operated by the City of Colorado Springs as a unit of the City's Colorado Springs Companies Group. The FAA's National Plan of Integrated Airport Systems (NPIAS) classifies the Colorado Springs Airport as a primary commercial service airport.

The Colorado Springs Airport is located in the southeast portion of the City of Colorado Springs, with its boundaries extending into El Paso County. Its elevation is 6,183 feet above sea level. The airport operates three runways: two north-south runways and one crosswind runway. A 12-gate terminal building, expandable to 20 gates, was completed in 1994.

There are nine major and national commercial airlines which currently serve Colorado Springs region. These include:

- Allegiant Air
- American Airlines
- Continental Airlines
- Delta Air Lines
- Northwest Airlines
- United Airlines
- US Airways/American West

In addition to the major and national carriers, there are five regional and commuter airlines which serve the Colorado Spring Municipal Airport, these include:

- American Eagle
- ExpressJet Airlines (Continental Express)
- Comair (Delta Connection)

- Mesa Air Group (America West Express, Mesa Airlines and United Express)
- Sky West Airlines (Delta Connection, and United Express)

There are on average 49 average daily commercial departures per day and more than 2 million passengers pass through the Colorado Springs Airport (COS) each year. Enplaned passengers per major/national airlines is 69, and for regional/commuter airlines at 39.

There are also three air cargo services based at Colorado Springs Municipal Airport: Airborne Express, Federal Express and Key Lime Air.

COS is conveniently located near I-25 and is within easy driving distances to various Colorado cities and tourist attractions.

Uncongested air and ground space, short taxi time, and a low weather-related closure/cancellation rate are why COS consistently ranks among the lowest in delays of all U.S. airports.

Drennan Road serves vehicular access to the airport. Regional access is via I-25, Martin Luther King Expressway (US 24 Bypass) and Powers Boulevard, the latter of which intersects Drennan Road. Improved access (from Powers Boulevard and/or Drennan Road) is being explored through an Environmental Assessment by the City of Colorado Springs.

Colorado Springs Municipal Airport Operations

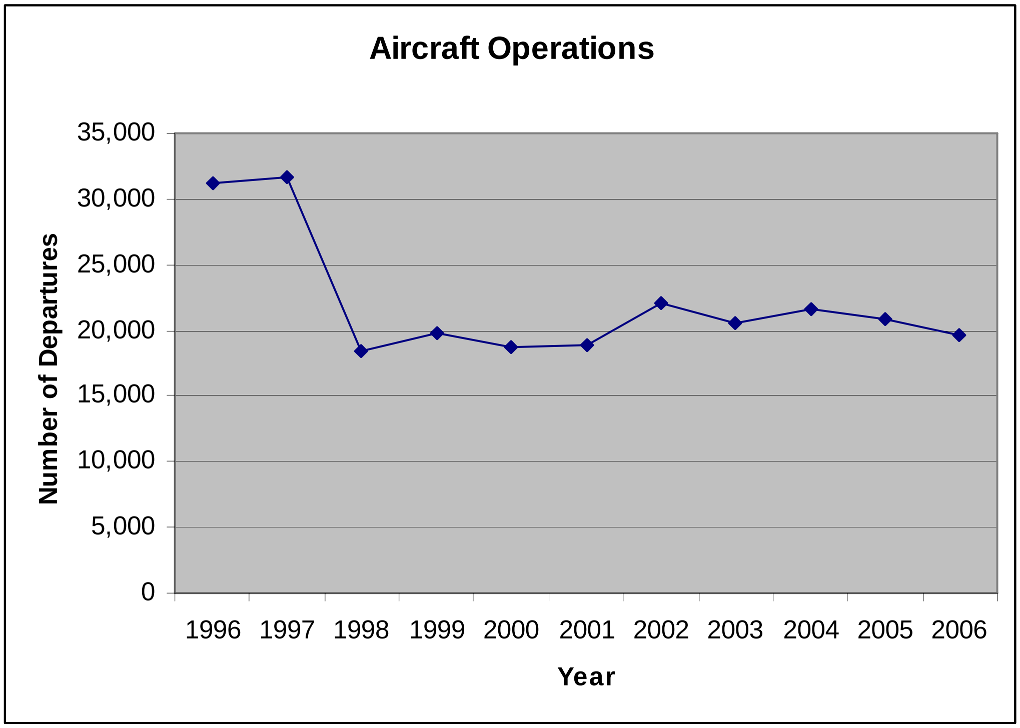
The Colorado Springs Airport Planning Program Advisory Committee was formed in 1996 for the purpose of providing support for the development of the Airport Master Plan, which was completed in 1999. As part of that effort, a review and analysis of current and historic aviation activities was performed. From that effort, aviation activity forecasts were developed by activity type. A summary of 1996 historical and 2017 forecast operations is presented in Table 6-5.

TABLE 6-5: COLORADO SPRINGS MUNICIPAL AIRPORT ANNUAL OPERATIONS

Activity	1996	2017
Air Carrier	67,293	166,000
Air Cargo	3,016	3,600
Military	30,228	46,200
General Aviation	127,063	169,200

According to Colorado Springs Municipal Airport management records aircraft operations declined sharply in 1997. At this time, Western Pacific Airlines, the largest commercial service airline at that time, moved its hub to Denver International Airport. Since 1997, aircraft operations have held relatively steady. Figure 6-12 shows the change in aircraft operations between 1996 and 2006.

FIGURE 6-12: AIRCRAFT OPERATIONS FROM 1996 TO 2006



The number of enplaned passengers, aircraft operations, landed weight and freight and mail for the years 2004 to 2006 as reported in the Colorado Springs Municipal Airport Annual Report is presented in Table 6-6.

TABLE 6-6: COLORADO SPRINGS MUNICIPAL AIRPORT OPERATIONS (2004-2006)

Activity	2004	2005	2006
Enplaned Passengers	1,034,747	1,030,833	1,017,016
Aircraft Operations	174,909	165,911	140,958
Landed Weight (in thousands)	1,563,735	1,525,778	1,417,293
Freight and Mail (tons)	18,236	16,725	16,303

Operating expenses increased from $13,26,784 in 2005 to $21,542,0219 in 2006. These costs are primarily due to an increase in personnel costs and equipment purchases. Although the airport experienced a slight decrease in passenger traffic, operating revenues increased from $13,216,784 in 2005 to $13,804,532 in 2006 due primarily through terminal concessions and public parking revenues. The completion of the public parking lot reconfiguration allowed for an increase in short term parking utilization. In addition, the airport raised its long term and valet parking fees. Landing fees decreased by $513,513 due to a reduction in the number of landings

Airport Maintenance

The Colorado Springs Airport has received approximately $36 million in grants from the Federal Aviation Administration airport improvement program for planning, design and operational/maintenance improvements.

This includes a $12 million grant that will be used for rehabilitation of one of the airport's three runways. The problem with the runway is a chemical reaction that has been taking place called alkali-silica reactivity that occurs between Portland cement concrete and certain types of aggregates. It causes a gel-like substance to secrete and ultimately causes the structure to fail. The project was approved because the runway is deteriorating and the airport is important to the national system.

Colorado Springs Municipal Airport Expansion

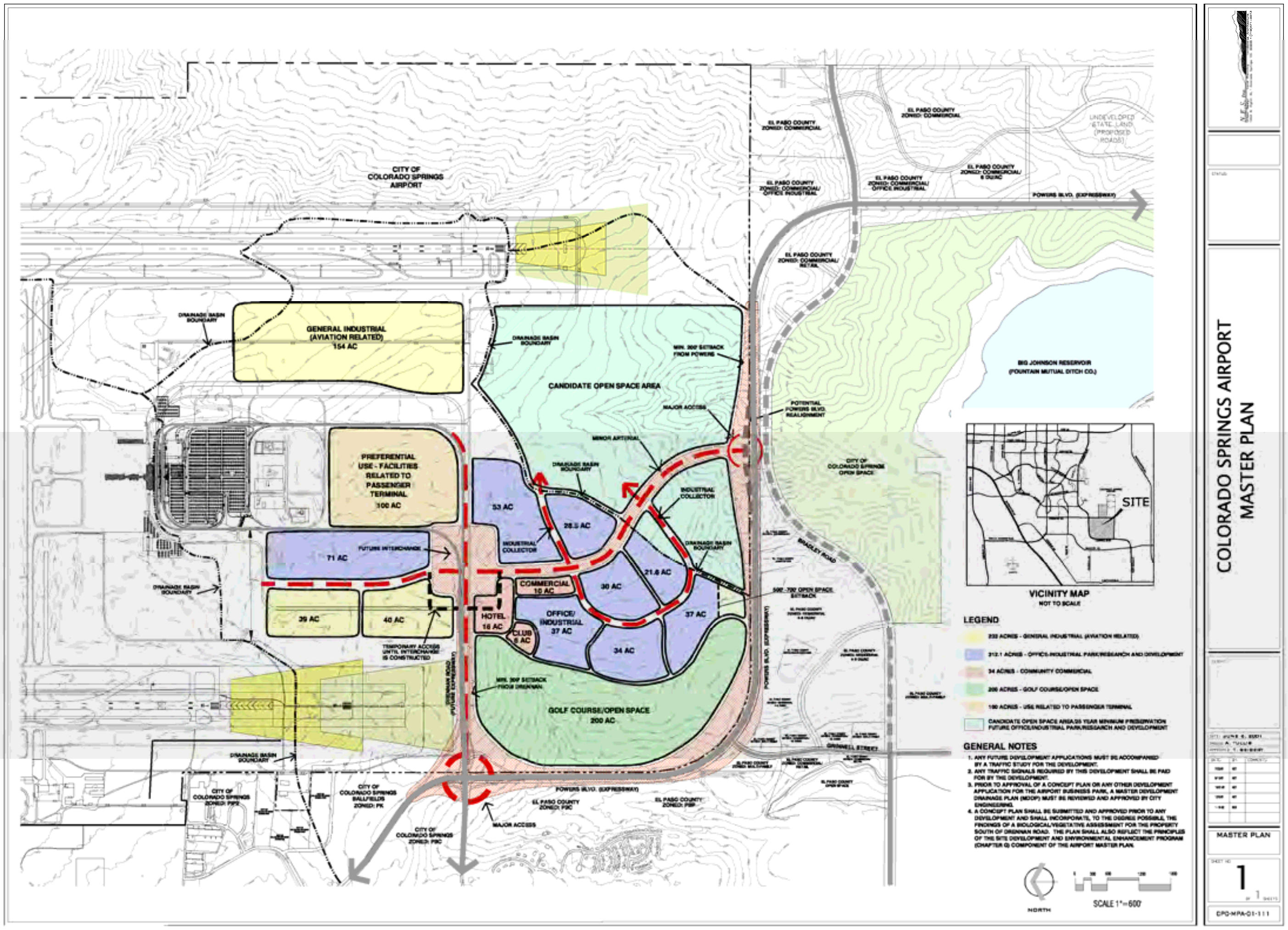
The Colorado Springs Municipal Airport Master Plan includes the Colorado Springs Airport Business Park which will encompass approximately 1,500 acres south of the Airport. It includes development of 450 acres of mixed commercial/industrial use, an aviation/military facility (100 acres), an 18-hole golf course, and approximately 475 acres of open space. A map of the Colorado Springs Municipal Airport Master Plan is presented in Figure 6-13. The Business Park is currently under construction and is expected to be constructed over the next 25 years in response to market demand. In addition, Frontier Airlines recently announced that the carrier's new heavy-maintenance facility would be constructed at the airport. The 100,000 square foot facility is expected to be completed in 2009.

Construction has begun on the expansion of the Colorado Springs Airport Business Park. The Business Park would generate additional traffic trips in the vicinity of the airport and potentially increase aircraft operations at the airport itself.

Traffic analyses conducted as part of the Environmental Assessment for the Business Park estimates that approximately 90,400 trips are expected to be generated by the Business Park at full build out. In addition to the traffic the Business Park is projected to generate, the internal Business Park roads, will need to accommodate terminal and adjacent development traffic. An estimated 109,500 daily trips, including Business Park, terminal and adjacent development traffic would be accommodated by local roadways. According to the Traffic Impact Analysis Report (CH2M Hill 2005), all of the intersections within the Business Park operate at or better than the desired LOS for peak hour operations.

FHWA and CDOT are currently conducting an Environmental Assessment of the proposal to upgrade Powers Boulevard to a controlled-access freeway. Other improvements to the adjacent roadway network are planned independent of the Business Park, including upgrading Fountain Boulevard and constructing a new Drennan Road expressway with an interchange at Hancock Expressway.

FIGURE 6-13: COLORADO SPRINGS MUNICIPAL AIRPORT MASTER PLAN



Meadow Lake Airport

Meadow Lake Airport is located 3.5 miles east of Colorado Springs' city limits near the intersection of US 24 and Judge Orr Road. The Federal Aviation Administration has designated this privately owned facility as a reliever to the Colorado Springs Municipal Airport. Its average number of annual operations is 55,135.

Since 1990, Meadow Lake Airport has under-gone a number of improvements to its facilities: lengthening, widening and paving of Runway 15/33, reconstruction and extension of its parallel taxiway system, and installation of medium intensity runways. Meadow Lake has three runways in operation. They are described in Table 6-7.

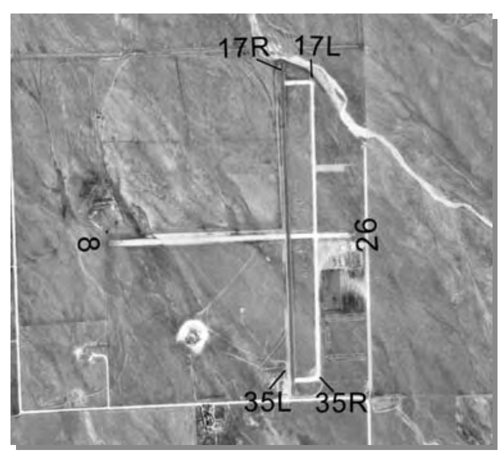
TABLE 6-7: MEADOW LAKE AIRPORT RUNWAYS

Runway	Length	Surface
15/33	6,000	Asphalt
8/26	2,084	Turf
N/S	1,800	Turf/Turf

A master plan has been completed for Meadow Lake Airport that would include an 800-acre expansion of the airport and the adjacent Meadow Lake Industrial Park. At build-out, the expanded Meadow Lake Airport will provide for a new east-west runway and the existing runway will be extended from 6,000 feet to 8,300 feet.

Airport expansion plans include improvements to the existing roadway system including construction of two new access roads and realignment of Judge Orr Road to the north and east of its present alignment to intersect with US 24 to correct safety deficiencies.

Springs East Airport



Springs East Airport is located on Ellicott Road between US 24 and SH 94. It has 8,760 annual operations. The facility has two runways described as follows:

TABLE 6-8: SPRINGS EAST AIRPORT RUNWAYS

Runway	Length	Surface
17/35	5,000	Asphalt
8/26	3,440	Gravel

Aviation Improvements

From information obtained from the FAA, passenger enplanements in Colorado have increased steadily (a passenger enplanement is one passenger boarding a commercial aircraft). In 1996, there were 18,471,845 passenger enplanements. In 2005, the enplanement totals rose by 23% to 22,814,837. Not only does the statewide aviation system play a key role in the transportation network, it also generates billions of dollars in economic benefits, including thousands of jobs.

Master planning efforts have been undertaken to expand and improve both the Colorado Springs Municipal Airport and Meadow Lake Airport to accommodate passenger and cargo air traffic. These plans would provide increased aircraft capacity at these two airports, as well as increased industrial/commercial development in the vicinity of the airport.

Rail

Two class one railroads operate in the Colorado Springs area: Burlington Northern and Union Pacific Railroads. A class one railroad is defined as a railroad with annual gross operating revenues of $50 million or more.

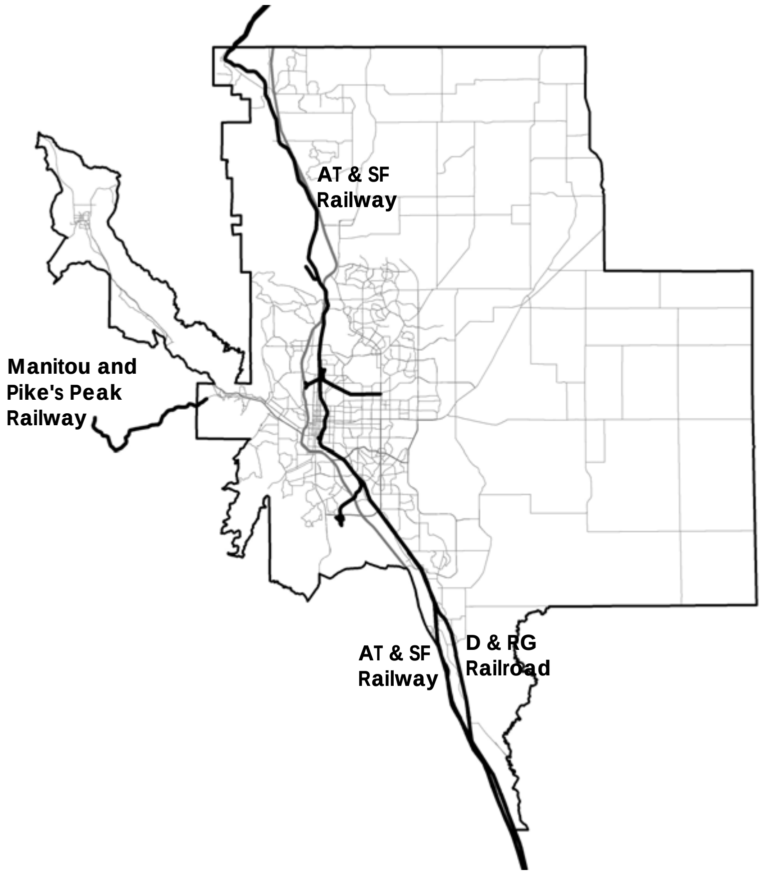
A total of 170 rail crossings exist within the metropolitan planning area. The majority of these crossings are located along the class one rail lines. The remaining crossings are located along classification yards and spurs to the main lines. Table 6-9 summarizes the number of rail crossing facilities classified as grade-separated and at-grade as well as subcategorized as public and private. Grade-separated facilities are categorized as crossing under or over the rail line.

TABLE 6-9: RAIL CROSSING INVENTORY

Type of Rail Crossing	Crossing	Percent
Grade-Separated		
Public – Underpass of Rail	29	18%
Public – Overpass of Rail	21	12%
Subtotal:	50	30%
At-Grade		
Public	76	44%
Private	44	26%
Subtotal:	120	70%
Total	**170**	**100%**

The existing rail system for the Colorado Springs metropolitan area is illustrated in Figure 6-14. Within the Colorado Springs metropolitan area, two tracks enter El Paso County on its northern boundary and continue to the Town of Palmer Lake where they connect as the Joint Line. The Joint Line is a single track shared by both railroads that continues through Colorado Springs and Security/Widefield.

FIGURE 6-14: RAIL NETWORK



The track then separates into two single lines near the City of Fountain. Several spur lines are located within the Colorado Springs metropolitan area, these include:

- Service to the Martin Drake and Birdsall Power Plants;
- Service to Fort Carson; and
- Service to Garden of the Gods Road industrial area near Chestnut Street.

Within the region, the addition of rail crossings is very unlikely over the 25 year planning horizon. The increasing roadway traffic and potential at-grade conflicts would likely prevent the railroad company from receiving approval of additional crossings. Due to the increased safety issues with at-grade crossings, the railroads and communities with at-grade crossings have been exploring the possibility of constructing grade-separated interchanges.

Based on the evaluation criteria used, these options were not selected for further consideration as part of the subsequent I-25 Environmental Assessment.

Rail Improvements

The Colorado Department of Transportation (CDOT) and the two class one railroads operating in Colorado, the Burlington Northern Santa Fe Railway Company and the Union Pacific Railroad, have been holding discussions regarding the possible re-location of rail infrastructure east of El Paso County and away from the Front Range. These preliminary efforts between CDOT and the railroads have been known either as the "Colorado Railroad Partnership Project" or as "Colorado's Safety and Mobility Partnership Project." This study is intended to be preliminary in nature and broad in terms of detail, since it may be an initial phase of what may become a more comprehensive analysis of the infrastructure. The specific impacts to rail operations in the Colorado Springs Metropolitan Area have not been finalized. Any actions resulting from these discussions will be incorporated into future long-range plan updates.

Rocky Mountain Rail Corridor

Another rail proposal is from the Rocky Mountain Rail Authority (RMRA), an organization formed by Inter-Governmental Agreements between Colorado cities, town, counties and transportation districts. They are requesting Congress to designate the 11th High Speed Corridor as the Rocky Mountain Corridor that will serve the nearly seven million citizens of Wyoming, Colorado and New Mexico. The Corridor will serve the citizens with over 1000 miles of passenger rail track from Casper to Albuquerque and Denver International Airport to Colorado ski areas and mountain communities.

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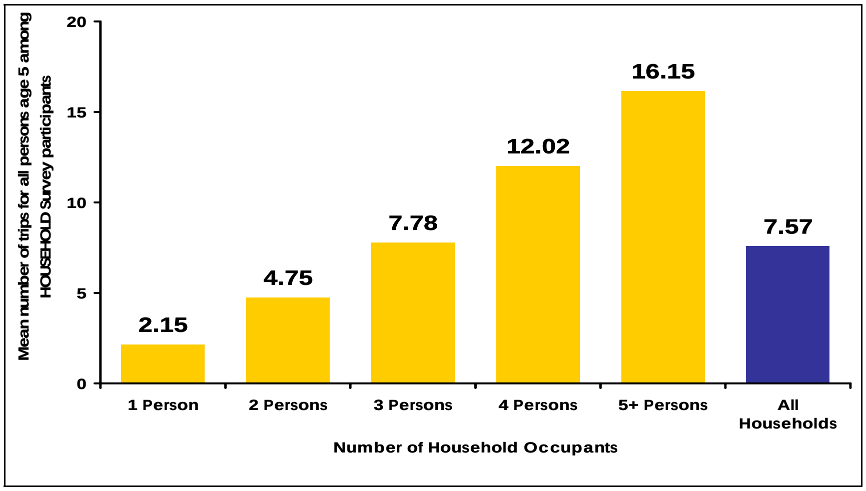
CHAPTER 5: FUTURE REGIONAL DEVELOPMENT

INTRODUCTION

The demand for transportation services is directly related to the demographic, economic, and geographic characteristics of an urban area. The total demand for transportation typically rises in proportion to increases in population, employment, and improved economic conditions. As an urban area expands, the numbers and lengths of individual trips increase unless land-use densities and mixed use developments increase at an equal or greater rate. Expanding population, employment, and urban area size, along with improved economic conditions, result in an increased need for transportation facilities and services. These include freight, roadway, transit, bicycle, and pedestrian facilities, along with other strategies intended to increase the efficient use of existing facilities.

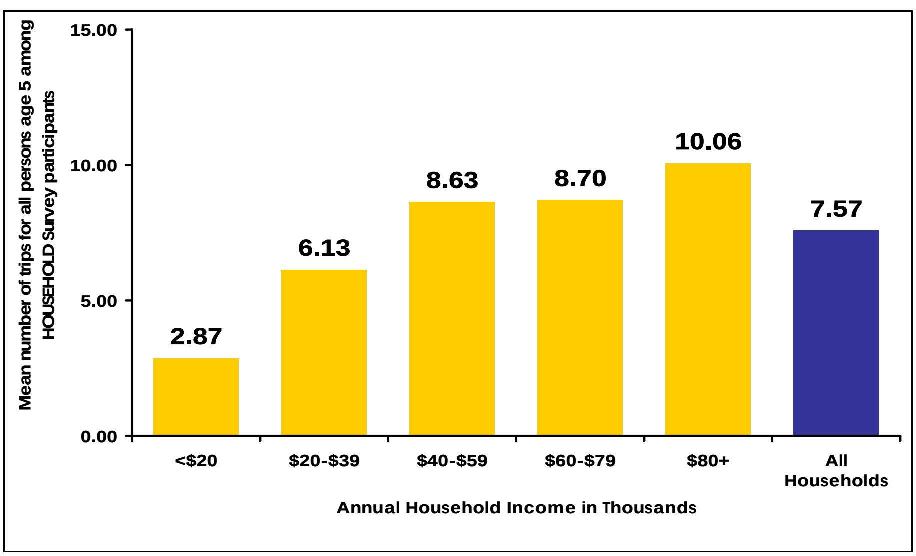
Social travel patterns are equally as important in determining travel characteristics as are population and employment characteristics. Changes in socio-economic factors, such as the increase in women in the workforce and higher vehicle ownership by teens translate directly into changes in travel demand in a metropolitan area. According to the PPACG's 2002 household travel survey, family-related trips, such as day care and school, account for 30% of trips residents make. Differences in trip making based on household size and household income are provided in Figure 5-1 and Figure 5-2.

FIGURE 5-1: HOW HOUSEHOLD SIZE AFFECTS THE NUMBER OF TRIPS COMPLETED PER DAY BY HOUSEHOLDS IN THE COLORADO SPRINGS AREA



Source: 2002 PPACG Regional Travel Survey

FIGURE 5-2: HOW HOUSEHOLD INCOME AFFECTS THE NUMBER OF TRIPS COMPLETED PER DAY BY HOUSEHOLDS IN THE COLORADO SPRINGS AREA



Source: 2002 PPACG Regional Travel Survey

The regional travel demand forecasting model relies on the PPACG household travel survey data to provide inputs and calibrate the mathematical equations that represent decisions people make related to travel. These decisions are affected by such factors as:

- Household income;
- Distance;
- Available modes--transit, auto, or walk;
- Family characteristics--number of workers, number of children, and age;
- Trip purpose--school, work, or recreation.

The model provides estimates of the number of trips that will be made based on these characteristics as well as on future population and employment growth.

PPACG 2035 SMALL AREA FORECAST

In order to project future transportation needs and to confirm that the *2035 Regional Transportation Plan* is consistent with anticipated growth patterns, PPACG staff analyzed regional projections of population and employment and allocated them into small sub-areas of the region, referred to as transportation analysis zones, or TAZs. The product of this effort is the *Small Area Forecast for 2005–2035*. The *Small Area Forecast* was developed and reviewed in 2006 and 2007, and was approved for use in the development of the *2035 Regional Transportation Plan* by the PPACG Board of Directors in July 2007. *The Small Area Forecast* estimates continued to be reviewed and commented upon during the remaining development of the *2035 Regional Transportation Plan*. Detailed information can be found in Appendix F.

The regional population and employment totals were developed by the Colorado State Demographer and adopted by PPACG's Board of Directors. PPACG used a model developed by the Federal Highways Administration called TELUM to disaggregate the regional totals into the 599 traffic analysis zones in the PPACG transportation planning area. The housing and population projections were conducted within two constraints. First, the inputs needed to conform to the transportation analysis zones (TAZ) of the transportation demand model. Second, the forecast attempted to capture the housing location preferences that the citizens of the community have demonstrated and are expected to continue in the future. More information and TAZ specific information can be found in Appendix F.

The *Small Area Forecast* serves three purposes. First, the forecast is used extensively by Pikes Peak Area Council of Governments (PPACG) and its member entities as reliable estimates of housing, jobs, population, school enrollment, income and military presence. It is an essential input to transportation modeling that is used to forecast needs and evaluate effectiveness of proposed transportation system projects. Second, the data are valuable to local governments to aid in planning for their communities. Third, a large number of local businesses and others in the private sector use these data for marketing and other strategic purposes.

Historic and forecast metropolitan area populations are presented in Table 5-1. Historic and forecast metropolitan area employment is provided in Table 5-2. Existing and forecast metropolitan area population and employment spatial distributions are presented as Figures 5-3 through 5-6.

TABLE 5-1: HISTORIC AND FORECAST METROPOLITAN AREA POPULATION

Population	1960	1970	1980	1990	2000	2010	2020	2030
Metro Area	143,742	235,972	309,424	397,014	507,288	587,487	678,420	769,850
El Paso County	143,742	235,972	309,424	397,014	516,929	606,181	701,168	801,734
City of Colorado Springs	70,194	135518	215,105	281,140	360,890	396,512	429,818	460,498
City of Manitou Springs	3,626	4,278	4,475	4,535	4,980	4,980	4,980	4,980
City of Fountain	1,602	3,515	8,324	9,984	15,197	30,433	35,371	40,084
Town of Palmer Lake	542	947	1,130	1,480	2,179	3,671	6,757	6,957
Town of Monument	204	393	690	1,020	1,971	3,791	4,273	4,473
Town of Green Mountain Falls	179	359	589	663	773	860	880	880

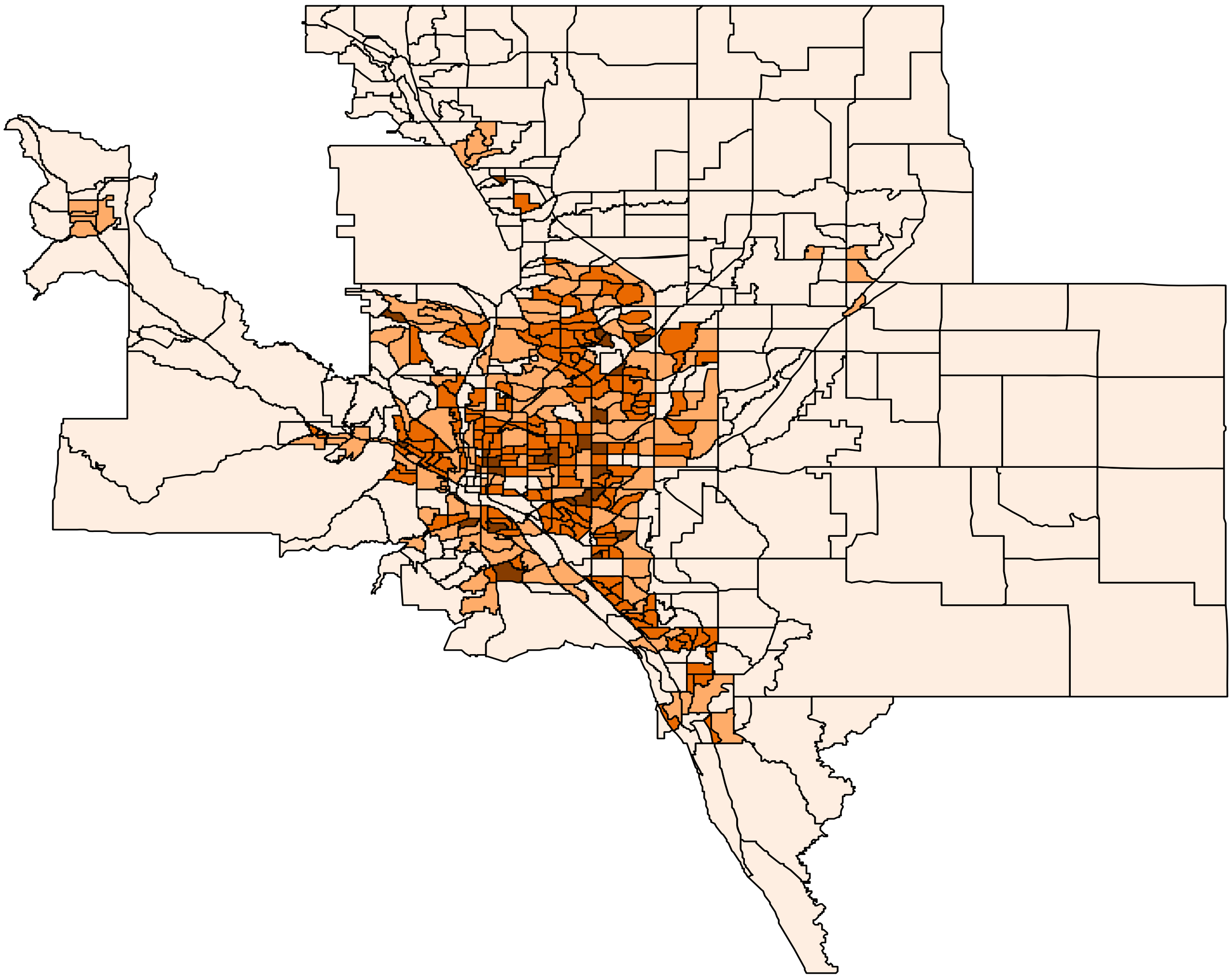
Note: The metro area defined by the U.S. Census Bureau is the Colorado Springs Metropolitan Statistical Area (MSA). For the 1960 through 1990 census the MSA boundary is the same as the El Paso County boundary, so counts for the metro area are the same as the county figures.

TABLE 5-2: HISTORIC AND FORECAST METROPOLITAN AREA EMPLOYMENT

Employment	2000	2010	2020	2030
Metro Area	309,240	362,492	438,783	504,973
El Paso County	313,641	367,507	444,370	510,908
City of Colorado Springs	267,057	301,379	348,665	387,499
City of Manitou Springs	1,697	1,891	2,047	2,115
Town of Monument	1,058	1,563	2,011	2,147
City of Fountain	6,115	8,531	11,218	12,764
Town of Palmer Lake	202	332	447	480
Town of Green Mountain Falls	154	160	166	168

Note: The metropolitan area for 1960 through 1990 corresponds to the Colorado Springs Metropolitan Statistical Area boundary, effectively the El Paso County boundary. The metropolitan area for 2000 through 2030 is the Metropolitan Planning Organization (MPO) boundary.

FIGURE 5-3: HOUSEHOLDS PER ACRE IN 2005



2005 Households per Acre

	0 - 1
	1 - 2.5
	2.5 - 5
	5 - 11.3

FIGURE 5-4: HOUSEHOLDS PER ACRE IN 2035

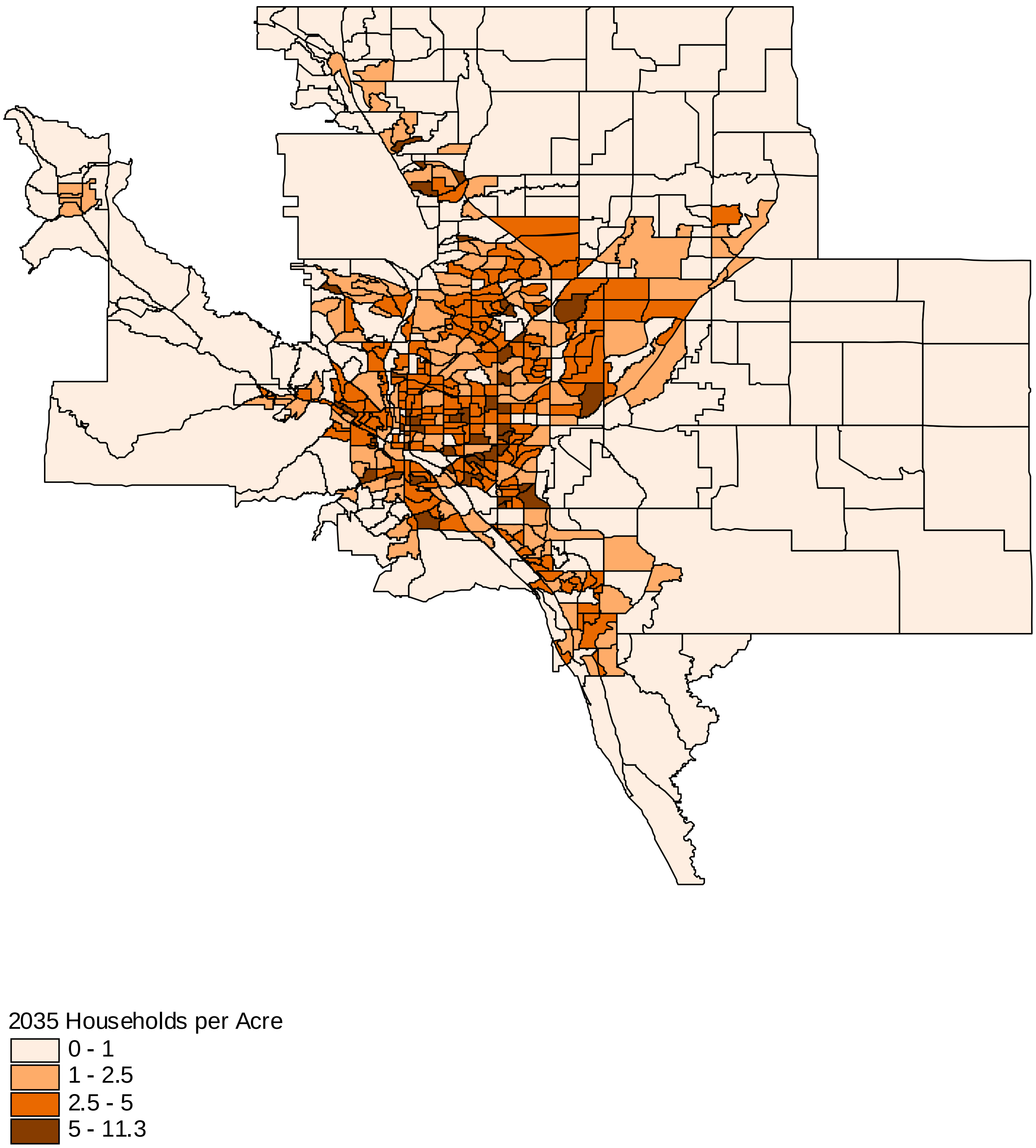


FIGURE 5-5: EMPLOYMENT PER ACRE IN 2005

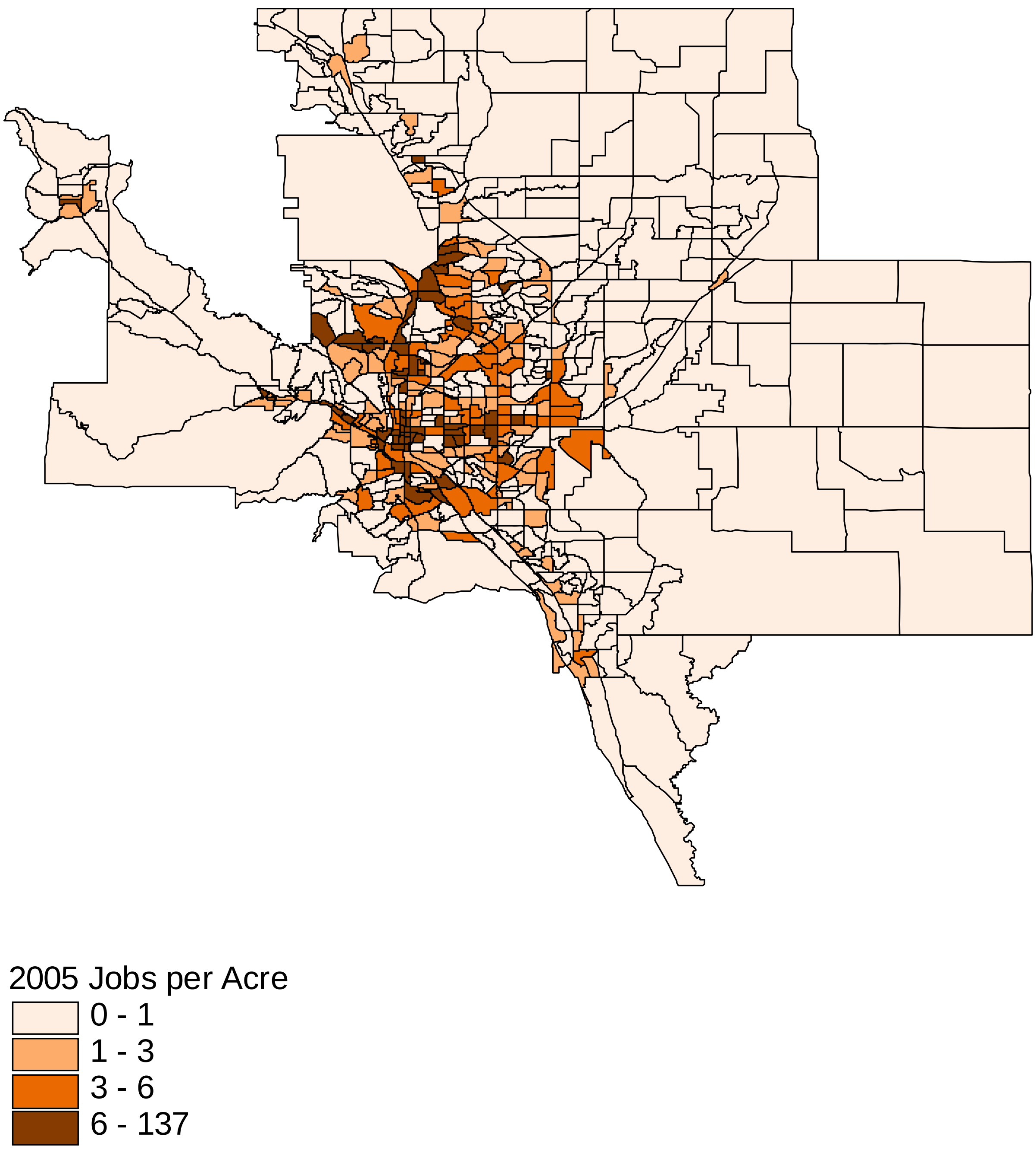
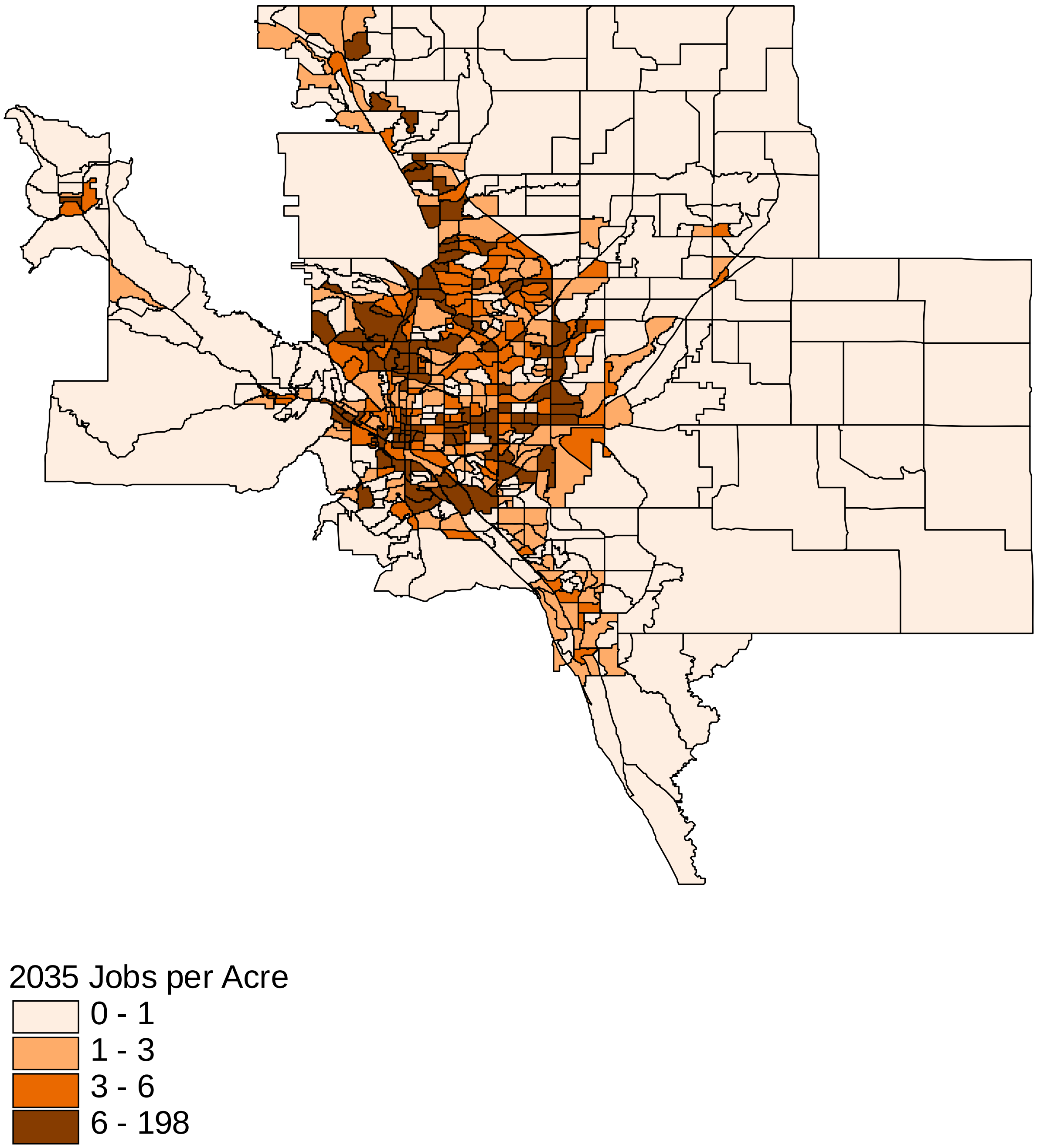


FIGURE 5-6: EMPLOYMENT PER ACRE IN 2035



PPACG 2002 HOUSEHOLD TRAVEL SURVEY

PPACG conducted a travel survey during the autumn of 2002. This survey was composed of two parts, a household travel survey and an on-board transit survey. There were 1,816 responses to the household survey and 403 responses to the transit survey.

The information was used to help calibrate the regional travel demand model and to address the need for enhancing, expanding, and developing new transportation facilities in the region. The survey also aided analysis of alternative transportation solutions for the major modes of transportation: roads; transit services; bicycle and pedestrian facilities; park-and-ride facilities; freight movement; and transportation system management strategies such as signalization, intelligent transportation systems (ITS), ridesharing, and travel demand management. The travel survey also provided the basis for analyzing the environmental and social impacts of transportation projects.

Key findings of the travel survey include numerical breakdowns of trips made to various destinations, how residents travel to their destinations, and vehicles per household. On a typical weekday, residents of the Colorado Springs area complete nearly 1.5 million trips to destinations in the region. The estimated number of trips that residents make to the region's most frequented destinations is provided in Table 5-3 below.

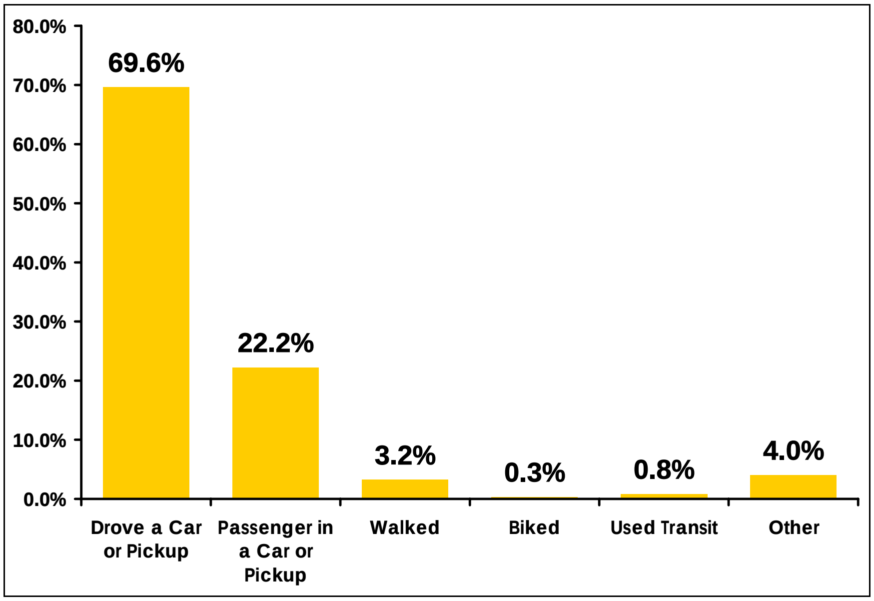
TABLE 5-3: ESTIMATED NUMBER OF TRIPS RESIDENTS MAKE TO THE REGIONS' MOST FREQUENTED DESTINATIONS

Type of Trip	Trips per Day*	Percentage
Trips to/from home and a school/daycare	303,000	30%
Trips to/from home and work	218,500	22%
Trips to/from home and shopping areas	199,500	20%
Work related trips during the workday	93,200	9%
Trips to another person's home	74,300	7%
Trips to/from home and a recreation place	59,500	6%
Trips to a hospital or doctor's office	39,300	4%
Trips to a religious place	23,300	2%

** Estimated trips based on 2000 Census of 192,409 households.*

The nearly 1.5 million trips are predominately made in a private car or pickup as is illustrated in Figure 5-7.

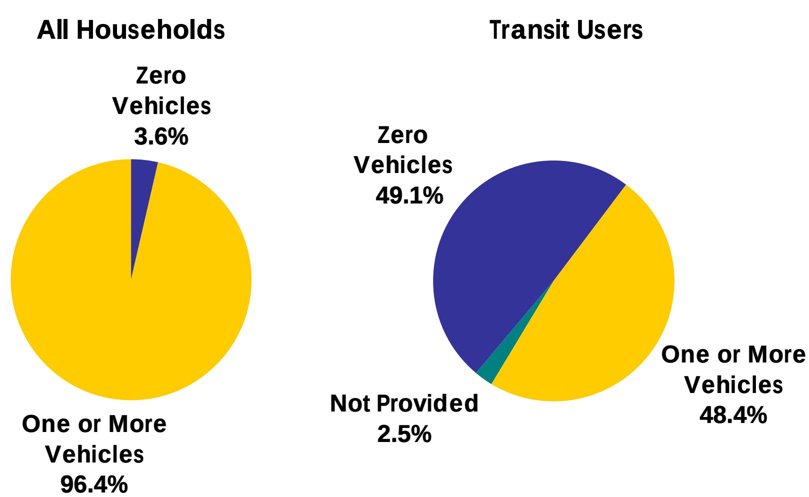
FIGURE 5-7: HOW RESIDENTS TRAVEL TO THEIR DESTINATION



Source: 2002 PPACG Regional Travel Survey

While the majority of trips are being made in a car or truck, those who travel via transit are substantially less likely to have an available vehicle in their household (see Figure 5-8) and thus are much more likely to be dependent on transit for their travel needs.

FIGURE 5-8: VEHICLES PER HOUSEHOLD



Source: 2002 PPACG Regional Travel Survey

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Chapter 4: Financial Plan

Overview

This chapter describes the revenue sources, anticipated revenues, estimated costs to maintain, operate and expand the transportation system in the Pikes Peak Area Metropolitan Planning Region from 2008 until 2035. The financial analysis presented in this chapter meets the new federal requirements stated in SAFETEA-LU. It also discusses changes to revenue sources since adoption of the 2030 plan. It must be emphasized that this is a long range systems level plan, many of the cost estimates and most of the revenue estimates are preliminary and will be revisited several times before the years they represent come to pass. The intent is to prepare an approximate, but realistic, estimate of both the total funds available and total program cost.

Satisfying the Pikes Peak region's transportation financial needs during the next 28 years is a major undertaking. The infrastructure demands associated with building and maintaining the roadway, non-motorized, freight, aviation, and public transportation systems will be challenged by the Pikes Peak region's projected population growth and by the aging of the existing infrastructure already in use. The limited availability of federal, state and local moneys will also have a significant impact on the ability to fund proposed projects. Demands on the transportation system have grown significantly in the past and the increase in this demand will accelerate faster than the growth in funding.

Federal rules require that long range transportation plans (LRTPs) such as *Moving Forward* and the associated transportation improvement program (TIP) are fiscally constrained. That is, planned expenditures shall not exceed the revenue estimates to support the operations, maintenance, and new construction during the 28 years covered by *Moving Forward* or the eight years in the 2008-2015 TIP.

Moving Forward is a fiscally-constrained transportation plan as it is anticipated that the specific transportation investments identified in the Chapter 12 can be accomplished with revenues that are projected to be available.

This plan acknowledges that projected funding levels are not sufficient to adequately maintain existing functions or serve projected increases from regional population and economic growth.

Meeting the needs or achieving the transportation vision identified during the *Moving Forward* planning time frame will require new revenues for maintenance, operating and capital from as yet unidentified revenue sources. Without additional revenues regional accessibility and mobility will deteriorate and the infrastructure will decline. This will, in turn, severely constrain the movement of goods and people throughout the region. The gap between requirements and resources is not new, and simply reallocating resources will not close it. After years of under investment, the region has a backlog of needs resulting in current investment levels which are below the level needed to sustain and improve the regional transportation system.

The Pikes Peak region, like the rest of Colorado, has and will continue to have additional transportation needs beyond those improvements listed within the constrained portion of the plan. There are projects identified which can meet these needs but cannot be incorporated into the Plan at this time due to insufficient revenues projected to be available for their construction and/or implementation. They are listed in Appendix K, "Mobility Strategies Excluded from Constrained Plan."

Requirements for a Financial Plan

The Code of Federal Regulations describes the elements of a transportation financial plan. A new requirement of SAFETEA-LU is that the plan must include the revenues and costs to operate and maintain the roads and associated systems (signals, signage, snow removal, etc) to allow MPOs to estimate future transportation conditions and promote making fullest use of existing infrastructure. This has not previously been done at the long range plan level in the Pikes Peak region. PPACG staff is working with local entity staff to assemble this information.

The requirement that the financial plan include recommendations on new financing strategies is also new. The timing of *Moving Forward* coincided with the release of the Governors Transportation Finance and Implementation Panel recommendations. These recommendations are summarized later in this chapter.

Another new requirement of SAFETEA-LU is to use of year of expenditure (YOE) dollars for planning purposes. The USDOT has provided guidance that a 4% inflation per year for costs shall be utilized in the absence of a rigorously developed rate for each MPO. This change in methodology will accent the reduction in the buying power of the transportation revenues that had not been previously accounted for during the planning process.

The CDOT Metropolitan Planning Organization Guidance Manual defines fiscal constraint for regional long-range transportation plans. The guidance states:

> *Long-range, 20-year regional transportation plan must be "fiscally constrained," and contain only those projects the MPOs can reasonably pay for over the 20-year planning horizon. CDOT and the MPOs cooperatively develop resource allocations to be used by the MPOs to prioritize projects in the Regional Transportation Plans. In addition to the fiscally constrained plan, MPOs may choose to also develop a "preferred" 20-year plan that contains all desirable transportation projects for the region.*

Approach to Fiscal Constraint

The approach used to determine the adequacy of the financial resources for maintaining, operating, and expanding the regional transportation system involved four primary steps:

- Determining the costs of adding new capacity: This was done by inflating the costs of the projects from the 2030 plan from their 2004 base to a 2007 base level. The 2007 base level is then extended into the future by adding a 4% annual inflation rate.

- Estimating the costs for routine maintenance and life-cycle treatments: The costs to maintain and operate the regional transportation system were developed using USDOT's Highway Economic Resource System for States (HERS_ST). This methodology developed costs per mile for routine maintenance and life-cycle treatments per lane mile by functional class (principal arterial, minor arterial, collector, and local). Routine maintenance includes patching, joint and crack filling, slope repair, drainage structure clearing, cutting and clearing vegetation, sweeping and clearing debris, striping and pavement repairs. Life-cycle treatments include periodic application of bituminous overlays, seal treatments, milling, crack routing and filling, and base repair.

- Adjusting estimates of existing and future anticipated financial revenues to a year of expenditure level. – Effective December 11, 2007 it is required that revenue and cost estimates that support the metropolitan transportation plan use an inflation rate to reflect years of expenditure dollars, pursuant to

CODE OF FEDERAL REGULATIONS 23 CFR 450.322 (10)

A financial plan that demonstrates how the adopted transportation plan can be implemented.

(i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

(ii) For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under § 450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.

(iii) The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified.

(iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Starting December 11, 2007, revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect ''year of expenditure dollars,'' based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

(v) For the outer years of the metropolitan transportation plan (i.e., beyond the first 10 years), the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/cost bands.

(vi) For non-attainment and maintenance areas, the financial plan shall address the specific financial strategies required to ensure the implementation of TCMs in the applicable SIP.

(vii) For illustrative purposes, the financial plan may (but is not required to) include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.

(viii) In cases that the FHWA and the FTA find a metropolitan transportation plan to be fiscally constrained and a revenue source is subsequently removed or substantially reduced (i.e., by legislative or administrative actions), the FHWA and the FTA will not withdraw the original determination of fiscal constraint; however, in such cases, the FHWA and the FTA will not act on an updated or amended metropolitan transportation plan that does not reflect the changed revenue situation.

SAFETEA-LU. CDOT's Office of Financial Management and Budget provided Pikes Peak MPO a year by year forecast of revenues adjusted for inflation. The policies and assumptions used to determine the growth rates for anticipated revenues are listed in the Colorado Department of Transportation 2035 Revenue Forecast and Resource Allocation dated December 14, 2006.

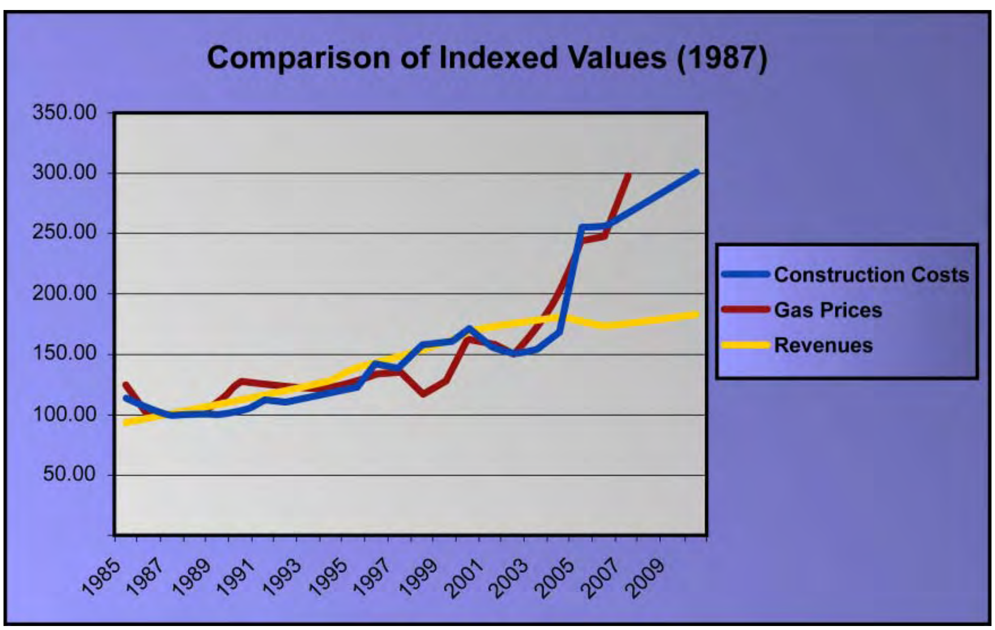
- Comparing forecast revenues against forecast costs. The first eight years of the plan are comprised of two TIP periods, 2008 through 2011 and 2012 through 2015 Individual inflated costs and revenues were used to compare revenues against costs for those years. The outer years of the plan is grouped into five-year time periods. The third year of the five-year term revenue estimate was used for each time period. The costs of the projects were inflated to the third year of each time period as well.

Projected Funding Gap

Simply stated, the costs of maintaining, operating and expanding the transportation system has dramatically risen, while revenues have slowed and demands on the system are pressured by an increasing population and a growing economy.

The primary revenue source for transportation funding is state and federal gas tax revenues. Gas taxes are not indexed to inflation and have not been increased since 1991 (state) and 1993 (federal). Furthermore, due to the steady increase in fuel efficiency, drivers pay less in gas taxes per vehicle mile traveled (VMT) than they did 10 or 20 years ago. Figure 4-1 illustrates how revenues have flattened while costs continue to rise. Absent new state or federal legislation, it is expected that this trend will continue.

FIGURE 4-1: COMPARISON OF INDEXED VALUES (1987)



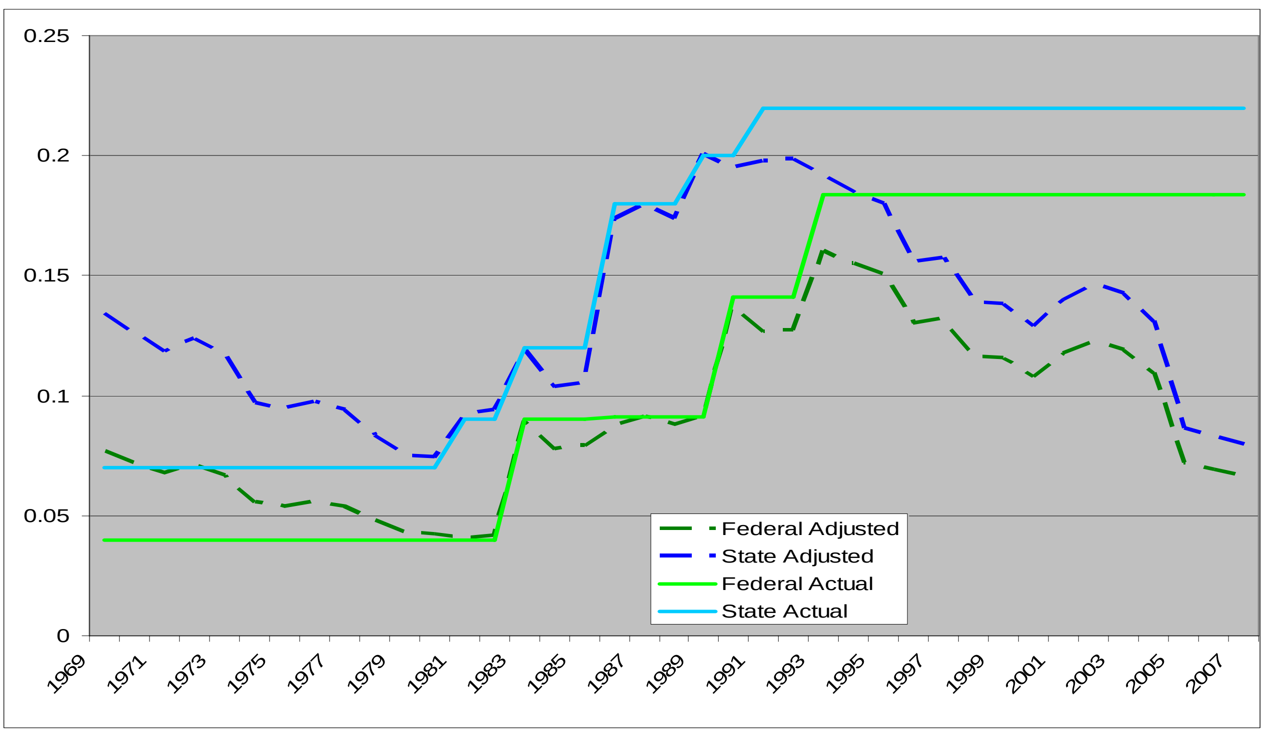
It is projected, that the federal gas tax trust fund will exhaust its surplus in 2009. If the projection is realized, it is expected that while Congress has "authorized" $2.45 Billion for Colorado over the life of SAFETEA-LU, it will likely reduce the "obligation limitation" of the funding. The obligation limitation is a ceiling on contract authority for authorized federal –aid funds in order to reduce highway program spending in response to economic and budgetary conditions. Future obligation limitations could reduce the federal funding expected by a range 10 to 40%.

There is a significant decline in the purchasing power of the gas tax. From 1994 to 2005, the Colorado construction index increased 114.8%. If the state gas tax had been indexed annually since the last tax increase in 1992, it would currently be 33 cents per gallon. Assuming an inflation rate of 4% per year, in order to compensate for lost purchasing power; Colorado's gas tax would have to increase from its current level of 22 cents per gallon to $ .56 cents in 2015 and $1.24 in 2035.

In 1957, the federal gas tax was $.03 per gallon. Indexed for inflation, the equivalent tax in 2006 would be $ 20.8 cents per gallon. Federal gas tax is currently $ 18.4 cents per gallon.

The forecast cost of the transportation system needs, as determined during the *Moving Forward* planning process, are approximately $12,000,000,000. This is approximately four times (400%) of the funds forecast to be available for the Pikes Peak regions' transportation system.

FIGURE 4-2: ACTUAL GASOLINE EXCISE TAX RATE AND ADJUSTED BUYING POWER



STRATEGIES TO INCREASE TRANSPORTATION FUNDING

The Pikes Peak region participated in the Governor's efforts to identify long term sustainable programs and funding sources for transportation in Colorado. In April, 2007, Governor Ritter established the Transportation Finance and Implementation Panel. In November 2007, the panel recommended an investment focus and funding thresholds with potential revenue sources. The preferred funding threshold was $1.5 B additional funds for transportation annually. Table 4-1 below is a summary of the Panel's Funding Sources Recommendation.

TABLE 4-1: FUNDING SOURCES RECOMMENDATION

Revenue Source	Incremental Fee or Tax	Revenue Generated
Increased Vehicle Registration	$100 average	$500M
Increased Motor Fuel Tax	13 per gallon	$361M
New Daily Visitor Fee	$6 daily fee	$240 M
Increased Sales & Use Tax	.35% increase	$312 M
Increased Severance Tax	1.7% effective increase	$ 96M

In changing the current structure of taxes and fees, policymakers are not restricted to just one source. In other words, the entire increase needed to generate sufficient revenue to close the funding gap does not have to be loaded onto a single source, as doing so could lead to an onerous increase. Rather, policymakers may find it more equitable and politically palatable to distribute tax or fee increases across several sources. Moreover, the increase need not be uniform across sources; a 4¢ gas tax increase can be combined with a 2¢ sales tax increase, for example. Additionally, taxes and fees can be increased in any increment preferred by policymakers. There should be a logical connection between the source and the use of the funding.

On April 19, 2007, Charles Brown Consulting and Carter & Burgess Inc. prepared for CDOT a draft report on Transportation Revenue Options to assist state policy makers. Given the variety of tax and fee increments, as well as the numerous combinations that policymakers may select, the report outlined a variety of policy options is provided in easily scaleable units. Exerts from the report are provided in Tables 4-2 through 4-4 below indicating a 1¢ fuel tax increase, indexing fuel taxes to inflation, increasing motor vehicle registration fees by $1.00. This reflects changes to state revenues only.

TABLE 4-2: ESTIMATED REVENUE FROM AN INCREASE OF ONE CENT IN FUEL TAX RATES (NOMINAL DOLLARS)

Period	Baseline Scenario		Minimum Growth Scenario		Maximum Growth Scenario	
	Revenues During Period	Cumulative Revenues	Revenues During Period	Cumulative Revenues	Revenues During Period	Cumulative Revenues
FY 2008-09 to 2009-10	$42	$42	$42	$42	$42	$42
FY 2010-11 to 2014-15	$148	$190	$147	$189	$152	$194
FY 2015-16 to 2019-20	$163	$353	$159	$348	$179	$373
FY 2020-21 to 2024-25	$178	$531	$172	$520	$213	$586
FY 2025-26 to 2029-30	$193	$724	$185	$705	$254	$840
FY 2030-31 to 2034-35	$209	$933	$199	$903	$305	$1,145

Note: All values in Millions

Source: Draft Transportation Revenue Options Study, April, 2007

TABLE 4-3: ESTIMATED REVENUE FROM INDEXING THE FUEL TAX TO INFLATION (NOMINAL DOLLARS)

Period	Baseline Scenario		Minimum Growth Scenario		Maximum Growth Scenario	
	Revenues during period	Cumulative Revenues	Revenues during period	Cumulative Revenues	Revenues during period	Cumulative Revenues
FY 2008-09 to 2009-10	$26	$26	$26	$26	$27	$27
FY 2010-11 to 2014-15	$497	$523	$466	$492	$546	$574
FY 2015-16 to 2019-20	$1,188	$1,711	$1,059	$1,551	$1,433	$2,007
FY 2020-21 to 2024-25	$2,117	$3,829	$1,797	$3,347	$2,839	$4,846
FY 2025-26 to 2029-30	$3,293	$7,121	$2,681	$6,029	$4,979	$9,825
FY 2030-31 to 2034-35	$4,784	$11,905	$3,777	$9,806	$8,299	$18,125

Note: All values in Millions

TABLE 4-4: ESTIMATED REVENUE FROM INCREASING THE MOTOR VEHICLE REGISTRATION FEE BY $1.00 (2008 CONSTANT DOLLARS)

Period	Baseline Scenario		Minimum Growth Scenario		Maximum Growth Scenario	
	Revenues During Period	Cumulative Revenues	Revenues During Period	Cumulative Revenues	Revenues During Period	Cumulative Revenues
FY 2008-09 to 2009-10	$7	$7	$7	$7	$7	$7
FY 2010-11 to 2014-15	$24	$32	$24	$31	$24	$32
FY 2015-16 to 2019-20	$23	$54	$22	$54	$24	$56
FY 2020-21 to 2024-25	$22	$76	$21	$75	$24	$80
FY 2025-26 to 2029-30	$20	$96	$20	$94	$24	$104
FY 2030-31 to 2034-35	$19	$115	$18	$113	$24	$127

Note: All values in Millions

SYSTEM COST PROJECTIONS

This plan considers the cost to expand, maintain and operate the transportation system needed by the Pikes Peak region. Before consideration can be given to system expansion, the region needs to determine the funding needed and available to operate and maintain the transportation system already in existence. These two aspects of the transportation system are clarified below. Public comments indicated a preference for maintaining existing infrastructure and improving operations of existing infrastructure.

System Maintenance and Preservation

Highway maintenance activities protect the investment in the infrastructure. Maintenance activities vary widely but can include: roadway patching and sealing, blading unpaved surfaces and shoulders and ditches, cleaning drainage structures, repairing slopes due to washout or erosion, maintaining stream beds, sweeping the roadway surface, picking up litter and trash, controlling vegetation, maintaining ITS devices, roadway signs and lighting, guardrail repair, bridge repair, painting bridges, tunnel maintenance, rest area maintenance, snow plowing and ice control, removing snow and sand. This preservation effort is vital to the integrity of the infrastructure and an important highway safety component.

For the regional roadway system, costs to maintain existing lanes exceed $_____million annually. There is also a backlog of needed maintenance approaching $____ million. These costs will consume a larger proportion of transportation funding as the transportation system ages and grows.

System Management and Operations

Operational and management activities enable more efficient travel and improve the reliability of the system. They are intended to make the best use of the existing transportation facilities by managing and operating systems, improving traffic operations and safety. . Examples of operational strategies include intersection improvements, signal timing, ITS deployment, ramp metering, incident management, access management. For the Pikes Peak Area regional roadway system, costs to operate the system exceed $_____million annually.

Transit operating costs are assumed to be covered by available revenues to the transit system. Projected funding for transit system operation and improvement is outlined in WAITING FOR MOUNTAIN METRO TRANSIT PLAN.

System Expansion

In a rapidly growing region such as Pikes Peak, there is large demand for system expansion. The needed regional roadway system expansion costs have been estimated at $_______ billion over the twenty eight year period. Cost estimates are reviewed in detail during each plan update.

REVENUE SOURCES

Transportation has traditionally been funded by user fees. Today, the major tax sources to fund transportation are the fuel taxes and license fees, as well as transit fare box revenues.

Local Sources

Local revenue comes from a variety of sources such as property tax for highway projects and sales tax for transit projects. Other revenues include moneys from street use permits, gas tax, utility permits, and impact fees. The entities that have adopted the PPRTA have an IGA that requires maintenance of effort, that is, the funding levels that existed for transportation in 2005(?) must be maintained as a minimum into the future

State of Colorado Sources

Colorado Highway Users Tax Fund (HUTF)

The primary source of revenue in Colorado is the Highway Users Tax Fund. The HUTF is a dedicated revenue source comprised of motor-fuel tax, car registration fees and other miscellaneous revenue. There are two levels of funding to the HUTF: a basic and an additional funding level. A portion of the basic funding is allocated Off the Top to the Department of Public Safety for the State Patrol and Department of Revenue for the Ports of Entry. The State Treasury distributes the remaining basic funding in the following manner: 65% to CDOT, 26% to Colorado Counties and 9% to Colorado cities. All additional funding is distributed 60% to CDOT, 22% to Colorado Counties and 18% to Colorado Cities. Motor fuel tax is the largest revenue source in the HUTF. All motor fuel taxes up to 7 cents per gallon are considered basic funding and subject to Off the Top. The amount over 7 cents per gallon is considered motor additional funding. The HUTF can be used for acquisition of right – of –way and the construction, engineering, safety and reconstruction, repair, improvement, maintenance and administration of the state highway system and public roads system.

Besides Motor Fuel Tax, the HUTF revenue sources include driver's license fees, interest, penalty assessments and other miscellaneous sources.

Sales and Use Taxes (S.B. 97-01)

In 1997, the Colorado General Assembly enacted S.B. 97-001. This bill provided that under certain conditions, 10% of the State sales and use tax attributable to the sales and use of vehicles and related items would be transferred to the HUTF and subsequently transferred to the State Highway Fund and expended for the Strategic Transportation Project Investment Program with a minimum of 10% going to transit strategic projects. Before a transfer can occur, adequate general fund revenue must exist to fund a maximum of 6% increase in appropriations.

Gaming Funds

In 1991, limited gaming began in Colorado. The Department of Transportation may request an appropriation from the State's Limited Gaming Fund to address the construction and maintenance of roads associated with the increased traffic on state highways in the vicinity of gaming communities. State highways in the vicinity of Cripple Creek, including SH 24, have received funding from this appropriation.

Capital Construction Fund

In 1995, new legislation provided that the Transportation Commission must annually submit to the Capital Development Committee (CDC) a prioritized list of State Highway reconstruction, repair and maintenance projects for possible funding with Capital Construction Funds. Prior to that time, Capital Construction funds had been limited to non-transportation related capital improvements such as state buildings. Between FY 1996 and FY 2001, the Department of Transportation received $36.5 M in Capital Construction Fund appropriation. From FY 2002 through FY05 the Department did not receive any Capital Construction Funds. From FY 2006 through FY 2008, $45 M was received.

HB02-1310

This house bill provides for a transfer of two-thirds of the general fund surplus to the highway users tax fund. From FY04 through FY 06, $149.5 M was received by CDOT.

Federal Sources of Funding

The transportation system eligible for federal funds are state jurisdiction roads and local jurisdiction roads designated as functional classification collector or above. Mountain Metro Transit, the regional transit system operator, is also eligible for funding, as are other Specialized Transit services, as defined in PPACG's adopted Coordinated Human Services Plan attached as Appendix H. Federal funding is derived primarily from the federal fuel tax which is currently $0.184 per gallon.

The federal transportation funding picture changed significantly with the 1991 passage of the Intermodal Surface Transportation Efficiency Act (ISTEA), and successor Acts, the 1998 Transportation Equity Act for the 21st Century (TEA-21), and 2005's Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Federal funds are apportioned back to states on a formula basis. Colorado is a 'donor' state meaning that it gets back less in funding than it provides in fees.

ISTEA was considered landmark legislation because it enhanced the role of the Metropolitan Planning Organization in the programming, planning, and prioritization of Surface Transportation Program (STP) funds and because it gives these regions greater independence to invest in alternate modes of travel, including capital transit projects, such as High Occupancy Vehicle (HOV), Light Rail Transit (LRT), and park and ride facilities. The Act also established Transportation Management Areas (TMAs) where populations exceeded 200,000 and created a funding category for transportation projects to help regions meet air quality standards. In states, such as Colorado, where the amount of public lands and Indian lands exceed 5% of the total State area, the federal share for projects will be increased above those outlined in SAFETEA-LU. SAFETEA-LU is funded through projected revenues from the Highway Trust Fund and General Fund as well as ethanol tax reform.

A brief description of the existing funding programs available authorized through the federal legislation follows.

Congestion Mitigation and Air Quality Improvement Program

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides funding for projects and programs that will reduce transportation related emissions and contribute to attainment or maintenance of the national ambient air quality standards in air quality non-attainment and maintenance areas for ozone, carbon monoxide (CO), and particulate matter (PM-10, PM-2.5). Projects in this category of funding are selected by the Pikes Peak Area Council of Governments Board of Directors.

CMAQ funds provide a flexible funding source for transportation projects to the Pikes Peak Area because it is designated as an air quality maintenance area. The Clean Air Act Amendments of 1990 require that highest priority for funding be given to the implementation of the transportation elements of applicable State Implementation Plans (SIPs) and Transportation Control Measures identified in applicable SIPs. SAFETEA-LU adds new requirements that States and MPOs give priority to diesel retrofits and other cost-effective emission and congestion reduction projects and programs that provide air quality benefits. These federal funds are apportioned to the states based on weighted non- attainment and maintenance area population. Colorado has three non-attainment MPO's: The Denver/Longmont, Colorado Springs and Fort Collins/ Greeley Metropolitan areas as well as five rural non attainment areas: Canon City, Pagosa Springs, Aspen, Telluride and Steamboat Springs. The Transportation

Commission has allocated the CMAQ funds to the MPO's area based on a population and vehicle miles traveled after allocating $1 million State of Colorado. The Pikes Peak area receives (18.13%) of the total MPO apportionment.

Projects or programs that improve transportation systems management and operations that mitigate congestion and improve air quality can be funded under this program. Funds in this category cannot be used for new highway capacity. However, construction of high occupancy vehicle lanes is allowed with the understanding that capacity may be used by single occupancy vehicles during the non-rush hour period.

Surface Transportation Program (STP) Flexible

The Surface Transportation Program combines the old Federal Aid Primary, Federal Aid Urban, and Federal Aid Secondary categories into a single, flexible, intermodal block grant type funding program which provides flexible funding that may be used by States and localities for projects on any Federal-aid highway including the NHS, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. A portion of the funds reserved for rural areas may be spent on rural minor collectors. In addition to eligibility for operational and capacity improvements to roadways, it allows for the programming of transit capital projects, intracity and intercity bus terminals, carpool projects, fringe and corridor parking, capital and operating costs for traffic monitoring, management or control, transportation enhancements, transportation planning, and transportation control measures for air quality. If an area, such as the Pikes Peak region, has been designated a Transportation Management Area (TMA), money cannot be spent on road capacity improvements for general purpose traffic unless the improvements are part of the Congestion Management Program. The following outlines the STP subprograms:

- **ENHANCEMENTS:** The Transportation Enhancement Program funds activities or projects that add community or environmental value to any active or completed transportation project, and are over and above what is required for normal environmental mitigation for transportation improvements. The maintenance of these projects is not eligible for those funds. Ten percent of federal funds distributed to Colorado are dedicated to transportation enhancement activities (bikeways, walkways, highway beautification, and scenic or historic transportation projects). Projects in this subcategory of funding are selected by the Pikes Peak Area Council of Governments Board of Directors.

- **STP-URBAN (METRO):** The STP-Urban program is a formula allocation to the Pikes Peak Transportation Management Area (TMA) based on the population of the Colorado Springs Urban Area. Projects eligible for this funding include planning studies, enhancement activities, or road projects on a route functionally classified as rural major collector or above. Projects in this subcategory of funding are selected by the Pikes Peak Area Council of Governments Board of Directors.

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program was established in SAFETEA-LU as a new, separately funded, core program, It allows states to target funds to their most critical safety needs to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. By October 1, 2007, each State must have a strategic highway safety plan that identifies and analyzes safety problems and opportunities in order to use HSIP funds for new eligible activities under 23 USC 148. CDOT completed this plan in October, 2006 and PPACG has used it as a base from which to develop a local safety plan. States are also required submit annual reports describing at least 5% of the State's most hazardous locations, progress in implementing projects, and their effectiveness in reducing fatalities and injuries.

This program provides federal funds (90% Federal, 10% State/Local) for projects that improve the safety of high accident locations. Certain safety projects qualify for 100% federal funding. Projects in this category of funding are selected by CDOT. Only projects of $50,000 and over are funded, as cost effectiveness of the federal dollar diminishes below this amount. Projects can be combined to meet this $50,000 threshold.

Applications are requested from City and County transportation officials on an annual basis. Any project selected for this federal funding must be included in, or added to, the Statewide Transportation Improvement Program (STIP), and, if in an urban area, in the appropriate Transportation Improvement Program (TIP) of the respective Metropolitan Planning Organization (MPO). Local governments within the Pikes Peak area are advised to send a copy of their applications to the PPACG. The major factors in evaluating applications are the accident history and the cost benefit. Candidate projects must have a potential for accident reduction.

Safe Routes to School Program

The Safe Routes to Schools Program was created in SAFETEA-LU to enable and encourage children, including those with disabilities, to walk and bicycle to school; to make walking and bicycling to school safe and more appealing; and to facilitate the planning, development, and implementation of projects that will improve safety, and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. Projects in this category of funding are chosen by a statewide committee established by Colorado state law. The Federal share is 100%.

Highway Bridge Program

The Highway Bridge Program provides funding to enable States to improve the condition of their bridges through replacement, rehabilitation, and systematic preventive maintenance. SAFETEA-LU made it possible for all Highway Bridge Program funds to be used for bridges off of the state highway system. Within Colorado, about $ $1,145,700 is expected to be received for bridge projects between 2008 and 2035. Distribution of Bridge funds to individual bridge replacement projects for local agencies is governed by policies established by the Bridge committee. The costs are shared approximately 80% federal and 20% local match.

Interstate Maintenance (IM) Program

The Interstate Maintenance Program provides funding for resurfacing, restoring, rehabilitating, and reconstructing routes on the Interstate System. The Dwight D. Eisenhower National System of Interstate and Defense Highways retain a separate identity within the National Highway System. This program is similar to the former FAI-4R program and is intended for projects to rehabilitate, reconstruct, restore, and resurface the Interstate System. IM funds may not be used for new travel lanes, other than High Occupancy Vehicle lanes or auxiliary lanes or reconstruction.

National Highway System Program

The National Highway System (NHS) program provides funding for improvements to rural and urban roads that are part of the NHS, including the Interstate System and designated connections to major intermodal terminals. The NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. National Highway System was a new funding category in ISTEA. It established a National Highway System (NHS) which consists of major roads in the U.S. including the interstate system; other routes identified for their strategic defense characteristics; routes providing access to major ports, airports, public transportation and intermodal transportation facilities; and principal arterials that provide regional service. Funding in this category may be used for a wide variety of projects. In addition to roadway construction, operational and maintenance improvements, eligible projects include: start-up for traffic management and control, infrastructure-based intelligent transportation system capital improvements, fringe and corridor parking, carpool and vanpool projects, bicycle and pedestrian projects, and wetlands and natural habitat mitigation. In certain circumstances, transit projects in the corridor are also allowed if they benefit the NHS facility. Publicly-owned intracity and intercity bus terminals are also eligible. In addition, states have the option to shift 50% of the money to the STP category, which has greater project flexibility.

Discretionary Funds

Discretionary funds are additional funds (not formula funds) that the federal government may decide to award to a region. Examples include Transportation, Community and System Preservation funding, Public Lands Highways funding, and congressional allocations.

Transportation and Community and System Preservation Pilot (TCSP)

The TCSP Program is intended for eligible projects to integrate transportation, community, and system preservation plans and practices that improve the efficiency of the transportation system of the United States, reduce the impacts of transportation on the environment, reduce the need for costly future investments in public infrastructure, provide efficient access to jobs, services, and centers of trade and examine community development patterns and identify strategies to encourage private sector development. Projects in this category of funding are awarded by the FHWA or FTA. The federal share is 80/20.

Federal Lands Highways

The Federal Lands Highways Program provides for transportation planning, research, engineering, and construction of highways, roads, and parkways and transit facilities that provide access to or within public lands, national parks, and Indian reservations. The federal share is 100%. Projects are selected at the federal level.

"Flexible" Funds

The Federal Highway and Transit Laws authorize certain funds to be "flexible." For example, FHWA Surface Transportation Program funds can be transferred from FHWA to FTA for use in transit projects, while FTA Urbanized Area Formula funds may be available for highway projects to the extent that the PPACG is able to certify that:

- The funds are not needed for investments required by the Americans with Disabilities Act of 1990, as amended;
- A notice and opportunity for comment and appeal have been provided to affected transit providers during the public outreach period; and
- Local funds proposed for the non-Federal match are eligible to provide assistance for either highway or transit projects.

Transit Revenues

Revenue sources that have been described above are intended exclusively for highway investment or have the flexibility to be used for highway/transit funding. Transit systems are also funded by fare box proceeds, transit specific federal funds and other local funds. The following section describes the various funding sources for FTA programs. Governor Ritter recently named the City of Colorado Springs as the designated recipient for JARC and New Freedom funds apportioned to the Colorado Springs UZA, and the Pikes Peak Area COG as the planning agency for these funds. JARC and New Freedom funds are statutorily required to have a completed coordinated public transit-human services transportation plan before they can be programmed.

FTA Job Access and Reverse Commute (JARC) 49 U.S.C. §5316

The federal Job Access and Reverse Commute (JARC) grant program's goal is to improve access to transportation services to employment and employment related activities for welfare recipients and eligible low-income individuals and to transport residents of urbanized areas and non-urbanized areas to suburban employment opportunities. The JARC program was established as part of the Transportation Equity Act for the 21st Century (TEA-21) to address the unique transportation challenges that welfare recipients and low-income individuals face in finding and keeping jobs. JARC began as a discretionary grant program, but transitioned to a formula-based program under the Safe, Accountable, Flexible, Efficient Transportation Equity Act, A Legacy for Users (SAFETEA-LU). FY 2006 marks the first year of the restructured JARC program, now also known as Section 5316.

Job Access projects should develop new or expand existing transportation services such as shuttles, vanpools, new bus routes, connector services to mass transit, and guaranteed ride home programs for welfare recipients and low income persons. Reverse Commute projects should provide transportation services to suburban employment centers from urban, rural and other suburban locations for all populations.

FTA New Freedom Program, 49 U.S.C. §5317

The New Freedom program provides new public transportation services and public transportation alternatives beyond those currently required by the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) that assist individuals with disabilities with transportation, including transportation to and from jobs and employment support services.

Urbanized Area Formula Program, 49 U.S.C. §5307 (Section 5307)

Section 5307 may be used for Federal capital, operating, and planning assistance for transit in Urbanized Areas (UZAs), although operating assistance is not an eligible expense for urban areas with populations of 200,000 or more (a designated Transportation Management area (TMA)). The City of Colorado Springs is the designated recipient of funds apportioned to the Colorado Springs Urban Area. The funds are apportioned based on legislative formulas, with different formulas applying to TMA MPOs versus non-TMA MPOs. One percent of funds appropriated for Section 5307 are set aside for Small Transit Intensive Cities (STIC). FTA apportions these funds to UZAs under 200,000 in population that operate at a level of service equal to or above the industry average level of service for all UZAs with a population of at least 200,000, but not more than 999,999, in one or more of six performance categories. Based on language in the SAFETEA-LU conference report, FTA consolidates several amounts and identifies a single apportionment amount for each urban area. Section 5307 funds are available for transit vehicles and facilities, preventive maintenance, and a transfer to FHWA. FTA allows all maintenance costs to be eligible for capital assistance under "preventive maintenance."

FTA Capital Investment Program, 49 U.S.C. §5309

The Section 5309 Capital Investment Grant program provides capital funds for major transit investment projects. Eligible purposes are light rail, rapid rail (heavy rail), commuter rail, monorail, automated fixed guideway system (such as a "people mover"), or a busway/high occupancy vehicle (HOV) facility, Bus Rapid Transit that is fixed guideway, or an extension of any of these. 5309 funds are discretionary and are usually allocated by Congress. The Section 5309 program has three project categories. The categories are New Starts, Small Starts and Very Small starts. Projects costing over $250 M are eligible for New Starts. Small starts is for transit capital project less than $250M and requiring less than $75M and Very Small Starts projects must be less than $50M in total cost.

REVENUE PROJECTIONS

This section describes revenue sources reasonably expected to be available for expenditure in the Pikes Peak region. Implementation of *Moving Forward* requires available fiscal resources to be identified over the life of the plan. The availability of federal, state and local moneys from these sources will have a significant impact on the ability to fund proposed projects. PPACG, Mountain Metro Transit, and CDOT prepared a joint estimation of the anticipated revenues that can reasonably be expected to be available from all sources for transportation projects.

TRANSPORTATION FUNDING FORECAST UNCERTAINTY

This financial plan or any financing forecast that is predicated on achieving results in the future contains a number of risks. Risk considerations frequently have both positive and negative elements. The major risk elements that have an influence on this financial plan are described below.

- Gasoline tax, fuel tax, and registration fee revenues are related to employment, population, and income growth. Historical data indicate that the Pikes Peak region has performed above the national average across these demographic/economic measures. The future direction of measures will largely determine whether there are in increases or decreases in revenues.

- Federal funding was assumed to reset to TEA-21 levels during years 2010 through 2015, it was then assumed to return to rates found in SAFETEA-LU. At the current level of revenue growth and expenditure, this will be difficult to achieve. Conversely, the federal government may choose to add tax capacity to the transportation program or create demonstration programs using non-transportation-related funds that are not accounted for in this forecast.

- Traditionally, SUVs and light-duty trucks have been the fastest growing segment of the vehicle fleet. These vehicle types have below-average fuel economy, thus increasing gasoline tax revenues. Currently, hybrid vehicles are attaining a market presence, and automobile manufacturers are developing models across categories (including SUVs) that will lead to fuel displacement and long-term decreases in gasoline tax revenues that are not included in these forecasts.

- Inflation forecasting has inherent risk. The costs of the needs identified in the plan are assumed to increase at an annual inflation rate of 4% annually until 2035. Should inflation vary from this rate, there will be corresponding changes to funding needs.

Changes since the 2030 Regional Transportation Plan

The Finance Plan component of the long range plan has undergone a comprehensive update from the 2030 plan. From the time when the 2030 plan was adopted, voters in portions of the Pikes Peak region have approved a Rural Transportation Authority (RTA) sales tax of 1% on goods sold within their jurisdiction. This is currently generating over $70 million per year in revenues. Over half (55%) of this tax is for specific capital projects and may expire in 2014. For purposes of this financial plan it was assumed that voters will renew the tax throughout the life of the document. The remaining 45% of the tax does not expire and is dedicated to transit 10% and maintenance of the transportation system 35%.

Other changes at the federal level, include approval of the SAFETEA-LU. SAFETEA-LU includes $286.5 billion in authorized spending for all programs over the six years of the Act, 2004 through 2009. It must be pointed out that while the federal government authorizes transportation dollars at a certain level, the actual appropriation for their use is at a lower level, typically for transportation it is in the 80%-90% range. Still, SAFETEA-LU is a 38% increase over TEA-21's $218 billion for transportation programs. Approximately 75% of SAFETEA-LU authorizations are for highway and safety programs, 18.5% for transit and 6% for additional safety and other program. Colorado received $2.45 B in spending authority from SAFETEA-LU.

Table 4-5 illustrates the joint estimate of the revenue anticipated to be available through 2035 to implement the fiscally constrained portion of *Moving Forward*. Table 4-6 describes the assumptions used for each of the funding sources.

TABLE 4-5: FUNDING TABLE FOR THE 2008-2015 TRANSPORTATION IMPROVEMENT PROGRAM AND 2035 REGIONAL TRANSPORTATION PLAN

Funding Table for the 2008-2015 Transportation Improvement Program and 2035 Regional Transportation Plan

MOVING FORWARD 2035 REGIONAL TRANSPORTATION PLAN

	2008	2009	2010	2011	2012	2013	2014	2015	TIP Total 08-15	2016-2020	2021-2025	2026-2030	2031-2035	PLAN Total 08-35
Strategic Projects (7th Pot)	$ 6,625,662	$ 6,502,619	$ 257,588	$ -	$ 36,053,551	$ 38,883,433	$ 41,619,219	$ 44,309,737	**$ 174,251,809**	$ 368,500,000	$ 426,000,000	$ -	$ -	**$ 968,751,809**
Strategic Projects (8th Pot)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**	$ -	$ 57,250,000	$ 470,250,000	$ 526,250,000	**$ 1,053,750,000**
System Quality														
Surface Treatment	$ 6,917,435	$ 7,268,372	$ 6,448,089	$ 4,638,649	$ 7,012,019	$ 6,393,272	$ 6,307,402	$ 6,695,072	**$ 51,680,310**	$ 39,000,000	$ 43,000,000	$ 47,000,000	$ 100,000,000	**$ 280,680,310**
Bridge Program	$ 1,288,192	$ 1,330,325	$ 1,295,485	$ 1,146,062	$ 1,724,166	$ 1,785,324	$ 1,837,360	$ 1,924,948	**$ 12,331,861**	$ 10,750,000	$ 11,500,000	$ 12,500,000	$ 20,000,000	**$ 67,081,861**
Maintenance (MLOS)	$ 1,961,484	$ 2,015,811	$ 2,072,997	$ 2,077,635	$ 2,122,825	$ 2,171,676	$ 2,221,050	$ 2,264,597	**$ 16,908,075**	$ 12,000,000	$ 13,000,000	$ 14,000,000	$ 20,000,000	**$ 75,908,075**
ITS Maintenance	$ 822,096	$ 844,866	$ 729,854	$ 490,780	$ 733,414	$ 733,370	$ 732,757	$ 763,588	**$ 5,850,724**	$ 4,250,000	$ 4,500,000	$ 4,500,000	$ 9,000,000	**$ 28,100,724**
Mobility														
Congestion Relief	$ 704,906	$ 740,668	$ 653,565	$ 457,920	$ 699,501	$ 712,809	$ 724,546	$ 769,078	**$ 5,462,993**	$ 4,500,000	$ 5,000,000	$ 5,500,000	$ 11,500,000	**$ 31,962,993**
Snow and Ice Maintenance	$ 1,341,915	$ 1,379,082	$ 1,418,205	$ 1,421,378	$ 1,452,294	$ 1,485,714	$ 1,519,493	$ 1,549,285	**$ 11,567,366**	$ 8,250,000	$ 9,000,000	$ 9,750,000	$ 15,000,000	**$ 53,567,366**
STP-Enhancement	$ 778,163	$ 787,486	$ 825,421	$ 825,747	$ 825,897	$ 826,031	$ 826,120	$ 826,198	**$ 6,521,063**	$ 4,313,396	$ 4,661,699	$ 5,014,051	$ 5,359,883	**$ 25,870,092**
STP- Metro	*$ 7,264,584*	*$ 7,337,033*	*$ 5,179,982*	*$ 5,555,268*	*$ 5,896,251*	*$ 6,228,321*	*$ 6,507,505*	*$ 6,768,672*	**$ 50,737,616**	*$ 35,559,465*	*$ 38,427,622*	*$ 41,329,051*	*$ 44,176,790*	**$ 210,230,544**
CMAQ	$ 4,833,099	$ 4,880,813	$ 3,172,713	$ 3,370,207	$ 3,549,648	$ 3,724,399	$ 3,871,319	$ 4,010,500	**$ 31,412,698**	$ 21,055,956	$ 22,754,289	$ 14,472,322	$ 26,158,565	**$ 115,853,830**
Safety														
Safety Surface Treatment	$ 231,942	$ 238,366	$ 207,024	$ 142,932	$ 211,371	$ 189,110	$ 183,395	$ 191,111	**$ 1,595,251**	$ 1,000,000	$ 1,000,000	$ 1,250,000	$ 2,250,000	**$ 7,095,251**
Traffic Operations Maintenance	$ 2,729,707	$ 2,805,311	$ 2,884,894	$ 2,891,349	$ 2,954,238	$ 3,022,221	$ 3,090,933	$ 3,151,535	**$ 23,530,188**	$ 16,500,000	$ 18,000,000	$ 19,500,000	$ 30,500,000	**$ 108,030,188**
Hazard Elimination	$ 1,835,755	$ 1,863,881	$ 1,532,493	$ 1,630,010	$ 1,718,378	$ 1,804,437	$ 1,876,760	$ 1,944,416	**$ 14,206,130**	$ 10,250,000	$ 11,000,000	$ 11,750,000	$ 12,750,000	**$ 59,956,130**
Safe Routes To Schools	$ 184,643	$ 231,344	$ 207,088	$ 219,119	$ 230,018	$ 240,633	$ 250,277	$ 259,300	**$ 1,822,421**	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,750,000	**$ 8,072,421**
Program Delivery														
Maintenance	$ 408,290	$ 419,599	$ 431,502	$ 432,468	$ 441,874	$ 452,042	$ 462,320	$ 471,384	**$ 3,519,479**	$ 2,500,000	$ 2,750,000	$ 3,000,000	$ 4,500,000	**$ 16,269,479**
Maintenance Incentive Program	$ 948,000	$ 974,257	$ 1,001,895	$ 1,004,137	$ 1,025,977	$ 1,049,587	$ 1,073,450		**$ 7,077,303**	$ -	$ -	$ -	$ -	**$ 7,077,303**
Road Equipment	$ 341,085	$ 350,532	$ 302,814	$ 203,623	$ 304,291	$ 304,273	$ 304,019	$ 316,810	**$ 2,427,447**	$ 1,750,000	$ 1,750,000	$ 1,750,000	$ 3,750,000	**$ 11,427,447**
TC Contingency	$ 3,354,128	$ 3,438,058	$ 2,923,393	$ 2,116,149	$ 2,978,167	$ 2,997,805	$ 3,013,813	$ 3,137,730	**$ 23,959,244**	$ 16,000,000	$ 16,500,000	$ 17,000,000	$ 33,000,000	**$ 106,459,244**
Property	$ 121,094	$ 123,986	$ 109,406	$ 79,246	$ 109,865	$ 110,008	$ 110,451	$ 114,910	**$ 878,966**	$ 750,000	$ 750,000	$ 750,000	$ 1,250,000	**$ 4,378,966**
Metro Planning (FHWA & FTA)	$ 830,251	$ 894,656	$ 802,578	$ 848,871	$ 890,933	$ 931,895	$ 969,141	$ 1,003,984	**$ 7,172,309**	$ 5,250,000	$ 5,750,000	$ 6,250,000	$ 6,500,000	**$ 30,922,309**
Regional Priority Program	$ 2,097,402	$ 937,059	$ 2,760,001	$ 2,915,787	$ 3,059,040	$ 3,198,550	$ 3,326,381	$ 3,445,963	**$ 21,740,183**	$ 9,000,000	$ 9,750,000	$ 10,500,000	$ 11,250,000	**$ 62,240,183**
RTA (Capital through 2035)*	$ 76,437,901	$ 79,044,433	$ 81,739,848	$ 84,527,177	$ 87,409,554	$ 90,390,220	$ 93,472,526	$ 96,659,939	**$ 689,681,598**	$ 550,000,000	$ 650,000,000	$ 750,000,000	$ 875,000,000	**$ 3,514,681,598**
Capital	*$ 42,040,845*	*$ 43,474,438*	*$ 44,956,917*	*$ 46,489,947*	*$ 48,075,255*	*$ 49,714,621*	*$ 51,409,889*	*$ 53,162,967*	*$ 379,324,879*	*$ 302,500,000*	*$ 357,500,000*	*$ 412,500,000*	*$ 481,250,000*	*$ 1,933,074,879*
Mainteance	*$ 26,753,265*	*$ 27,665,552*	*$ 28,608,947*	*$ 29,584,512*	*$ 30,593,344*	*$ 31,636,577*	*$ 32,715,384*	*$ 33,830,979*	*$ 241,388,559*	*$ 192,500,000*	*$ 227,500,000*	*$ 262,500,000*	*$ 306,250,000*	*$ 1,230,138,559*
Transit	*$ 7,643,790*	*$ 7,904,443*	*$ 8,173,985*	*$ 8,452,718*	*$ 8,740,955*	*$ 9,039,022*	*$ 9,347,253*	*$ 9,665,994*	*$ 68,968,160*	*$ 55,000,000*	*$ 65,000,000*	*$ 75,000,000*	*$ 87,500,000*	*$ 351,468,160*
CDOT 5307-PPACG	$5,419,332	$5,764,520	$5,905,093	$6,245,702	$6,555,178	$6,856,565	$7,130,609	$7,386,967	**$ 51,263,964**	$ 38,783,104	$ 41,911,273	$ 45,075,730	$ 48,181,631	**$ 225,215,702**
CDOT 5316-PPACG	$193,494	$204,037	$209,013	$221,069	$232,023	$242,690	$252,390	$261,464	**$ 1,816,179**	$ 1,372,740	$ 1,483,463	$ 1,595,470	$ 1,705,404	**$ 7,973,255**
CDOT 5317-PPACG	$119,758	$126,601	$129,689	$137,169	$143,966	$150,585	$156,603	$162,234	**$ 1,126,605**	$ 851,760	$ 920,462	$ 989,960	$ 1,058,172	**$ 4,946,958**
CDOT 5309-PPACG-B&BF	$1,004,459	$1,044,637	$1,070,112	$1,131,836	$1,187,919	$1,242,536	$1,292,198	$1,338,654	**$ 9,312,351**	$ 7,028,213	$ 7,595,095	$ 8,168,553	$ 8,731,399	**$ 40,835,611**
CDOT 5309-PPACG-New Starts									**$ -**	$ 103,250,000	$ 21,750,000	$ -	$ -	**$ 125,000,000**
CDOT 5309-PPACG-Small Starts	$0	$0	$0	$0	$10,000,000	$10,000,000	$11,750,000	$11,750,000	**$ 43,500,000**	$ -	$ -	$ -	$ -	**$ 43,500,000**
CDOT 5310-PPACG	$289,716	$304,153	$311,570	$329,541	$345,870	$361,772	$376,232	$389,758	**$ 2,708,611**	$ -	$ -	$ -	$ -	**$ 2,708,611**
	$205,522,393	$210,896,938	$206,322,158	$209,587,008	$267,277,782	$276,879,497	$288,730,795	$298,527,773	$1,963,744,344	$1,823,964,635	$2,077,503,902	$2,253,395,136	$2,694,621,844	$10,813,229,860

*This forecast assumes that the full 1-cent is reauthorized in every year through 2035 for capital projects. IF this does not happen numerous proijects must be taken out of the constrained plan.

Funding for known allocations is based on formula.

Estimated funds based on historic success in obtaining funds from this category. Projects identified in 2035 Regional Transportation Plan are likely to be funded.

Operating Funds for CDOT and local governments to maintain the transportation system. No specific projects identified in the 2035 Regional Transportation Plan.

The 9.48% of statewide pools is for planning purposes only, funding for these categories will differ, potentially significantly from these estimates.

The fiscally constrained plan assumes that some local funds are spent on state highways. If this does not occur the projects will not proceed on this schedule.

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TABLE 4-6: PROJECTED REVENUE 2008-2035 FEDERAL STATE AND LOCAL SOURCES (INCLUDES LOCAL MATCHES AS REQUIRED)

	TIP (2008-2015) Funding Level ($1,000s)	LRTP (2008-2035) Funding Level ($1,000s)	Notes (Total Funds In ($1,000s))
CDOT Strategic Projects: SB-1 Funds	$221,000	$2,000,000	CDOT State Strategic Corridors funded through 7th Pot and Senate Bill 97-01 funding mechanisms. TIP years based on OSPB June 2007 estimate of transferred funds ($1.2 billion) and CDOT using half for debt service (600 million) and half for construction. PPACG has one third of ready to go projects' remaining balance.
Surface Treatment Program	$51,700	$279,900	Projects are selected on the basis of performance factors as determined by CDOT Region 2. The estimate for the 2035 Plan was developed by CDOT Region 2.
Bridge Program	$12,100	$51,890	Projects are selected on the basis of need as determined by CDOT Region 2. The estimate for the 2035 Plan was developed by CDOT Region 2. Estimate composed of CDOT estimated portion of Region 2 coming to PPACG plus 9.48% of statewide pool.
Surface Quality Maintenance Program	$16,900	$77,500	Projects are selected on the basis of need as determined by CDOT Region 2.
Congestion Relief	$5,500	$31,600	New Funding Category based on lane miles of congestion above the 0.85 volume-to-capacity ratio.
Enhancements	$7,000	$30,000	Based on historic allocation (1983-2001) estimate. PPACG receives 45% of CDOT Region 2 Enhancement Program total. Forecast assumes that beginning in year 2012 the funding level returns to SAFETEA-LU levels and increases using CDOT's Federal Growth Rate by year. This category also includes TOPS/GOCO/Colorado Springs Bike Tax funds.
Metro	$56,600	$251,300	CDOT and PPACG revenue estimates based on formula. Funds for local roadway system projects to help achieve 2035 plan and air quality goals as determined by the MPO. Forecast assumes that beginning in year 2012 the funding level returns to SAFETEA-LU levels and increases using CDOT's Federal Growth Rate by year.

	TIP (2008-2015) Funding Level ($1,000s)	LRTP (2008-2035) Funding Level ($1,000s)	Notes (Total Funds In ($1,000s)
CMAQ	$37,100	$166,600	Colorado Transportation Commission Allocation of 18.13% to PPACG Non-Attainment (Maintenance) Area. Federal Formula determines Colorado allocation of national CMAQ program. Forecast assumes that beginning in year 2012 the funding level returns to SAFETEA-LU levels and increases using CDOT's Federal Growth Rate by year.
Snow & Ice Maintenance	11,600	$53,500	Projects are selected on the basis of need as determined by CDOT Region 2. The estimate for the 2035 Plan was developed by CDOT Region 2.
Safety – Rockfall Mitigation	$2,066	$7,982	Projects are selected on the basis of need as determined by CDOT Region 2.
Safety – Hazard Elimination Program	$13,500	$46,394	Projects are selected on the basis of need as determined by CDOT Region 2.
Safe Routes to Schools	$1,186	$4,635	Projects are selected on the basis of need as determined by CDOT. The estimate for the 2035 Plan was developed by CDOT. Forecast assumes that beginning in year 2012 the funding level returns to SAFETEA-LU levels and increases using CDOT's Federal Growth Rate by year. State law specifies distribution based on percentage of K-8 school age children.
Safety - Traffic Operations	$20,450	$82,509	Projects are selected on the basis of need as determined by CDOT Region 2.
Metro Planning (PPACG)	$8,400	$37,100	PPACG Federal allocation of funds for regional transportation planning.
Regional Priority Programs (RPP)	$21,600	$49,422	PPACG receives 45% of the funding of the CDOT Region 2 allocation from Colorado Transportation Commission.
CDOT Maintenance Incentive Program	$6,636	$6,636	Projects are selected on a competitive basis by CDOT. Forecasts use 9.48% of total pool.
Public Transportation Programs	$	$	Colorado Springs Transit's estimated revenue. Capital: $; Operations: $
Department of Defense/ Defense Access Road, TEA/Fed Discretionary	$20,000	$85,000	$20 million construction priority military bases funding. 3 allocations of $15 million for Defense Access Roadway funding 2 allocations of $10 million other military construction funding

	TIP (2008-2015) Funding Level ($1,000s)	LRTP (2008-2035) Funding Level ($1,000s)	Notes (Total Funds In ($1,000s)
Local/Private Capital Project Funding	$505,000	$1,999,000	Includes local member government projects, private developer funds and local ballot initiatives. Also includes revenues from the Pikes Peak Regional Transportation Authority (RTA) and private developer commitments.
Local Government Maintenance & Operations Funding	$300,000	$2,000,000	Local government estimated outlay for operations and maintenance of transportation systems including roadway maintenance, bridge repair, restriping, curb and gutter, paving, snow removal, etc. Also includes revenues from the Pikes Peak Regional Transportation Authority (RTA) and private developer commitments. Excludes Transit Maint. & Operations (see public Transportation line item above).
TOTAL			

Notes:

1. *Known Allocation. Funding is based on formula.*
2. *Estimated funds based on historic success in obtaining funds from this category. Projects identified in 2035 Regional Transportation Plan are likely to be funded.*
3. *Operating Funds for CDOT and local governments to maintain the transportation system. No specific projects identified in the 2035 Regional Transportation Plan.*

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CHAPTER 3: REGIONAL SETTING

INTRODUCTION

The Regional Setting chapter is a result of the Transportation Reauthorization Act of 2006 (also known as SAFTEA-LU) which required Metropolitan and Statewide Transportation Plans to contain a discussion of types of potential environmental mitigation activities for environmental resources affected by the Regional Transportation Plan (RTP). The 2035 RTP will provide many benefits to the human community in the metropolitan planning region because it will lessen traffic congestion, make the roadways safer, and improve public transportation. However, the addition of roadways, bridges, and more lanes as well as the large amount of construction needed to complete these projects will have a significant effect on the environment as well as the cultural and community resources in the region.

The Regional Setting of the 2035 RTP divides the areas of impact down into seven (7) categories and looks at the severity of each to assess general areas of concern:

1. Natural Setting
2. Landscape and Vegetation
3. Biological Resources
4. Surface Water and Groundwater Issues
5. Cultural Resources
6. Community Resources
7. Air Quality

The Regional Setting chapter recognizes that because so many of the ecological functions are so closely related, it is important to look at the whole picture to understand how each project will affect the greater area and take an entire ecosystem approach to assess the cause and effect. The chapter is divided into two sections:

- **SECTION II** - Resource Description provides a discussion of each resource and the current conditions of that resource.

- **SECTION III -** Mitigation provides a description of the mitigation strategies that can offset unavoidable impacts and a description of mitigation locations where these resources are impacted.

Information in each of these resource categories is identified and described by the Metropolitan Planning Organization (MPO) boundary which encompasses parts of El Paso and Teller Counties. The environmental resource issue sections, landscape and vegetation, biological resources, and surface and groundwater issues were described according to the watershed boundaries because of the potential cumulative impacts of these issues. The watershed boundaries extend beyond the MPO boundaries into the City and County of Pueblo. Both the MPO boundaries and watershed boundaries are shown on Figure 3-1. The Regional Setting section recognizes that problems must be solved collectively by federal and state agencies, local governments, and private property owners. Table 3-1 shows the authority that each of theses agencies and others have in the MPO and Watershed.

FIGURE 3-1: MPO AND WATERSHED BOUNDARY

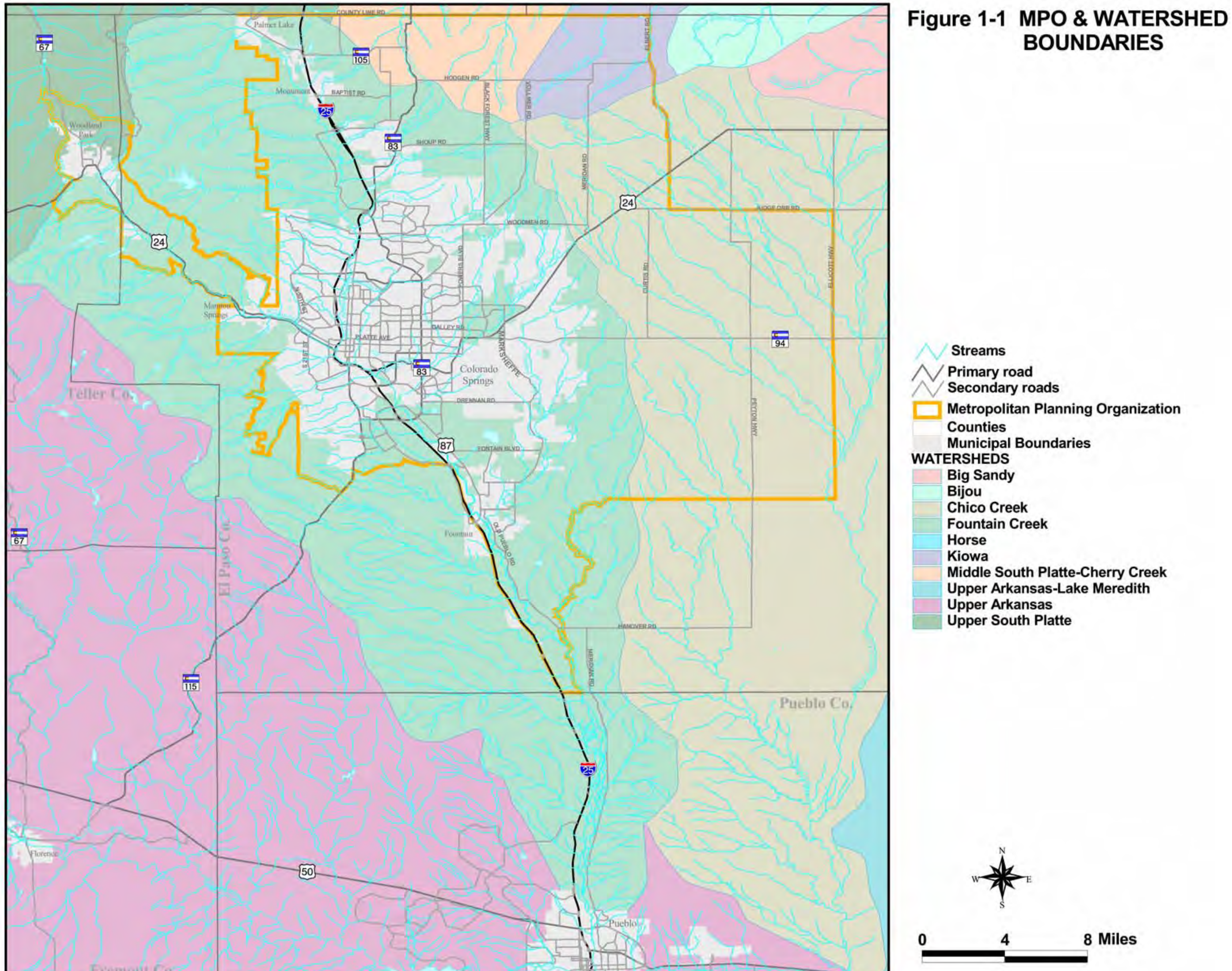

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TABLE 3-1: PROGRAM AUTHORITIES FOR GOVERNMENT AGENCIES

FUNCTION

Public Agency	Flood Control	Land Use	Water Quantity	Water Quality	Wastewater Treatment	Parks	Trails	Open Space	Storm Water Management	Flood Plains & Insurance	Erosion	Sedimentation	Wetlands	Habitat Protection
FEDERAL GOVERNMENT														
U.S. Army Corp of Engineers	X		X						X	X	X	X	X	
U.S. Bureau of Reclamation			X											
Environmental Protection Agency				X	X						X	X		X
Fish and Wildlife Service				X										X
National Soil Conservation Service	X	X									X	X		
Bureau of Land Management		X				X	X	X						X
U.S. Forest Service		X	X			X	X	X						X
Federal Emergency Management Agency	X								X	X				
Dep't of the Army, Fort Carson	X	X	X	X	X	X	X	X	X	X	X	X	X	X
STATE GOVERNMENT														
Colorado Department of Natural Resources	X		X			X	X	X			X	X	X	X
Colorado Division of Wildlife													X	X
Colorado Division of Water Resources	X		X											
Colorado Soil Conservation Board	X		X						X	X	X	X	X	X
Colorado Water Quality Control Division				X	X						X	X		
Colorado State Parks						X	X	X						
GOCO						X	X	X						X
Colorado Department of Transportation									X				X	X
COUNTY GOVERNMENT														
County Government, BOCC		X				X	X	X						
County Health Department				X	X									
County Parks						X	X	X			X	X		X
County Transportation									X					
County Storm Water Management									X		X	X	X	X
CITY GOVERNMENT														
Home Rule City		X			X	X	X	X	X					
City Government		X			X	X	X	X						
City Storm Water Enterprise									X					
City Owned Utilties				X	X									
Home Rule Town		X				X	X	X						
Town Government		X				X	X	X						
OTHER LOCAL GOVERNMENT														
Independent Utitlies & Power Companies														
Area Council of Government		X		X	X									
Water Authority			X	X										
Soil Conservation District											X	X		
Water Conservancy District			X	X							X	X		
Metropolitan District	X		X		X	X	X	X	X		X	X		
Other Special District	X		X		X	X	X	X	X		X	X		

Source: Fountain Creek Vision Task Force Meeting

RESOURCE DESCRIPTION

Natural Setting

Climate

The Pikes Peak Region is known for its cool summer weather, high percentage of clear sunny days and relatively dry climate. The meteorological classification of the area is an alpine dessert with about 250 days of sunshine per year. The temperatures within the region varies from highs of over a 100° in the summer to winter lows of 30° below zero at the higher elevations. The annual mean temperature in the Pikes Peak Region is approximately 48.5°. The mountain-plains climate is characterized by periodic high winds called Chinook winds. These warm, dry winds tend to moderate winter temperatures and facilitate snow melt. In the summertime, vigorous thunderstorms produce cloudbursts, lightning and hail. In fact, the Pikes Peak Region is one of the most active lightning strike areas in the United States. The region also experiences a low relative humidity, and wide ranges in temperature between sun and shade, between day and night, and sometimes from day to day.

Within the region the precipitation varies considerably because of elevation and major wind currents. Winter storms, typically from the northwest, tend to lose their snow to the west making for a dry winter climate. Heavy snowfall from these storms accounts for roughly one fourth of the annual precipitation while late spring and summer showers account for the rest. The annual precipitation for the region is between 15 and 16 inches. Failure of the spring-summer precipitation results in periodic drought years. In 2007, the City of Colorado Springs enacted lawn water restrictions due to an unusually low precipitation period. Given these circumstances, the availability of water is a limiting factor which has escalated in importance as the human population and associated water demands in the region have increased. Table 3-2 illustrates the monthly minimum, maximum, and average temperatures and the monthly precipitation for the region.

TABLE 3-2: MONTHLY CLIMATE AND WEATHER INDICATORS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Temperature	28.8	32.0	37.3	46.4	55.4	65.0	70.8	68.3	60.4	49.9	37.8	29.8	48.5
Maximum Temperature	41.4	44.6	50.0	59.8	68.7	79.0	84.4	81.3	73.6	63.5	50.7	42.2	61.6
Minimum Temperature	16.1	19.3	24.6	33.0	42.1	51.1	57.1	55.2	47.1	36.3	24.9	17.4	35.4
Precipitation (Inches)	0.3	0.4	0.9	1.2	2.1	2.2	2.9	3.0	1.3	0.8	0.5	0.5	16.2

Source: www.climate-zone.com

Geology and Paleontology

Physiographically, the Pikes Peak Region is characterized by gently sloping plains to the east and mountain ranges and basins to the west. The eastern plain contains generally level to rolling prairie broken by occasional hills and bluffs with the lowest point reaching 5,095 feet. Elevations dramatically increase towards the west where the plains meet the Front Range of the Rocky Mountain chain. At the highest elevation of 14,110 feet, Pikes Peak dominates the western portion of the Pikes Peak Region.

The geological past of the Pikes Peak Region is as varied as the landscape today. Within a billion years, the region has been at one time or another part of a massive ocean, covered by boggy swamps, and sculpted by vast glaciers. The Pikes Peak massive itself was formed by a series of alternating mountain-building forces and erosion. As Pikes Peak and the Front Range mountains rose, the overlying sedimentary rocks were tilted upward. These upturned sediments span millions of years of geological time, from the Precambrian Era through the Quaternary Period (see Figure 3-2), and are perfectly illustrated in the unusual red rock formations at the Garden of the Gods and Red Rock Canyon. These rocks get their red color from the oxidizing iron in the mix of sediments eroded from the Ancestral Rocky Mountains. Embedded in these rocks are fossil remains such as the footprints of the giant herbivore iguanodon that show the life of past geological periods.

The stresses of mountain building also brought episodes of stretching, faulting, and volcanism. Major faults, like the Ute Pass and Rampart Range faults, transported older Precambrian rocks to the surface over younger sedimentary rock resulting in the disappearance of titled sediments here and there. After a third and final uplift, further erosion, and sculpting from alpine glaciers, Pikes Peak reached its present formation. The never-ending process of mountain-building and erosion has left examples of exposed geology throughout the region in such dramatic forms as hogbacks, spires, hoodoos, and monoclines. It has also left marks of past life such as fossilized fish bones or the scooped depressions made by early Utes to grind grains. The oldest rocks in the Pikes Peak Region are schist, gneiss, and quartzite dating from the Precambrian Era. Pikes Peak itself consists mostly of Pikes Peak granite. This granite, generally pinkish in color, consists of interlocking crystals of quartz and feldspar.

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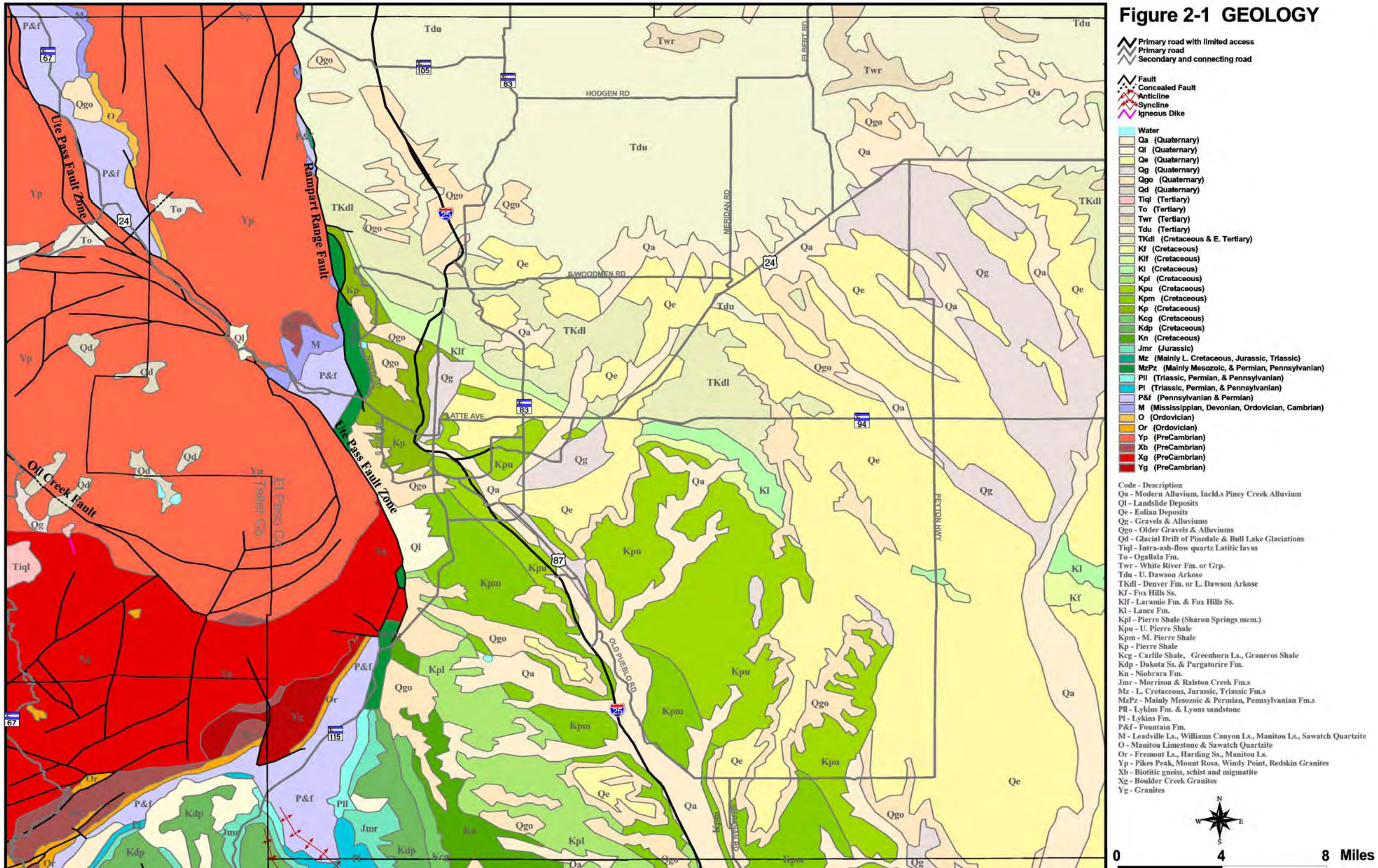
FIGURE 3-2: GEOLOGY



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Landscape and Vegetation

Soils and Mineral Resources

Soil types are easily distinguished by their location and the geologic formations present at those locations. There are four dominant soil types located geographically: those formed from Pikes Peak to the west, the foothills to the north, the plains to the east, and the valley to the south. Table 3-3 shows the soil characteristics, description, erosion and runoff susceptibility, slope and average precipitation for each of these areas. Figure 3-3 shows the different soil types in the region (as classified by the U.S. Department of Agriculture) and Table 3-4 identifies the soil types on the map.

TABLE 3-3: SOIL CHARACTERISTICS SUMMARY

	Pikes Peak-West	Foothills-North	Colorado Springs area and Plains to the East	Valley-South
Soil Characteristics	Shallow, gravelly soils derived from Pikes Peak Granite	Moderately deep, coarse sand derived from layers of sandstone	Deep sands deposited by wind	Shallow and moderately deep, derived from shale
Soil Description	Shallow and poorly developed	Moderately deep to sandstone bedrock with some areas exposed to the surface	Deep, well developed, existing on gentle slopes, high sand content combined with high wind (from plains) result in high wind erodibility	Clays in this area expand and contract with changes in moisture content, therefore shrink-swell is a major management concern
Erosion Susceptibility	High	Moderate	Low	Moderate – High
Runoff Susceptibility	Rapid	Medium	Slow	Moderate – Rapid
Elevation	7000-14000 feet	6800-7700 feet	6000-7000 feet	4600-6100 feet
Slope	25-90%	1-40%	1-20%	3-25%
Average Precipitation	22 inches	18 inches	15 inches	13 inches
Geographic Extent	Present in the quadrant extending from the confluence of Fountain Creek and Monument Creek north and west approximately along the Creek boundaries	Present in the quadrant extending from the confluence of Fountain Creek and Monument Creek north and east approximately along the Creek boundaries	Present in the quadrant extending from the confluence of Fountain Creek and Monument Creek south and east approx. along the Creek boundaries	Present in the quadrant extending from the confluence of Fountain Creek and Monument Creek south and west approximately along the Creek boundaries

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, and El Paso County Service Center Staff

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FIGURE 3-3: SOIL

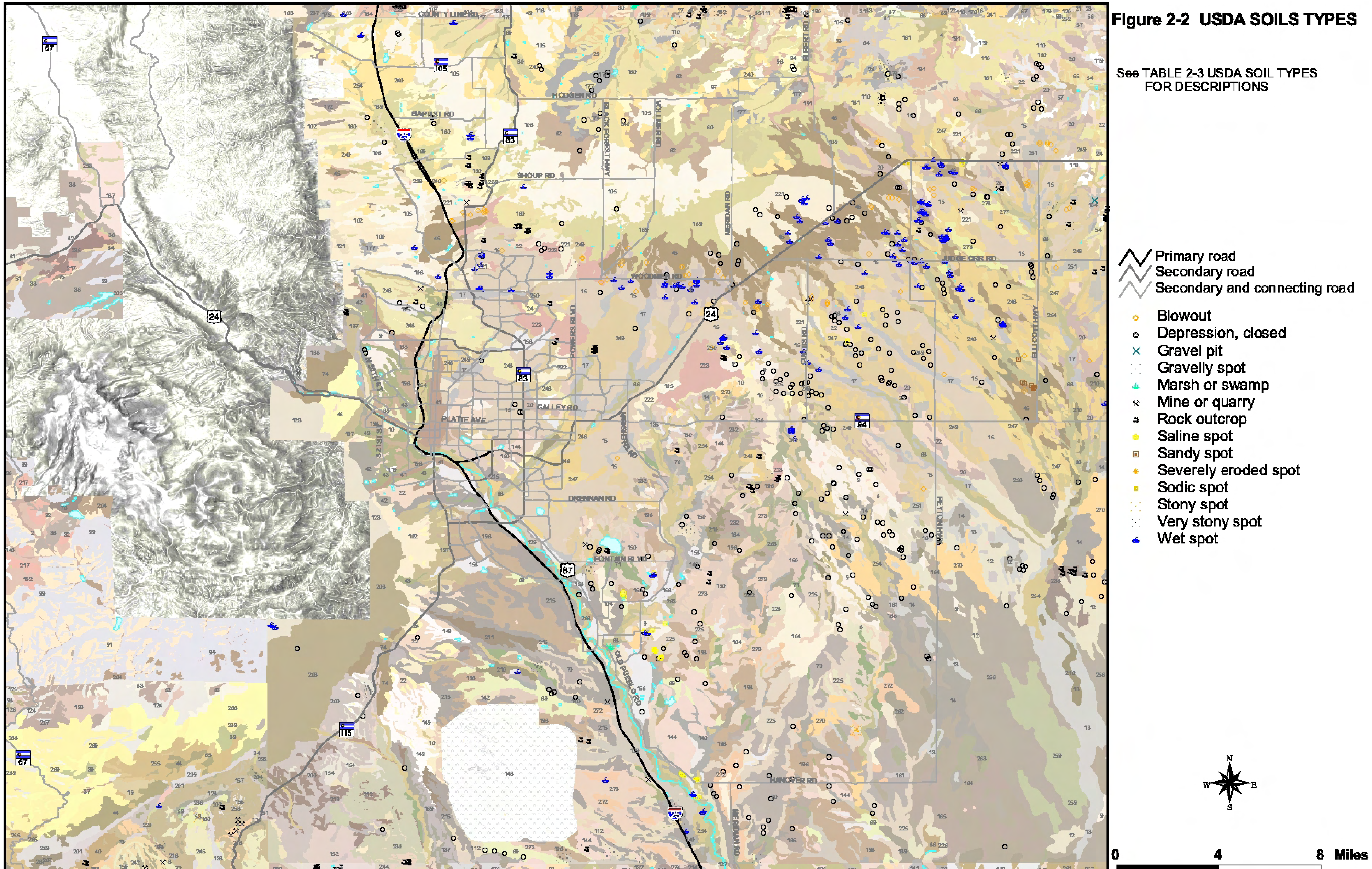

TABLE 3-4: USDA SOIL TYPES

1 - Adderton loam, 2 to 6 % slopes
2 - Adderton-Cryaquolls complex, 0 to 6 % slopes
3 - Adena-Manvel loams
4 - Alamosa loam, 1 to 3 % slopes
5 - Apishapa silty clay
6 - Aquic Ustifluvents
7 - Arvada-Keyner association
8 - Ascalon sandy loam, 1 to 3 % slopes
9 - Ascalon sandy loam, 3 to 9 % slopes
10 - Badland
11 - Bankard sand
12 - Bijou loamy sand, 1 to 8 % slopes
13 - Bijou sandy loam, 1 to 3 % slopes
14 - Bijou sandy loam, 3 to 8 % slopes
15 - Blakeland loamy sand, 1 to 9 % slopes
16 - Blakeland-Fluvaquentic Haplaquolls
17 - Blendon sandy loam, 0 to 3 % slopes
18 - Bluerim-Peyton sandy loams, 8 to 20 % slopes
19 - Boyle very gravelly sandy loam, 10 to 40 % slopes
20 - Bresser sandy loam, 0 to 3 % slopes
21 - Bresser sandy loam, 0 to 4 % slopes
22 - Bresser sandy loam, 3 to 5 % slopes
23 - Bresser sandy loam, 4 to 8 % slopes
24 - Bresser sandy loam, 5 to 9 % slopes
25 - Bresser-Stapleton sandy loams, 8 to 25 % slopes
26 - Bresser-Truckton sandy loams, 8 to 25 % slopes
27 - Brussett loam, 0 to 4 % slopes
28 - Brussett loam, 1 to 3 % slopes
29 - Brussett loam, 3 to 5 % slopes
30 - Brussett loam, 3 to 9 % slopes
31 - Brussett loam, 4 to 8 % slopes
32 - Bushpark-Rock outcrop complex, 40 to 60 % slopes
33 - Bushpark-Seitz association, 15 to 50 % slopes
34 - Cascajo variant gravelly sandy loam, 5 to 12 % slopes
35 - Cascajo very gravelly sandy loam, 5 to 25 % slopes
36 - Cascajo-Shale outcrop complex, 5 to 30 % slopes
37 - Casvare-Teaspoon complex, 20 to 50 % slopes
38 - Catamount-Guffey complex, 15 to 40 % slopes
39 - Cathedral-Rock outcrop complex, 45 to 80 % slopes
40 - Cerrillos gravelly sandy loam, 3 to 8 % slopes
41 - Chaseville gravelly sandy loam, 1 to 8 % slopes
42 - Chaseville gravelly sandy loam, 8 to 40 % slopes
43 - Chaseville-Midway complex
44 - Coaldale very gravelly sandy loam, 20 to 45 % slopes
45 - Columbine gravelly sandy loam, 0 to 3 % slopes
46 - Coni loam, 4 to 15 % slopes
47 - Coni rocky loam, 3 to 100 % slopes
48 - Connerton-Rock outcrop complex, 8 to 90 % slopes
49 - Crowfoot-Tomah sandy loams, 5 to 25 % slopes
50 - Cruckton sandy loam, 1 to 9 % slopes
51 - Cryaquolls, 0 to 3 % slopes
52 - Cumulic Cryaquolls, 2 to 5 % slopes
53 - Curecanti variant extremely cobbly loam, 8 to 20 % slopes, very stony
54 - Cushman loam, 1 to 5 % slopes
55 - Cushman loam, 5 to 15 % slopes
56 - Cushman-Ascalon complex, 4 to 15 % slopes
57 - Cushman-Kutch complex, 3 to 12 % slopes
58 - Cushman-Kutch complex, 8 to 25 % slopes
59 - Dumps and Pits
60 - Elbeth sandy loam, 3 to 8 % slopes
61 - Elbeth sandy loam, 4 to 8 % slopes
62 - Elbeth sandy loam, 8 to 15 % slopes
63 - Elbeth-Kettle complex, 8 to 25 % slopes
64 - Elbeth-Pring complex, 5 to 30 % slopes
65 - Ellicott loamy coarse sand, 0 to 4 % slopes
66 - Ellicott loamy coarse sand, 0 to 5 % slopes
67 - Englewood clay loam, 0 to 4 % slopes
68 - Fluvaquentic Haplaquolls, nearly level
69 - Fluvaquents, nearly level*
70 - Fort Collins loam, 0 to 3 % slopes
71 - Fort Collins loam, 3 to 8 % slopes
72 - Fort Collins loam, cool, 0 to 2 % slopes
73 - Fort Collins loam, cool, 2 to 5 % slopes
74 - Fortwingate-Rock outcrop complex, 15 to 60 % slopes
75 - Fourmile very gravelly coarse sandy loam, 3 to 20 % slopes
76 - Fris cobbly loam, 20 to 50 % slopes
77 - Garber gravelly sandy loam, 5 to 30 % slopes
78 - Gilcrest complex, 3 to 6 % slopes
79 - Gilcrest sandy loam, 0 to 2 % slopes
80 - Glenberg-Haverson complex
81 - Goth gravelly loam, 8 to 40 % slopes
82 - Goth-Cowd association, 8 to 25 % slopes
83 - Granile-Guffey very gravelly sandy loams, 25 to 50 % slopes
84 - Guffey-Herbman association, 5 to 50 % slopes
85 - Haploborolls, very stony-Rock outcrop complex, 40 to 90 % slopes
86 - Haplustolls, loamy, nearly level*
87 - Haplustolls, moderately coarse, nearly level*
88 - Haverson silt loam
89 - Heldt clay loam, 0 to 3 % slopes
90 - Heldt silty clay loam, 2 to 6 % slopes
91 - Herbman gravelly sandy loam, 5 to 55 % slopes
92 - Histic Cryaquolls, 0 to 1 % slopes
93 - Holderness loam, 0 to 4 % slopes
94 - Holderness loam, 1 to 5 % slopes
95 - Holderness loam, 4 to 8 % slopes
96 - Holderness loam, 5 to 8 % slopes
97 - Holderness loam, 8 to 15 % slopes
98 - Hoodle loam, 5 to 20 % slopes
99 - Ivywild-Catamount complex, 30 to 70 % slopes
100 - Jarre gravelly sandy loam, 1 to 8 % slopes
101 - Jarre-Brussett association
102 - Jarre-Tecolote complex, 8 to 65 % slopes
103 - Juget rocky complex, 20 to 65 % slopes
104 - Keith silt loam, 0 to 3 % slopes
105 - Kettle gravelly loamy sand, 3 to 8 % slopes
106 - Kettle gravelly loamy sand, 8 to 40 % slopes
107 - Kettle loamy sand, 5 to 25 % slopes
108 - Kettle loamy sand, 8 to 15 % slopes
109 - Kettle-Falcon complex, 9 to 65 % slopes
110 - Kettle-Rock outcrop complex
111 - Kettle-Rock outcrop complex, 15 to 65 % slopes
112 - Kim loam, 1 to 8 % slopes
113 - Kim loam, 3 to 8 % slopes
114 - Kim loam, cool, 3 to 8 % slopes
115 - Kim-Shingle complex, 3 to 20 % slopes
116 - Kippen and Pring soils, 1 to 12 % slopes, eroded
117 - Kippen loamy sand, 1 to 20 % slopes
118 - Kutch clay loam, 0 to 4 % slopes
119 - Kutch clay loam, 3 to 5 % slopes
120 - Kutch clay loam, 4 to 8 % slopes
121 - Kutch clay loam, 5 to 20 % slopes
122 - Kutch-Louviers complex, 8 to 25 % slopes
123 - Kutler-Broadmoor-Rock outcrop complex, 25 to 90 % slopes
124 - Lakehelen-Rock outcrop complex, 45 to 80 % slopes
125 - Larand very gravelly fine sandy loam, 10 to 40 % slopes
126 - Larkson stony loam, 5 to 20 % slopes
127 - Las Animas fine sandy loam
128 - Libeg extremely cobbly sandy loam, 10 to 20 % slopes
129 - Limon clay, 0 to 3 % slopes
130 - Limon silty clay loam, 0 to 2 % slopes
131 - Limon silty clay, 0 to 2 % slopes
132 - Limon silty clay, 0 to 5 % slopes,gullied
133 - Loamy wet alluvial land
134 - Louviers cobbly clay loam, 5 to 40 % slopes
135 - Louviers silty clay loam, 3 to 18 % slopes
136 - Louviers-Travessilla complex, 20 to 50 % slopes
137 - Manvel loam, 3 to 9 % slopes
138 - Manvel silt loam, 1 to 5 % slopes
139 - Manzanola clay loam, 0 to 1 % slopes
140 - Manzanola clay loam, 1 to 3 % slopes
141 - Manzanola clay loam, 2 to 9 % slopes
142 - Manzanola clay loam, 3 to 9 % slopes
143 - Manzanola silty clay loam, 0 to 2 % slopes
144 - Midway clay loam, 3 to 25 % slopes
145 - Midway-Shale outcrop complex, 1 to 9 % slopes
146 - Military impact area, unsurveyed
147 - Mine spoils
148 - Mined land
149 - Nederland cobbly sandy loam, 9 to 25 % slopes
150 - Nelson-Tassel fine sandy loams, 3 to 18 % slopes
151 - Neville fine sandy loam, 3 to 8 % slopes
152 - Neville fine sandy loam, 8 to 15 % slopes
153 - Neville sandy loam, 3 to 9 % slopes
154 - Neville-Rednun complex, 3 to 9 % slopes
155 - Nunn clay loam, 0 to 2 % slopes
156 - Nunn clay loam, 0 to 3 % slopes
157 - Nunn clay loam, 2 to 8 % slopes
158 - Nunn clay loam, 4 to 8 % slopes
159 - Nunn loam, 2 to 5 % slopes
160 - Nunn stony loam, 3 to 8 % slopes
161 - Olney and Vona soils, eroded
162 - Olney loamy sand
163 - Olney sandy loam
164 - Olney sandy loam, 0 to 3 % slopes
165 - Olney sandy loam, 3 to 5 % slopes
166 - Otero gravelly sandy loam, 3 to 9 % slopes
167 - Otero sandy loam, 1 to 5 % slopes
168 - Paunsaugunt-Rock outcrop complex, 15 to 65 % slopes
169 - Penrose-Manvel complex, 3 to 45 % slopes
170 - Penrose-Minnequa complex, 1 to 15 % slopes
171 - Penrose-Rock outcrop complex, 25 to 65 % slopes
172 - Perrypark gravelly sandy loam, 3 to 9 % slopes
173 - Peyton sandy loam, 1 to 3 % slopes
174 - Peyton sandy loam, 1 to 5 % slopes
175 - Peyton sandy loam, 3 to 9 % slopes
176 - Peyton sandy loam, 4 to 8 % slopes
177 - Peyton sandy loam, 5 to 9 % slopes
178 - Peyton sandy loam, wet, 1 to 5 % slopes
179 - Peyton-Elbeth sandy loams, 8 to 25 % slopes
180 - Peyton-Pring complex, 3 to 8 % slopes
181 - Peyton-Pring complex, 8 to 15 % slopes
182 - Peyton-Pring complex, 8 to 25 % slopes
183 - Peyton-Pring-Crowfoot complex, 3 to 15 % slopes, eroded
184 - Peyton-Pring-Crowfoot sandy loams, 5 to 25 % slopes
185 - Pits, gravel
186 - Playas
187 - Plome-Pimsby-Pimsby north slopes complex, 5 to 40 % slopes
188 - Pring and Kippen gravelly sandy loams, 1 to 25 % slopes
189 - Pring coarse sandy loam, 3 to 8 % slopes
190 - Pring coarse sandy loam, 4 to 8 % slopes
191 - Pring coarse sandy loam, 8 to 15 % slopes
192 - Qaunder-Bushpark very gravelly loams, 5 to 40 % slopes
193 - Raleigh-Rock outcrop complex, 15 to 40 % slopes
194 - Razor clay loam
195 - Razor clay loam, 3 to 9 % slopes
196 - Razor clay, eroded
197 - Razor stony clay loam, 5 to 15 % slopes
198 - Razor-Midway complex
199 - Riverwash
200 - Rizozo-Neville complex, 3 to 30 % slopes
201 - Rizozo-Rock outcrop complex, 15 to 45 % slopes
202 - Rock outcrop
203 - Rock outcrop-Coldcreek-Tolman complex, 9 to 90 % slopes
204 - Rock outcrop-Herbman complex, 20 to 70 % slopes
205 - Rocky Ford silty clay loam, 0 to 1 % slopes
206 - Rocky Ford silty clay loam, wet
207 - Rogert very gravelly sandy loam, warm, 15 to 40 % slopes
208 - Rogert-Rock outcrop complex, 20 to 60 % slopes
209 - Roygorge very gravelly sandy clay loam, 25 to 50 % slopes
210 - Sampson loam, 0 to 3 % slopes
211 - Satanta loam, 0 to 3 % slopes
212 - Satanta loam, 3 to 5 % slopes
213 - Satanta-Neville complex, 3 to 8 % slopes
214 - Schamber gravelly sandy loam, 5 to 25 % slopes
215 - Schamber-Razor complex, 8 to 50 % slopes
216 - Sedillo cobbly sandy loam, 4 to 25 % slopes
217 - Seitz very gravelly loam, 20 to 50 % slopes
218 - Shanta loam, 0 to 3 % slopes
219 - Shingle silty clay loam, 1 to 9 % slopes
220 - Shrine loam, 2 to 8 % slopes
221 - Stapleton sandy loam, 3 to 8 % slopes
222 - Stapleton sandy loam, 8 to 15 % slopes
223 - Stapleton-Bernal sandy loams, 3 to 20 % slopes
224 - Stoneham loam
225 - Stoneham sandy loam, 3 to 8 % slopes
226 - Stoneham sandy loam, 8 to 15 % slopes
227 - Stony rough land
228 - Stony steep land, cold
229 - Stroupe extremely stony loam, 9 to 25 % slopes
230 - Stroupe-Travessilla-Rock outcrop complex, 9 to 90 % slopes
231 - Table Mountain association
232 - Tassel fine sandy loam, 3 to 18 % slopes
233 - Teaspoon very gravelly sandy loam, 15 to 45 % slopes
234 - Tecolote very gravelly sandy loam, 15 to 40 % slopes
235 - Tellura-Seitz complex, 10 to 30 % slopes
236 - Terry sandy loam, 1 to 8 % slopes
237 - Tinytown-Cheeseman complex, 5 to 30 % slopes
238 - Tolex-Larkson complex, warm, 25 to 50 % slopes
239 - Tomah-Crowfoot complex, 8 to 15 % slopes
240 - Tomah-Crowfoot loamy sands, 3 to 8 % slopes
241 - Torriorthents-Rock outcrop complex, steep
242 - Travessilla channery loam, 5 to 20 % slopes
243 - Travessilla sandy loam, 1 to 9 % slopes
244 - Travessilla-Rock outcrop complex, 30 to 90 % slopes
245 - Travessilla-Rock outcrop complex, 5 to 50 % slopes
246 - Travessilla-Rock outcrop complex, 8 to 90 % slopes
247 - Truckton loamy sand, 1 to 9 % slopes
248 - Truckton sandy loam, 0 to 3 % slopes
249 - Truckton sandy loam, 3 to 9 % slopes
250 - Truckton-Blakeland complex, 9 to 20 % slopes
251 - Truckton-Bresser complex, eroded
252 - Truckton-Renohill complex, 8 to 25 % slopes
253 - Typic Haplustolls, 3 to 8 % slopes
254 - Ustic Torrifluvents, loamy
255 - Ustic Torriorthents, bouldery-Rock outcrop complex, 35 to 90 % slopes
256 - Ustic Torriorthents-Sedillo complex, 15 to 40 % slopes
257 - Valent loamy sand
258 - Valent sand, 1 to 9 % slopes
259 - Valent sand, 9 to 20 % slopes
260 - Vona loamy sand
261 - Vona sandy loam
262 - Vona sandy loam, 1 to 3 % slopes
263 - Vona sandy loam, 3 to 9 % slopes
264 - Wages loam, 2 to 9 % slopes
265 - Wahatoya-Tolex complex, 25 to 55 % slopes
266 - Water
267 - Wesix very channery loam, 5 to 40 % slopes
268 - Wetmore-Bundo, dry-Rock outcrop complex, 35 to 75 % slopes
269 - Wetmore-Rock outcrop complex, 40 to 80 % slopes
270 - Wigton loamy sand, 1 to 8 % slopes
271 - Wiley loam, cool, 2 to 6 % slopes
272 - Wiley silt loam, 1 to 3 % slopes
273 - Wiley silt loam, 3 to 9 % slopes
274 - Wiley-Kim loams
275 - Wormser silt loam
276 - Yoder gravelly sandy loam, 1 to 8 % slopes
277 - Yoder gravelly sandy loam, 8 to 25 % slopes

Vegetation

Vegetation impacts from a highway improvement project have ecological and aesthetic implications. Several vegetation-related issues are the focus of specific federal and state legislation including noxious weeds, wetlands and wildlife habitat. Re-vegetation of disturbed surfaces is an important erosion-control measure for water quality purposes. Vegetation communities within the area are highly influenced by existing interstates, roads and urban development. Vegetation communities included in the study area are:

TABLE 3-5: COMMUNITY VEGETATION TYPES

Vegetation Habitat	Description
Agricultural	Consist of dryland crop or irrigated cropland. Winter wheat is the major dryland crop, while corn, alfalfa and sugar beets are the main irrigated crops.
Grassland	Consist of short, mid-, tall- or mixed grass prairie. The animals that live in the grasslands are black-tailed prairie dogs, pronghorn sheep, swift fox, jackrabbits, lizards, and snakes.
Riparian Woodland	Consist of two types: lowland riparian and foothills.
Pinyon-Juniper Woodland	Consists of evergreen woodland situated at a higher elevation than grassland vegetation and below montane forest and shrub (from 4,500 to 7,500 ft.)
Montane Shrubland	These shrublands are generally the transition state between grasslands and forested area and occur in the lower foothills. Consist of several different vegetative associations, dominated by Gambel Oak
Montane Forest	Primarily in the western section and is home to bats, chipmunks, squirrels, martins, elk, mule deer, and many types of birds.
Urban/Built-Up Area	These lands include major cities small towns, suburban residential areas, and rural residential areas. Vegetation does occur in these areas along with different types of wildlife.

Source: Section 4.0, Wildlife, ACOE Fountain Creek Watershed Study Report (2006)

These vegetation types are described in more detail in the ACOE (2006) Report and are shown in Figure 3-4.

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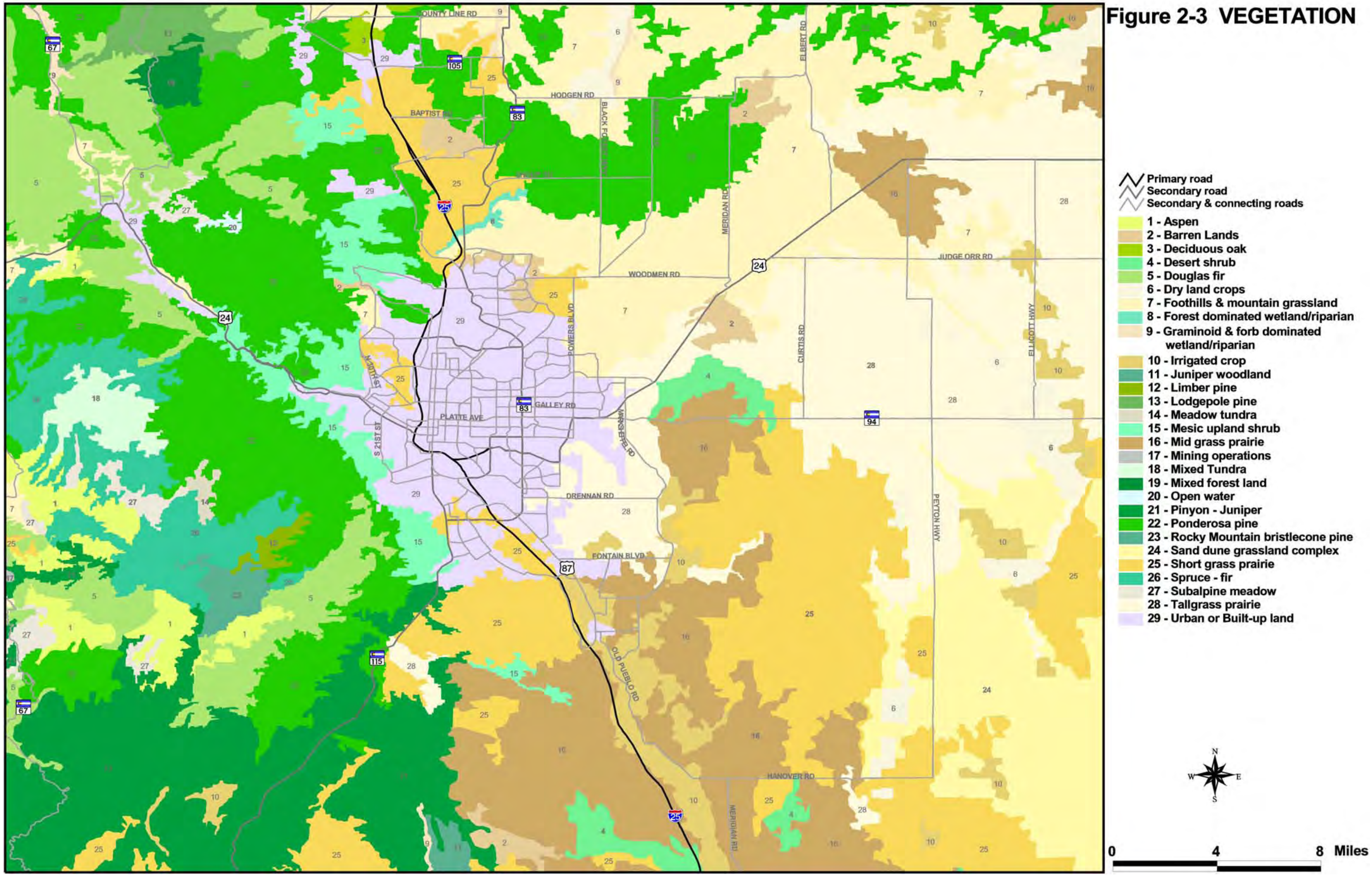
FIGURE 3-4: VEGETATION



Pikes Peak Area Council of Governments
Communities Working Together

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Wetlands

Wetlands are defined as land where water saturation is the dominant factor determining soil development, the hydrology of the area, and the types of plants and animals living in these areas. Wetlands have a direct effect on the types of plant and animal communities living in and around the environment. Wetlands are an extremely important habitat for many species, including birds, reptiles, and amphibians, as well as providing a food and water source for many of the mammals which live in the riparian woodlands. They are also an important link in migratory corridors.

Wetlands are essential biological resources that provide many ecological services. They are integral in recharging groundwater supply, alleviating stress on land from flooding, controlling erosion, improving water quality, and are an important habitat for wildlife, including endangered species. These benefits can have more important impacts in developed areas where the contributions of wetlands services are greatly needed.

The Fountain Creek Watershed currently has 9,336 acres of wetlands (ACOE, 2006). The majority of this is in the Colorado Springs area, but there are vital areas outside too. Wetlands are described according to the four distinct sub-watershed boundaries shown in Figure 3-5. Table 3-6 shows a wetlands inventory, current and historic wetland types based on the four sub-watershed boundaries.

- **MONUMENT CREEK SUB-WATERSHED** has a total of 2,041 acres of wetlands. The wetlands in this area are generally healthy and support a diverse wildlife habitat, which provide many services for the surrounding areas.

- **FOUNTAIN CREEK SUB-WATERSHED** with a total of 276 acres of wetlands is comparatively small to the amount of wetlands in the other three watersheds. This is primarily due to the fact that the terrain is very rocky.

- **COLORADO SPRINGS COMPOSITE SUB-WATERSHED** has the largest area of wetlands with 3,950 acres of wetlands. This area, although it has the most wetland area, is also the most highly developed. Many of the historical wetlands of this area have dried up due to changes in stream flow. The areas of wetlands that are degraded provide little ecological benefit, but there are still some areas which are providing ecological services and creating wildlife habitat. This sub-watershed also holds the greatest potential for wetland restoration.

- **LOWER FOUNTAIN CREEK SUB-WATERSHED** has the second largest areas of wetlands of the four sub-watersheds with an area of 3,069 acres. Because there is less development in this watershed, some of the wetlands retain their health, but the changing in water flow has also affected the quality of some of the wetlands in this area.

FIGURE 3-5: FOUNTAIN CREEK SUB WATERSHED

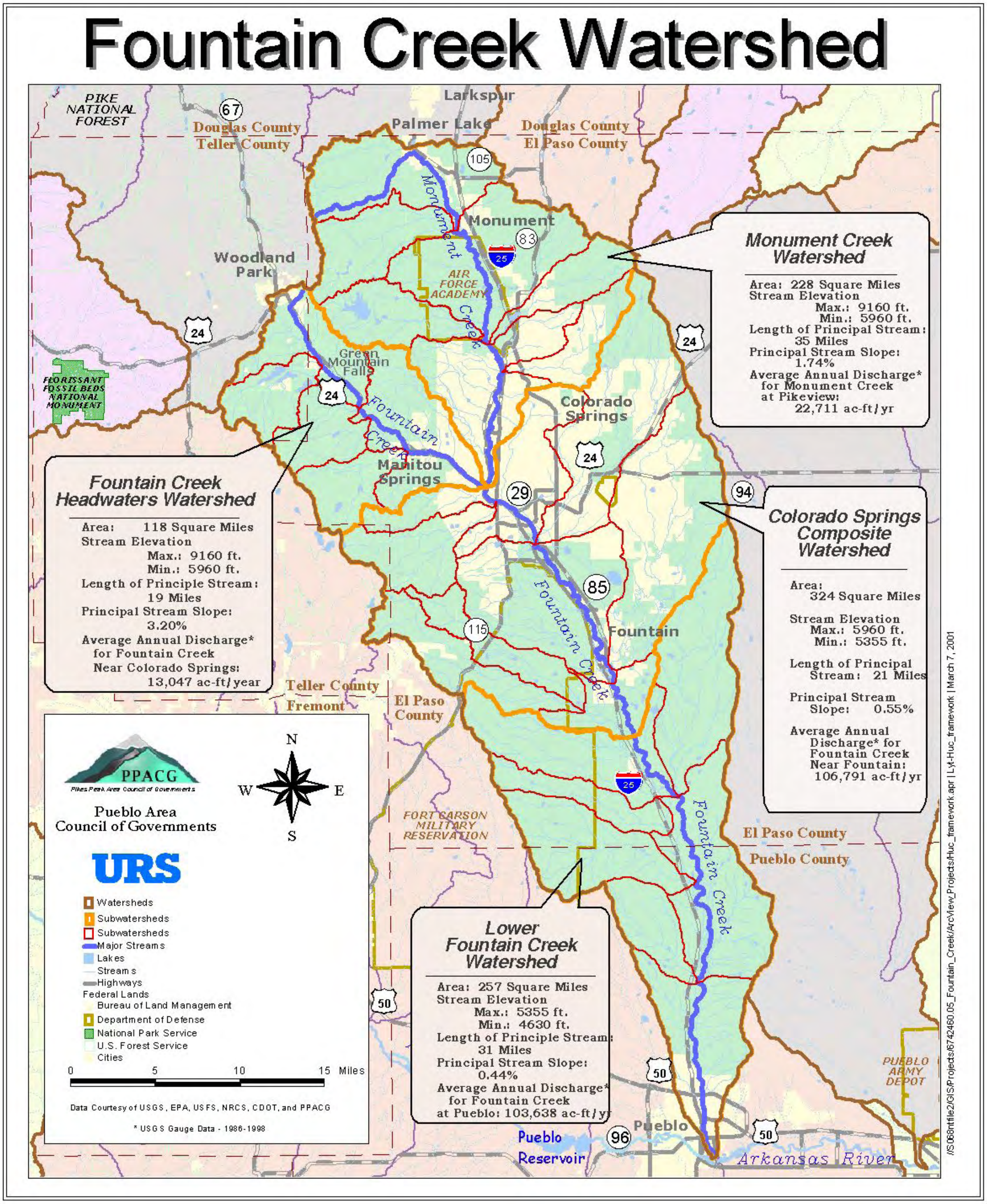


TABLE 3-6: WETLAND INVENTORY

Sub-Watershed	Amount of Wetlands (acres)							
	Historic Wetland Type [1]				Current Wetland Type [1]			
	PEM	PSS	PFO	Total	PEM	PSS	PFO	Total
Monument Creek	329	389	32	**750**	1,393	648	0	**2,041**
Fountain Creek Headwater	149	147	0	**296**	192	84	0	**276**
Colorado Springs Composite	155	454	493	**1,102**	3,818	132	0	**3,950**
Lower Fountain Creek	599	2,073	517	**3,189**	2,954	115	0	**3,069**
Total	**1,232**	**3,063**	**1,042**	**5,337**	**8,357**	**979**	**0**	**9,336**

Source: Section 3.0, Wetlands, ACOE Fountain Creek Watershed Study Report (2006).

[1] *According to Cowardin et al (1979), plaustrine emergent is PEM, plaustrine scrubshrub is PSS and plaustrine forested is PFO.*

Hazardous Materials and Solid Waste

Information provided below is based on a search of federal and state databases for hazardous materials that was conducted for the ACOE (2006) Watershed Report. This included a description of each database that lists addresses of known underground storage tanks (USTs), leaking USTs, landfills, hazardous waste generation or treatment, storage and disposal facilities, and subsurface contamination. A summary of that information is presented below. The goal is to have facilities that have known and documented environmental conditions that may negatively impact the watershed.

There are approximately 5,000 sites listed on the database within the area., of which using the criteria listed above, 71 sites were deemed by professional opinion as the facilities that would have the most negative environmental impact (ACOE, 2006). These are shown on Figure 3-6 and included:

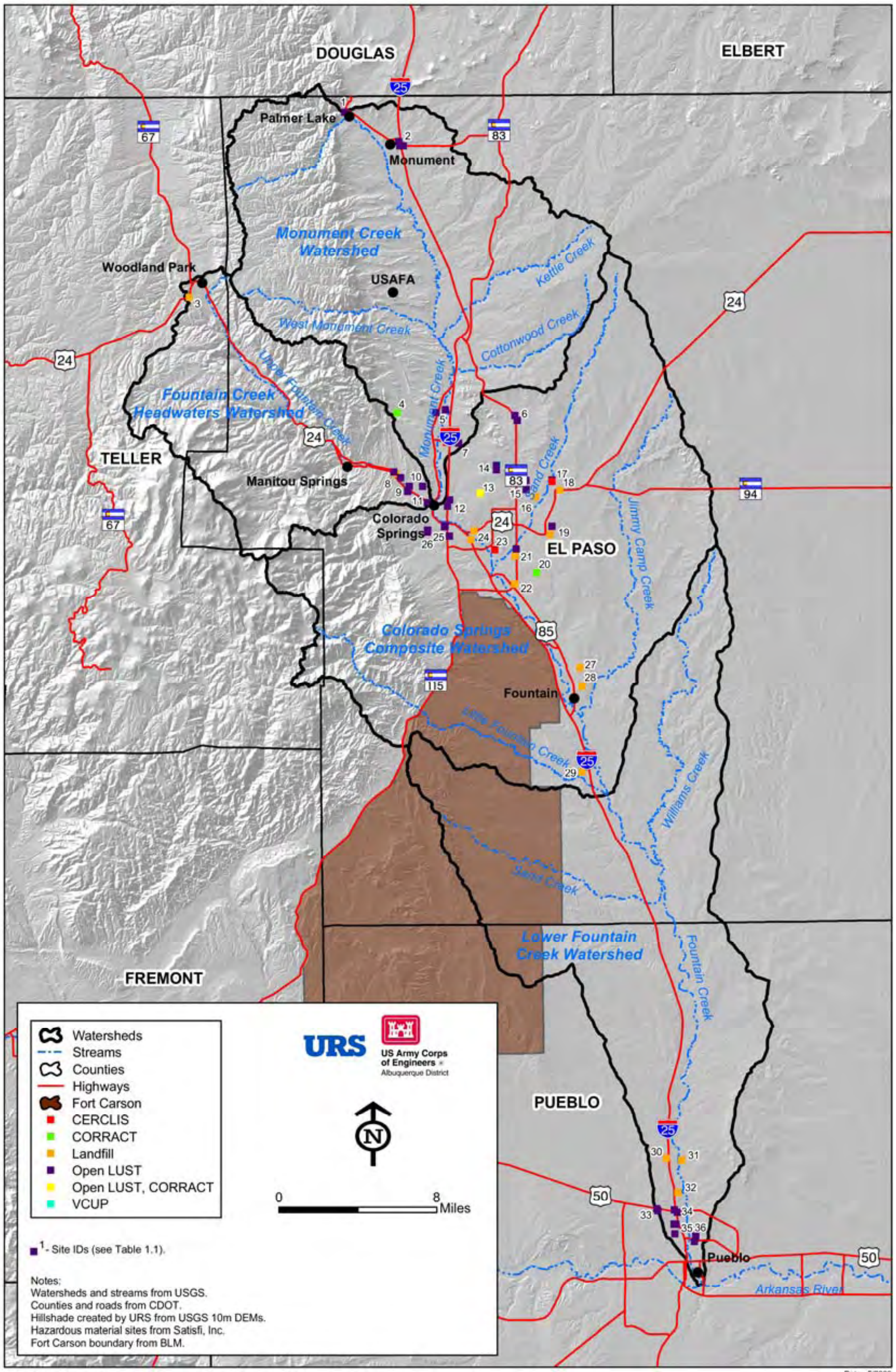
- **43 open Leaking Underground Storage Tanks (LUST) sites –** described as facilities, usually service stations, with aboveground or underground storage tank leaks of petroleum products. Potential impacts include impacts on surrounding soils and groundwater.

- **21 Landfills –** includes solid waste facilities that have received permits from the state, and may be currently in use or closed.

- **3 Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) sites –** sites being assessed by the EPA for possible inclusion on the National Priority List. These sites include the Fillmore and Cascade PCE Plume, High Quality Circuits and the Galley Road Dump Site.

- **3 Corrective Action (CORRACT) sites –** this includes sites that have hazardous waste violations, often involving contamination of soil or groundwater. These sites include the Ingersoll-Rand Security and Safety facility, Hewlett-Packard and the Lory-Oil Company.

FIGURE 3-6: HAZARDOUS MATERIALS



Seismic Zones and Topographic Impacts

The level of seismicity in Colorado has been characterized as being low to moderate due in part to the lack of adequate seismographic coverage in the state, and a number of sizable earthquakes which have occurred in the historical or more recent record. The largest known historical earthquake in Colorado was on November 8, 1982 which had an estimated magnitude of 6.6 and was located in north-central Colorado. Earthquakes in Colorado are induced by disposal of waste fluids and secondary oil-recovery in western Colorado. A swarm of earthquakes, including one of magnitude 4.6, occurred near Trinidad in the fall of 2001 (closest and largest known earthquake to Colorado Springs).

The MPO boundaries cover a diverse terrain and elevations can range from 14,100 feet at the summit of Pikes Peak to 4,600 feet in Pueblo. The natural topographic limitations set by steep terrain can have a large impact on potential transportation projects, both in terms or financial and environmental impact.

Biological Resources

Wildlife Species, Viewing Areas and Crossings

The study area supports a high diversity of wildlife that inhabits one or more of the available habitats. These include:

- **BIG GAME –** these are managed by Colorado Division of Wildlife (CDOW) for seasonal hunting. These include hoofed animals such as mule deer, white-tailed deer, pronghorn, American Elk, Bighorn or Mountain Sheep, Black Bear and Mountain Lion.

- **SMALL OR MEDIUM SIZED CARNIVORES –** Medium-sized animals known to inhabit the study area include carnivores such as bobcat, coyote, red fox, swift fox, gray fox, and raccoon, short-tailed and long-tailed weasels, mink, ringtail and skunk.

- **SMALL MAMMALS –** Small mammals inhabiting the study area include bats, rabbits, hares, rodents and shrews.

- **BIRDS –** The most common bird species in the study area are the American Robin, the Mourning dove, the Western Meadowlark, and the Lark Bunting.

Wildlife crossings can be an effective method to ensure both animal and human well-being. Automobile collisions with wildlife are not only fatal for the animal, but to the passengers of the automobile as well.

Threatened and Endangered Species

The 2035 Regional Transportation Plan will have an effect on many of these habitats, and with that is the potential for harming threatened and endangered species. These species fall under the special status designated by federal and state governments. Table 3-7 identifies the threatened and endangered species in the area that are currently present or at one time used the watershed for their habitat, and there are potential restoration opportunities. Sub-watershed boundaries referenced in the Table are shown in Figure 3-5.

Of special note is the Preble's Meadow Jumping Mouse, whose only native habitat is the boundary between the Great Plains and Rocky Mountain in Colorado and Wyoming. New and existing transportation projects are shown to negatively affect the Preble's Meadow Jumping Mouse's territory. Habitat fragmentation is a serious concern as roadways and bridges create artificial boundaries.

TABLE 3-7: THREATENED AND ENDANGERED SPECIES

Common Name	Scientific Name	Federal Status	State Status	Sub-Watersheds				Occurrence and Habitat
				MC	UFC	CSC	LFC	
FISH								
Arkansas Darter	*Etheostoma cragini*	C	T	*	*	X	X	
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	T	T		X			
Pallid Sturgeon	*Scaphirhynchus albus*	E	--	*	*	*	*	Downstream
BIRDS								
Bald Eagle	*Haliaeetus leusoephalus*	T	T		X	X	X	Winter foraging in riparian areas
Burrowing Owl	*Athene cunicularia*	--	T			X	X	Shortgrass prairie
Interior Least Tern	*Sterna sntillarum athalassos*	E	E	*	*	*	*	Migratory, habitats downstream
Lesser Prairie Chicken	*Tympanuchus pallidicinctus*	C	T					Winter presence in grasslands
Mexican Spotted Owl	*Strix occidentalis lucida*	T	T	X	X	X		Montaine forest, woodlands
Piping plover	*Charadrius melodus*	T	T					Habitats downstream
Whooping Crane	*Grus americana*	E	E					Old migratory corridor
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	C	--		X	X	X	Possibility of being present
MAMMALS								
Black-footed ferret	*Mustela nigripes*	E	E					Old habitat

Common Name	Scientific Name	Federal Status	State Status	Sub-Watersheds				Occurrence and Habitat
				MC	UFC	CSC	LFC	
Canada Lynx	*Lynx Canadensis*	T	E					Re-introduced, alpine
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	T	T	X	X	X	X	Riparian areas and grasslands
PLANTS								
Colorado Butterfly Plant	*Gaura neomexicana ssp. coloradensis*	T	--	X		X	X	Floodplains and prairies
Slender moonwort	*Botrychium lineare*	C	--		X			
Ute ladies'-tresses	*Spiranthes diluvalis*	T	--		X			Wetlands

Source: Section 5.0, Threatened & endangered Species, ACOE Watershed Study (2006)

T/E = Threatened/Endangered C = Candidate for federal listing X = Species habitat occurs in region

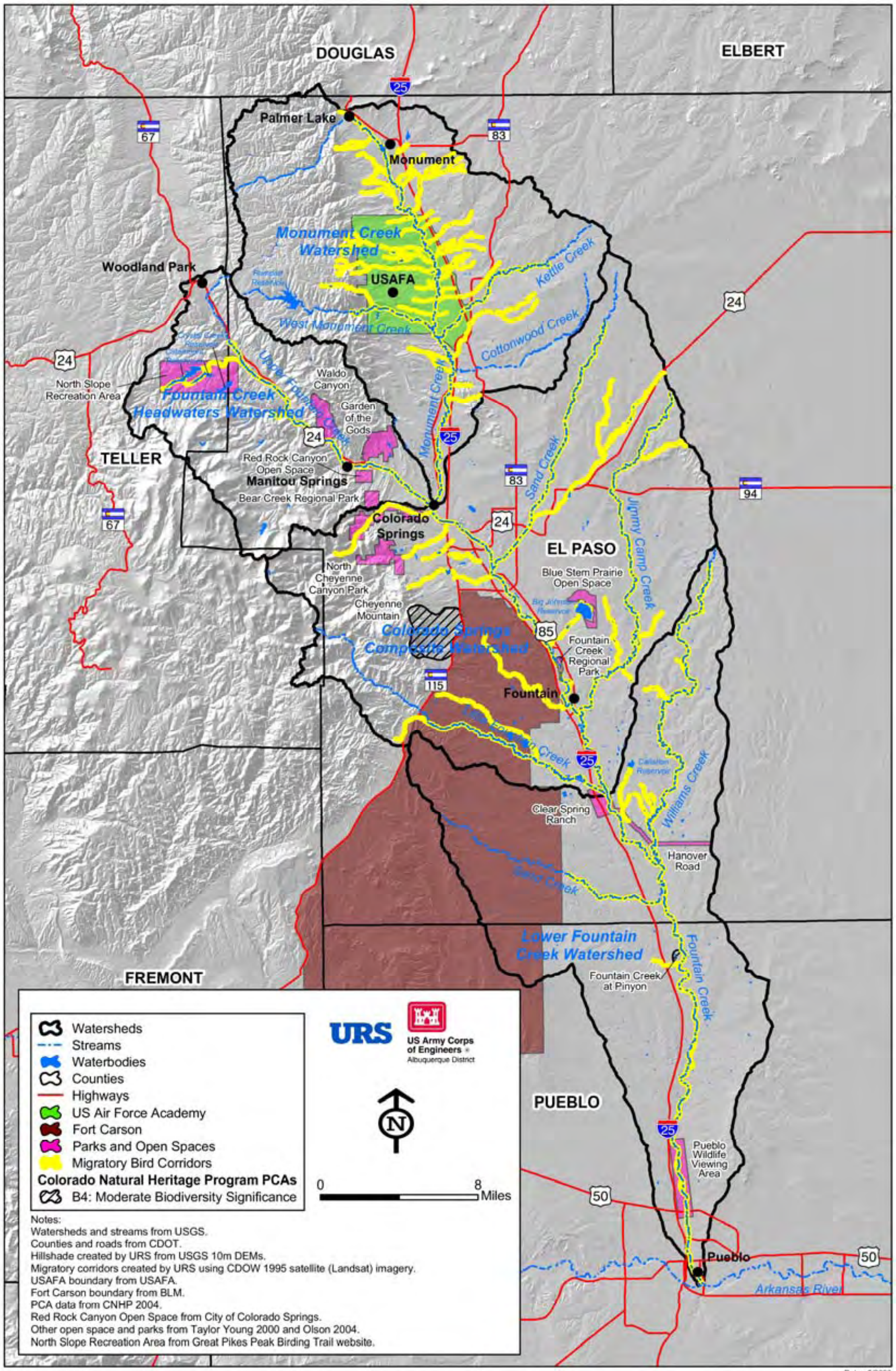
** = Projects may affect species' habitat downstream*

Migratory Populations

Waterways, specifically those along the mountains are crucial habitats for migrating animals and help their ability to travel long or short distances depending on the species. Most of the migrating species of concern are bird species and birds migrate for a variety of reasons. Figure 3-7 shows the Migratory Bird Corridors and Stopovers. The primary reason is food availability, but they also migrate to find mates or proper nesting grounds and material. Studies have shown that it is not critical for migrating birds to have a safe corridor to travel through, just that they have a safe habitat on either side. However, recent studies have shown that there are more than one species of bird which need protected migratory corridors in order to have a successful migration.

Other migrating animals include reptiles, amphibians, birds, and some mammals. Development, including roads, is the largest inhibitor to reptile and amphibian migration, along with nearby water sources. For birds, migration patters can vary, and the timing of different birds can be very different depending on the type of bird, and where they are traveling from. Migrating birds generally utilize wetlands and grasslands to stop on their routes, and impacts on these areas may greatly affect the species. Nearly all birds are protected under the Migratory Bird Treaty Act, a federal act administered by the United States Fish & Wildlife Service (USFWS) which prohibits disturbance or destruction to an active nest, nesting birds, or their eggs or young. This applies to all birds (including raptors), except non-native species including house sparrow, European starling, rock dove and game birds.

FIGURE 3-7: MIGRATORY BIRD CORRIDORS AND STOPOVER SITE



Invasive Species

Invasive species may have negative impacts upon crops, native plant communities, livestock, and the management of natural or agricultural systems. Federal and State of Colorado regulations address the noxious weed problem. One example is the Colorado Noxious Weed Act (CRS, Title 35, Article 5.5). CDOT is one of the agencies specifically tasked with responsibilities for noxious weed management. The eleven noxious weed species reported by each county in the region in 2004 to the Colorado Department of Agriculture (CDA) are (these are included on the 40 listed on the CDA state noxious weed list): Chinese clematis; Diffuse knapweed; Hoary cress; Leafy spurge; Orange hawkweed; Perennial pepperwood; Russian knapweed; Russian olive; Saltcedar; Spotted knapweed; and Yellow toadflax.

Saltcedar is an important noxious weed in Pueblo and southern El Paso counties and can create dense monocultures on riverbanks, and transpire larger amounts of water than the displaced natural wetland.

The typical floodplain along Fountain Creek in Pueblo and southern El Paso counties contains many areas invaded by both Saltcedar and Russian olive. Saltcedar was observed at eight locations in southern El Paso County during field visits including five in the Colorado Springs Region and three in Northern Pueblo County. The CDA show Russian olive along Fountain Creek only in Pueblo County, however field observations show it extending into southern El Paso County similar to Saltcedar. Locations are shown in the Table 3-8 based on the sub-watershed boundaries found on Figure 3-5. Figures 3-8 and 3-9 show the location of some of the more common Invasive Plants.

Table 3-8: Observations of Noxious Weeds

Common Name	Observations in Sub-Watersheds			
	MC (out of 8 sites)	FCH (out of 5 sites)	CSC (out of 12 sites)	LFC (out of 12 sites)
Diffuse knapweed	4	0	0	1
Leafy spurge	0	0	1	1
Perennial pepperwood	0	0	1	5
Russian olive	1	0	8	8
Saltcedar	0	0	5	10
Spotted knapweed	2	1	1	0
Yellow toadflax	3	0	0	0
Canada thistle	8	3	8	10
Munk thistle	4	1	0	1
Bull thistle	2	0	0	0
Bouncingbet	0	2	1	0
Scotch thistle	0	0	1	1

Source: Section 3.0, Wetlands, ACOE Fountain Creek Watershed Study Report (2006)

FIGURE 3-8: INVASIVE PLANTS–SALTCEDAR AND DIFFUSE KNAPWEED

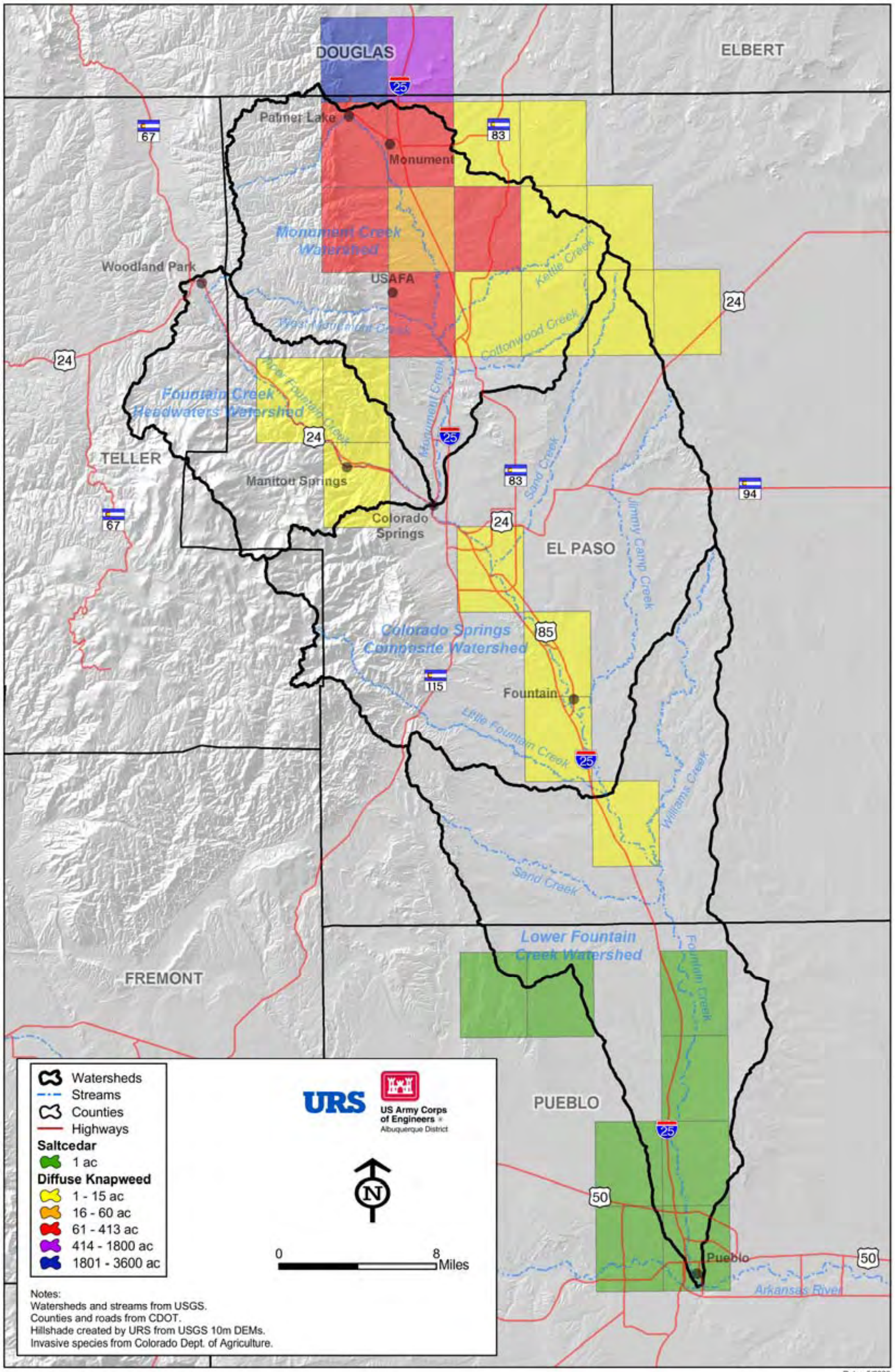
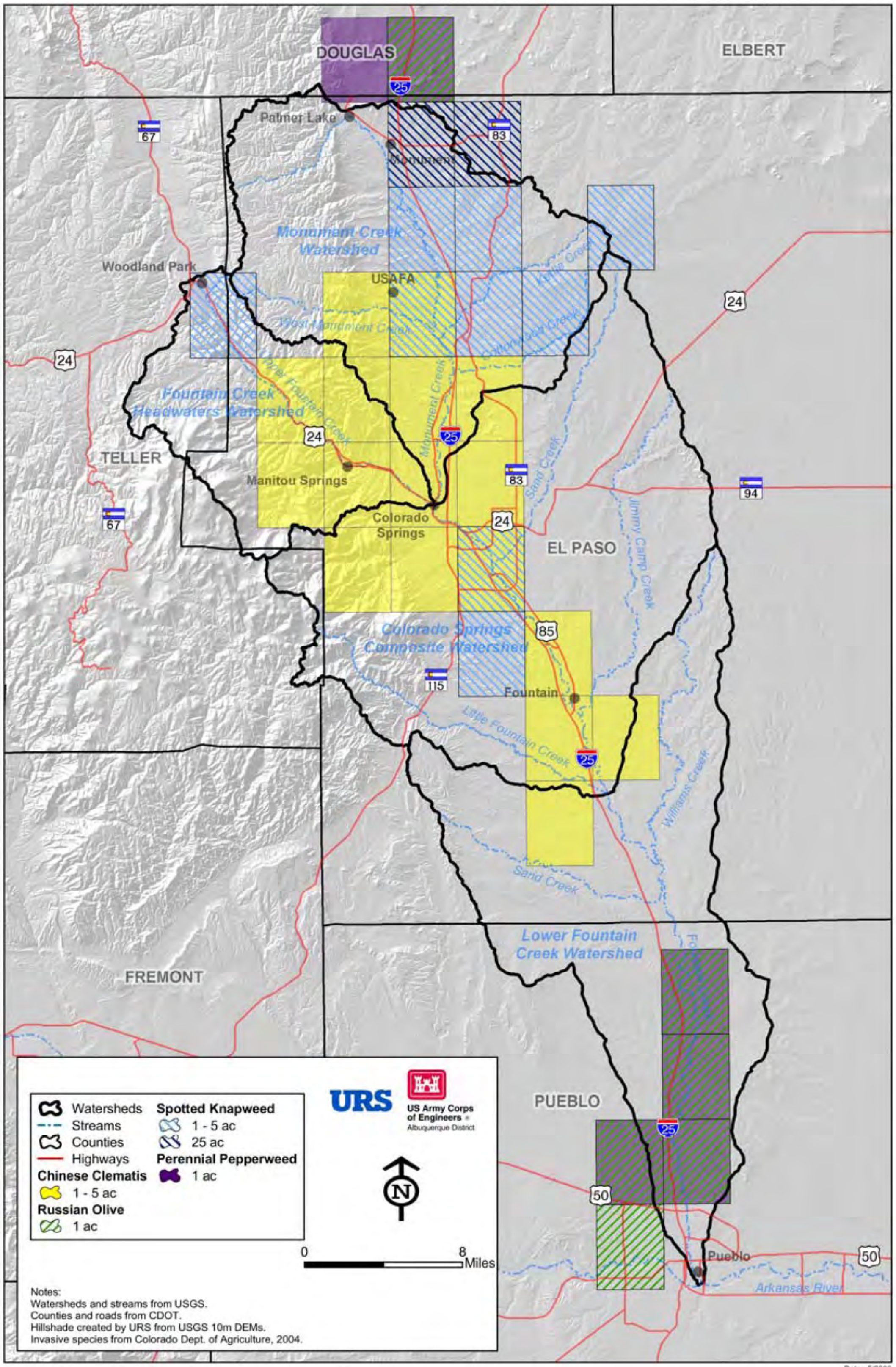


FIGURE 3-9: INVASIVE PLANTS – SECOND FIGURE



Surface Water and Groundwater Issues

Stormwater Runoff and Impervious Surfaces

When looking at the effects of road improvement on the water quality, several important factors must be examined. Due to the nature of a watershed, these issues are all closely related. The construction and improvement of roads results in drastic increases of the amount of impervious surface areas, which has many effects on the watershed. The increase in impervious surfaces creates more surface run-off, increasing the amount of sediment and chemicals that run into the waterways, as well as increasing the amount of water in streams, which could lead to channelization and flooding. Even though they are closely related, each issue will be addressed separately so that each specific issue can be reviewed and mitigation opportunities can be explored.

The quantity of water in a stream varies seasonally depending on the amount of precipitation and upstream flow, but is very important to the health of the stream. As outlined in the Fountain Creek Watershed Plan, there are three distinct flows in the Monument and Fountain Creeks: base flow, snowmelt, and summer flow.

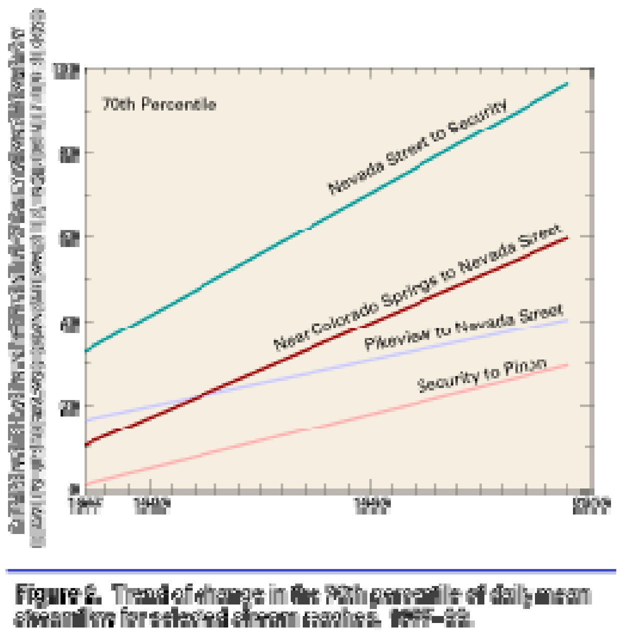
- Base flow usually occurs from late September until mid-April and flows are fairly consistent, without much fluctuation.
- Snowmelt begins in mid-April and lasts until mid June and flows are significantly higher and peak around mid-May, with April and May usually being the highest precipitation months.
- Summer flow begins in mid-June and lasts until the end of September and is usually highly variable due to afternoon and evening thunderstorms.

Increased flows may lead to channelization, which in-cuts the banks of the stream and contributes to habitat loss as well as increased incidence for flooding. Stream morphology can also change dramatically due to streamflow and deposition, and the more water there is, the more dramatic effects that water can have on the quantity of the stream. Decreased flows can greatly reduce habitat and are indicators that the habitat is being affected in some way. Also, with a low level of water in a stream, there is less water for pollutants to be diluted in, so the concentrations of pollutants are higher, therefore having more effect.

Because the largest controlling factor for water quantity is precipitation, the trends in precipitation must be understood to be able to correctly interpret the trends in overall water quantity. Generally, precipitation has been increasing gradually, but this increase has been seen only in the spring months, and is not necessarily the result of other seasonal changes. The USGS reports that the highest stream flow data ever recorded occurred during the period between 1994 and 1997. But, starting in 1977, the average annual flows have been increasing at all gauging sites, but not at the same rate. These changing rates have been attributed to the changes in land use the watershed has undergone, increasing the impermeable surface rates as well as the general overland flow, putting more water into the streams.

Figure 3-10 shows the trend of change in the 70th percentile of daily mean stream flow. The selected stream segments are good representations of the entire area, and it is clear that the quantity of water is rising in the overall watershed. Streamflow trend graphs show base flow fluctuating with a general trend increasing, but over the past few years the trend has been going back towards its original state.

FIGURE 3-10: STREAMFLOW TREND CHANGE



Source: Stogner, 2000

Imperviousness occurs when there are too many impenetrable surfaces and as a result, precipitation cannot flow into the ground through surface pores. Impervious surfaces are mainly caused by roofs and asphalt and concrete surfaces specifically from the transportation system. Too much surface runoff can have detrimental effects on watersheds, causing an increase in erosion, sedimentation, increase in flood prone areas due to altered stream flow, and the prevention of refilling the natural underground water system because of the overland flow instead of infiltration. These changes to the flow of water can result in serious transformations in the shape and integrity of streams and will cause them to lose their ecological value to the system.

The imperviousness of the land will be changed by the 2035 Regional Transportation Plan by increasing the amount of concrete and asphalt and therefore increasing the amount of runoff into the rivers. Table 3-9 shows the current and future amount of impervious surface area in each of the sub-watersheds.

TABLE 3-9: CURRENT AND FUTURE IMPERVIOUS SURFACE AREA

	Code Id	Square Miles	% Impervious Surface Area		Difference
			Current	Future	
Fountain Creek Headwaters					
Upper Fountain Composite	FC1	26	8.0	9.0	**1.0**
Reservoirs Composite	FC2	18	5.0	5.0	0.0
Manitou Reservoir Composite	FC3	18	1.0	1.0	0.0
Garden of the Gods Composite	FC4	39	14.0	14.0	0.0
Ruxton Creek	FC5	18	1.0	1.0	0.0
Monument Creek					
North Monument Creek	MC1	43	9.0	12.0	**3.0**
Beaver Creek	MC2	27	2.0	2.0	0.0
Monument Creek Headwaters	MC3	56	9.0	16.0	**7.0**
West Monument Creek	MC4	24	5.0	5.0	0.0
Kettle Creek	MC5	17	9.0	17.0	**8.0**
Lower Monument Composite	MC6	44	39.0	42.0	**3.0**
Cottonwood Creek	MC7	18	29.0	44.0	**15.0**
Colorado Springs Composite					
Cheyenne Creek	CSC1	25	6.0	6.0	0.0
Colorado Springs Composite	CSC2	45	45.0	45.0	0.0
Upper Little Fountain Creek	CSC3	27	1.0	2.0	**1.0**
Rock Creek	CSC4	20	5.0	5.0	0.0
Cheyenne Mountain Composite	CSC5	62	26.0	28.0	**2.0**
Sand Creek	CSC6	59	27.0	43.0	**16.0**
Jimmy Camp Creek	CSC7	69	7.0	37.0	**30.0**
Little Fountain Bottom Composite	CSC8	17	10.0	18.0	**8.0**
Lower Fountain Creek					
Racetrack Composite	LFC1	41	6.0	6.0	0.0
Lower Sand Creek	LFC2	17	5.0	5.0	0.0
Young Hollow	LFC3	38	1.0	1.0	0.0
Williams Creek	LFC4	50	1.0	1.0	0.0
Pinon Composite	LFC5	53	1.0	1.0	0.0
Steele Hollow	LFC6	18	1.0	1.0	0.0
Bragdon Composite	LFC7	40	8.0	19.0	**11.0**

Source: Fountain Creek Watershed: Impervious Surface Area and Watershed Health Analysis (PPACG, 2005)

The effects of this imperviousness specifically on waterways will be the effect it has on the streams. Table 3-10 outlines the general conditions of streams at different levels of imperviousness. Figure 3-11 shows current levels of impervious surface area and Figure 3-12 future levels of impervious surface area. The different classification levels outline the characteristics of the stream and the resulting objectives and enforcements that should be put into effect. Figure 3-13 shows the major streams and creeks.

TABLE 3-10: STREAM SYSTEM CHANGES FROM IMPERVIOUS SURFACE AREA

Urban Stream Classification	Sensitive (0-10% Impervious)	Impacted (11-25% Impervious)	Non-Supporting (26 –60% Impervious)
Channel Stability	Stable	Unstable	Highly Unstable
Water Quality	Good	Fair	Fair-Poor
Stream Biodiversity	Good-Excellent	Fair-Good	Poor
Resource Objective	Protect biodiversity and channel stability	Maintain critical elements of stream quality	Minimize downstream pollutant loads
Water Quality Objectives	Sediment and temperature	Nutrient and metal loads	Control bacteria
Land Use Objectives	Watershed-wide impervious cover limits	Site impervious cover limits	Additional infill and redevelopment encouraged
Monitoring And Enforcement	GIS monitoring of impervious cover	GIS monitoring of impervious cover	Pollutant load modeling
Riparian Buffers	Widest buffer network	Average buffer width	Greenways

Table 3-11 shows changes in Impervious Surface Area. The amount of sensitive watersheds is greatly reduced, while both impacted and non-supporting watersheds are projected to increase.

TABLE 3-11: CURRENT AND FUTURE IMPERVIOUS SURFACE AREA CLASSIFICATIONS

	Current	Future
Sensitive (0 – 10%)	21	15
Impacted (11 – 25%)	1	6
Non-Supporting (26 – 100%)	5	6

FIGURE 3-11: FOUNTAIN CREEK SUBWATERSHED ANALYSIS: CURRENT IMPERVIOUS SURFACE AREA

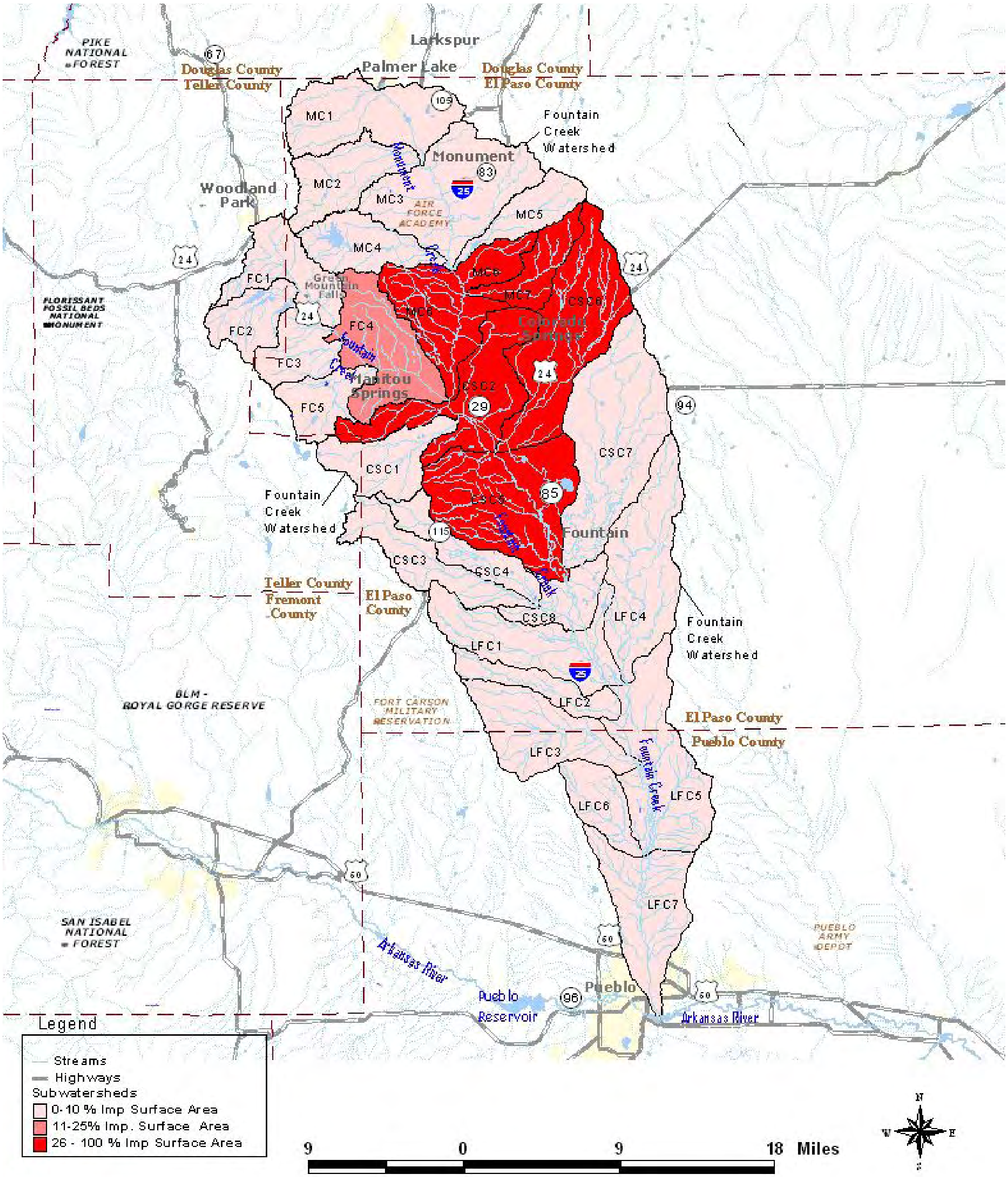


FIGURE 3-12: FOUNTAIN CREEK SUBWATERSHED ANALYSIS: FUTURE IMPERVIOUS SURFACE AREA

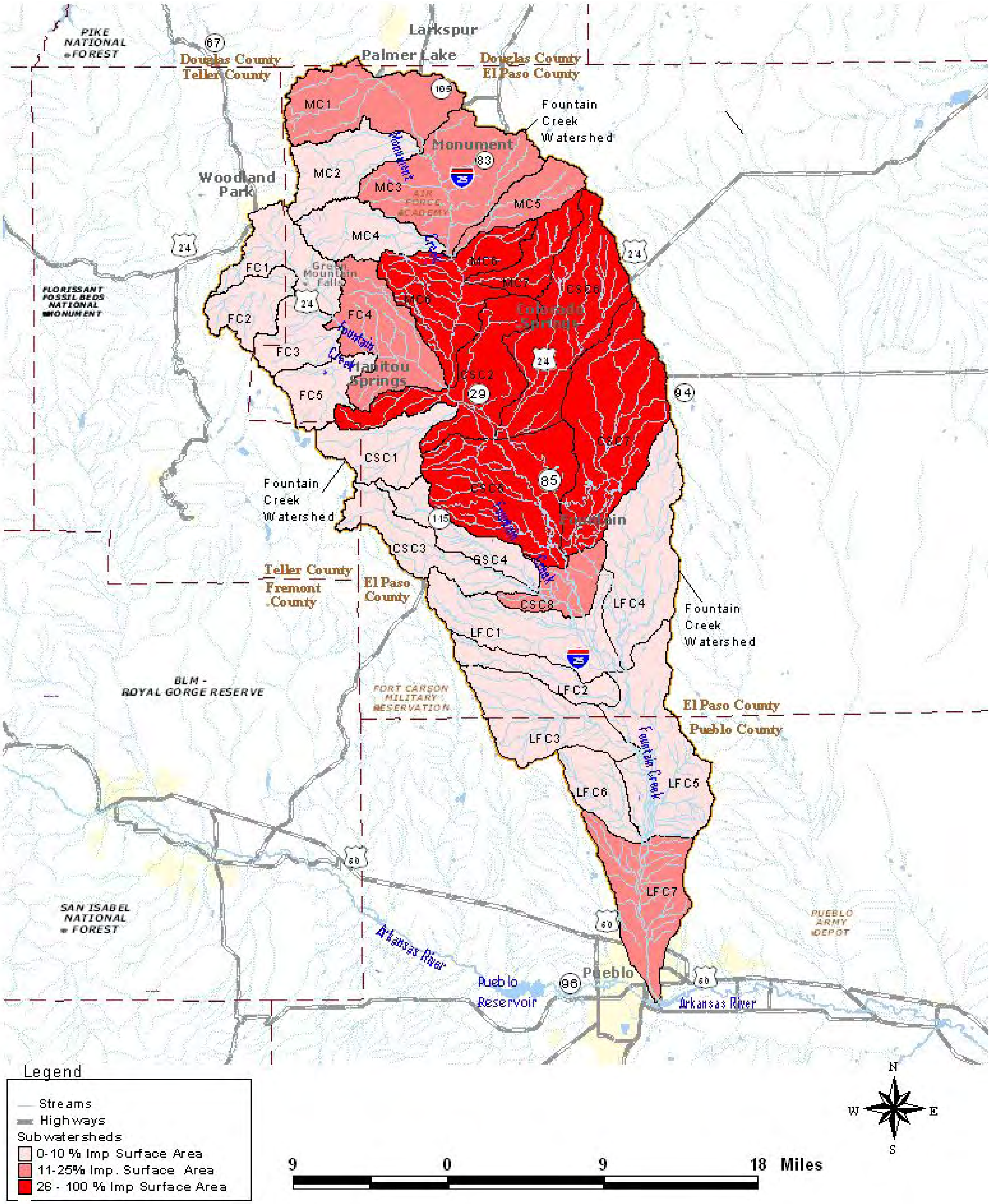


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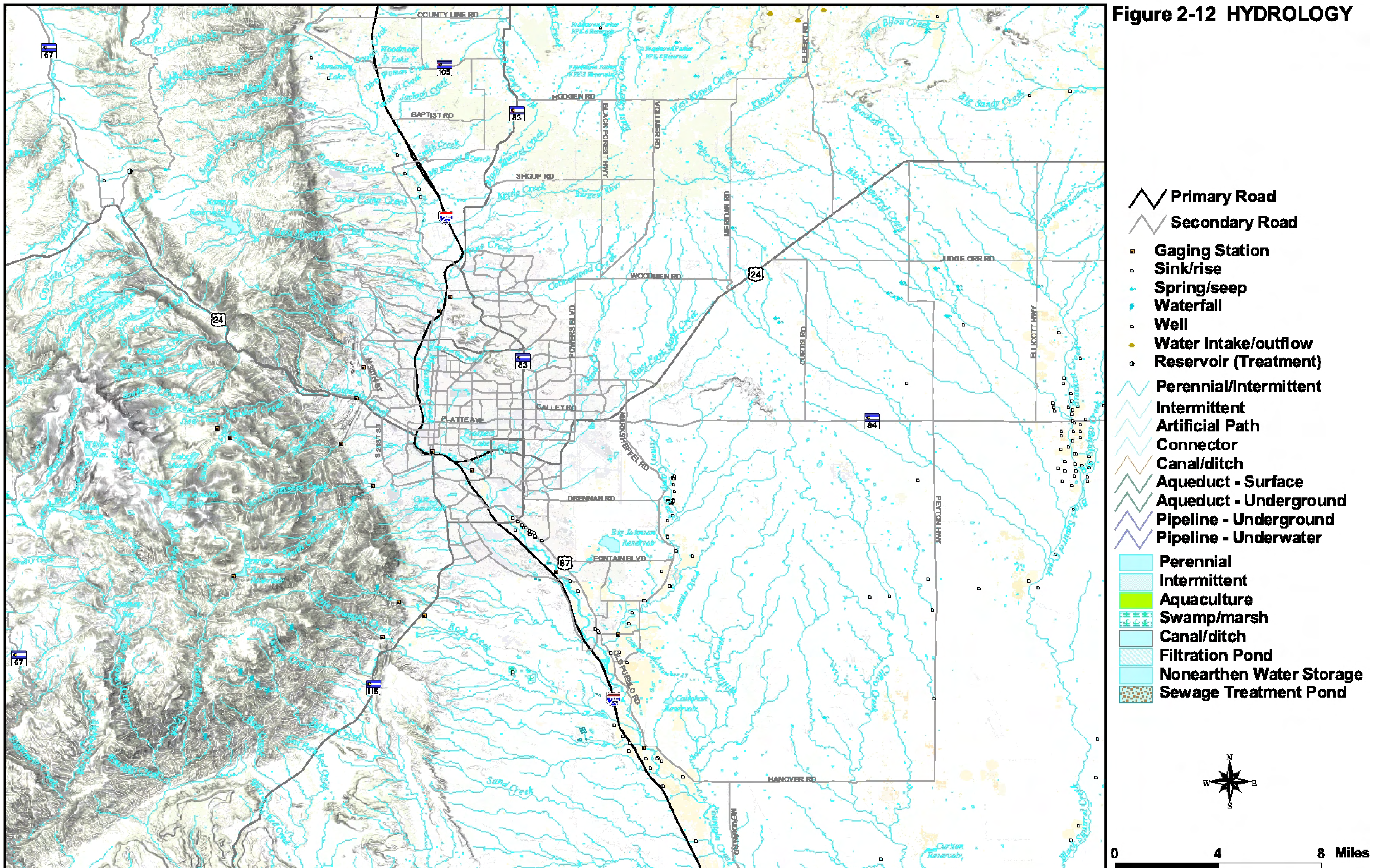
FIGURE 3-13: HYDROLOGY



Pikes Peak Area Council of Governments
Communities Working Together

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Erosion and Sedimentation

Erosion in the Colorado Springs area has been increasing since the start of development and settlement. The increase in impermeable surfaces leads to a decrease in the amount of water infiltration down into the soil, causing more water to run-off. This is problematic in the Fountain Creek Watershed where the soils are primarily sandy, and erode easily with released sediment. The sediment loads in streams have been shown to increase the flow of sediment by ten times (tons per cubic foot-second) than would have occurred during an average stream flow. Small particulate matter and pollution can run off the roads, accumulate in the waterways, and have adverse effects on the ecosystem. When it runs into the rivers, the sediment can create higher loads for the streams, making them deeper, wider, faster moving, and harder for species to live in. Sediment can also fill in cracks between rocks, greatly reducing the amount of habitat for native species to live and lay their eggs.

Also, with increased water movement across the land the chance of road washout increases which can destroy bridges and lessen the strength of the foundation of roads, putting the long-term usage of the roads into question. Erosion occurring in an uncontrolled or unmanaged system can result in exacerbated stream bank deterioration; channel instability; loss of agricultural, residential, industrial or private property; loss of infrastructure; and increased sediment loads to downstream reaches. Because sediment has been outlined to be a big problem in water quality, this issue needs to be addressed.

Flooding and Floodplain Impacts

A floodplain is an area of land around a body of water, particularly rivers or streams that are normally dry, but fill with water during a flood event. Roads and development can have a significant effect on floodplains and the land surrounding them. Roads alter the natural pathways of water flowing over the floodplain to reach the body of water. Also, because the development of roads increases the impermeable surfaces of the land, there is a higher amount of run-off, and therefore flooding is more likely to occur. Less water is being infiltrated into the land, which has other serious effects. The chances of flooding may also be increased by the loss of channel capacity from sedimentation.

Floodplain encroachment has become a large problem. The increase in development of floodplains has led to channel floodway zones becoming constrained, which makes potential floods have higher peaks and they will progress downstream with rapid speed.

The 2035 Plan contains some encroachment on the current floodplains, but not much more than is already significantly encroached by the current transportation system. Figure 3-14 shows the 100 and 500 year Federal Emergency Management Association (FEMA) designated floodplain boundaries. The main concern is the increase in impermeable surfaces and the resulting increase in surface run-off. Below is the summary of the five largest stream flow events.

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FIGURE 3-14: FLOOD PLAIN HAZARDS

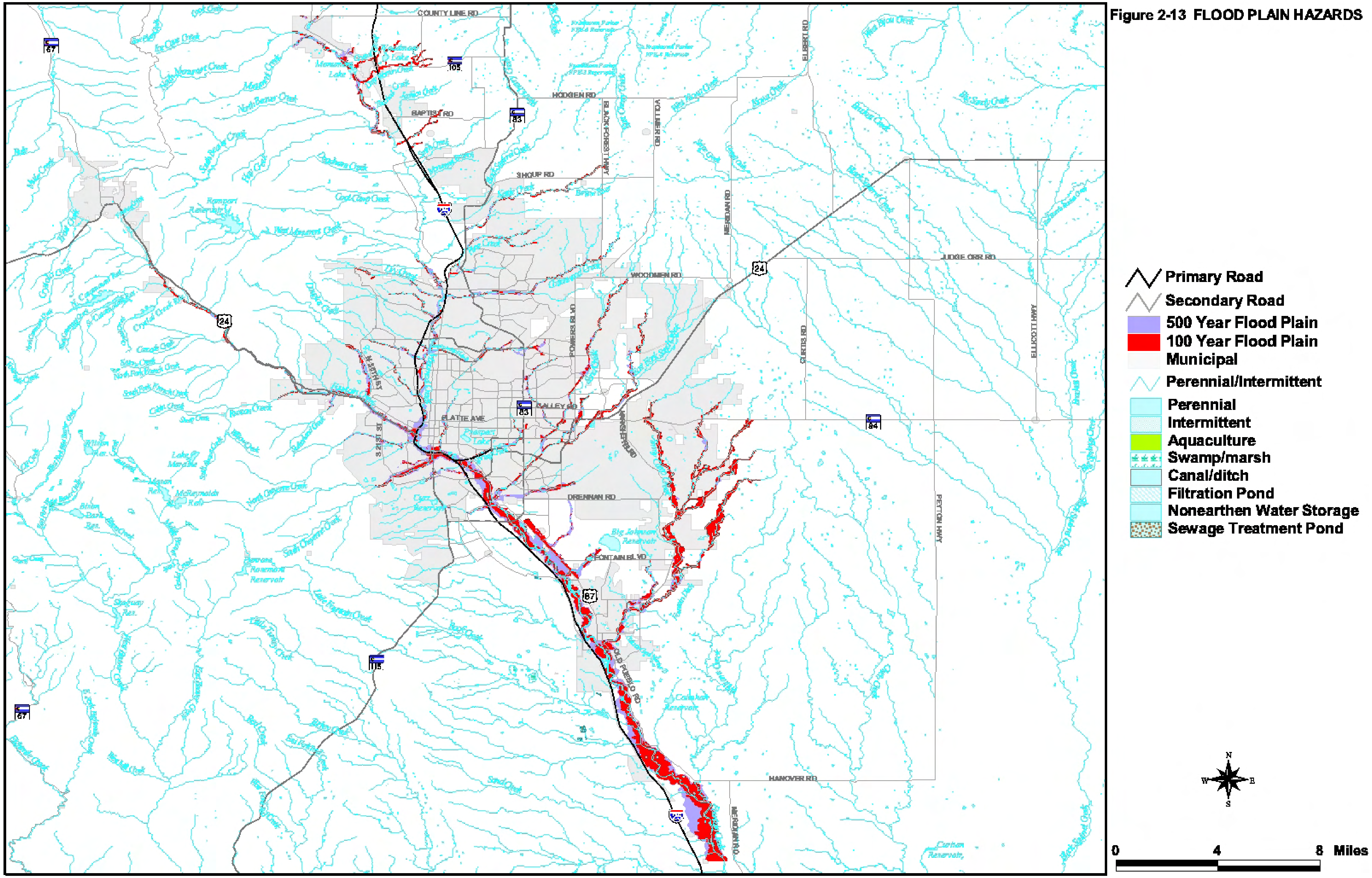

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TABLE 3-12: FIVE LARGEST STREAMFLOW EVENTS

Date	Peak Instantaneous Stream Flow (in ft^3/s)	Recurrence Interval Exceeded	Streamflow at Recurrence Interval (in ft^3/s)	Flow Period	General Storm Location Within Watershed	Reported Precipitation (in inches)
06/17/1965	47,000	200 yr	45,750	Snowmelt	NE C. Springs	14
05/30/1935	35,000	50 yr	30,060	Snowmelt	NE C. Springs	18
06/04/1921	34,000	50 yr	30,060	Snowmelt	n/a	n/a
04/30/1999	18,900	10 yr	15,750	Snowmelt	C. Springs	10
07/10/1945	17,800	10 yr	15,750	Summer	n/a	n/a

Source: Stogner, 2000

Water Quality

Water quality is extremely important to the health of the land, the ecosystem, and human usage. Having good water quality makes it usable for drinking, recreation, crop irrigation, industry, and wildlife and habitat preservation. Water quality is greatly affected by both point and non-source point polluters.

Typically, water quality issues are attributed to point-source polluters such as factories or wastewater treatment plants. But, significant pollutants come from non-point sources such as roads. Roads have a very high impact on the quality of the surrounding waterways, specifically because of the construction of new roads, the maintenance and upkeep of old roads, and the vehicles driving on roads. The main pollutants entering the system from roadways that are of concern are the sediment, total dissolved solids (TDS) from salts used for de-icing, and possibly more heavy metals such as zinc, cadmium, arsenic, nickel, copper, iron, lead, manganese, and others. These pollutants in the ecosystem can have serious effects on the local habitats and also the groundwater pools.

According to the National Research Council, Americans dump between 8 million to 12 million tons of salt on our roads per year. Some of the effects are:

- Salt slowly kills trees, especially white pines, and other roadside plants. The loss of indigenous plants and trees on roadsides allows hardier salt-tolerant species to take over.
- Elk, moose, and sheep eat road salt causing "salt toxicosis" where they lose their fear of vehicles and humans, causing many fatal encounters.

- Salt corrodes metals like automobile brake linings, frames, and bumpers, and can cause cosmetic corrosion. To prevent this corrosion, automakers spend almost $4 billion per year.

- Salt can penetrate concrete to corrode the reinforcing rods causing damage to bridges, roads and cracked pavement.

For the Pikes Peak Region, specific water standards are measured to determine the health of the waterways. These are:

- **NUTRIENTS** (Total phosphorous, Nitrite, Nitrate, Ammonia) - generally from agriculture. This can cause an overgrowth of aquatic plants and algae, causing the amount of oxygen in the water to decrease, causing eutrophication of the waterways, which fewer species can live in.

- **SOLIDS** (Total Suspended Solids, Total Dissolved Solids and Settleable Solids) - generally caused by erosion of the surrounding soils. These various forms of solids can affect the amount of light reaching aquatic plants, cover fish spawning and animal habitat, and reduce the food supply for small organisms.

- **SELENIUM –** caused by leaching in the soil and irrigation cycles. Selenium has an effect on fish and other aquatic species, affecting their tissue composition.

- **METALS** (Copper, iron, lead, zinc, selenium, iron, magnesium) - byproducts of mining and construction can leach hazardous materials into the waterways, and can pose a serious risk to water quality and ecosystem health.

- **BACTERIA** (E. Coli and Fecal coliform) - a bacteria commonly found in the human and animal gastrointestinal tracts.

These indicators are all measurable and helpful in determining the quality of water in the Fountain Creek Watershed. Table 3-13 shows the pollutants, as outlined by the EPA in the Colorado Section 303d list. Of greatest concern for this region are E. Coli and Selenium.

The primary monitoring systems for these substances are the 22 active USGS monitoring systems on major rivers and tributaries in this watershed. The specific sources of selenium and sediment are unknown, and there are no direct connection between selenium and roads, but there is significant data between sediment and road construction. Both the sediment and selenium impairments make for impaired waterways, and the effects of polluted waters and the effect of the 2035 RTP will have on these waters should be taken seriously because they are so important for the health of the environment.

TABLE 3-13: WATER QUALITY IMPAIRED STREAM SEGMENTS

WBID	Segment Description	Classification	2006 303 d Impairment	Priority	Water Quality Trends		
					Down	Stable	Upward
COARFO01	Mainstream of Fountain Creek, including all tributaries, lakes and wetlands, reservoirs, from the source to confluence with Monument Creek	Aquatic Life Cold 1 Recreation 1a Water Supply Agriculture	E. coli, Se	H/L	Fluoride	Sulfate	Iron, Manganese, Colifom
COARFO02a	Mainstream of Fountain Creek from the confluence with Monument Creek to above the State Highway 47 bridge.	Aquatic Life Warm 2 Recreation 1a Water Supply Agriculture	E. coli	H	Fecal Coliform	Sulfate	Selenium
COARFO02b	Mainstream of Fountain Creek from above the State Highway 47 bridge to the confluence with the Arkansas River	Aquatic Life Warm 2 Recreation 1a Water Supply Agriculture	Se	L	Selenium, Sulfate	Manganese	Iron, Fluoride, Coliform
COARFO03	Tributaries to Fountain Creek which are in USFS or AFA Lands, from the confluence with Monument Creek to the confluence with the Arkansas River, except the main stem of Monument Creek in the AFA Lands.	Aquatic Life Cold 1 Recreation 1a Water Supply Agriculture					
COARFO04	All tributaries to Fountain Creek not on USFS or AFA lands, from confluence with Monument Creek to confluence with Arkansas River.	Aquatic Life Warm 2 Recreation 1a Agriculture					

WBID	Segment Description	Classification	2006 303 d Impairment	Priority	Water Quality Trends		
					Down	Stable	Upward
COARFO05	Marshland on Nash Property; Jimmy Creek from irrigation div. to FC; and unnamed tributary from boundary of Fort Carson to FC.	Aquatic Life Warm 2 Recreation 2 Agriculture					
COARFO06	Mainstream of Monument Creek, from the boundary of National Forest lands to the confluence with Fountain Creek.	Aquatic Life Warm 2 Recreation 1a Water Supply Agriculture	Se	L	Iron, Manganese, Fluoride	Sulfate, Coliform	
COARFO07a	Pikeview Reservoirs, Willow Springs Pond #1, Willow Springs Pond #2.	Aquatic Life Warm 2 Recreation 1b Water Supply Agriculture	PCE	M			
COARFO07b	Prospect Lake, Quill Lake, Monument Lake.	Aquatic Life Warm 2 Recreation 1a Agriculture					

E. coli

E. Coli is a bacteria commonly found in the human and animal gastrointestinal tracts. It is a good indicator of the levels of other illness-causing bacteria and pathogens in the waterway. Upper Fountain Creek (Segment 1) and the mainstem of Fountain Creek to the Highway 47 bridge in Pueblo are listed currently on the 303d list as impaired for E.Coli (i.e., the mean concentrations are above the 126 CFU/100 ml stream standard for E. Coli.). Peaks in E. Coli concentrations are seen in Monument and Fountain Creek and are usually higher during the spring through fall when runoff is higher and lower during the winter (low flow) when stream flow is lower.

Selenium

Selenium is a naturally occurring, semi-metallic trace element found in bedrock, soils, water and living organisms. Selenium is most commonly found in Cretaceous and Tertiary marine sedimentary rocks. Selenium can impact livestock, birds and fish. Levels of selenium in the Fountain Creek Watershed vary – there was a significant increase through 2002 and a decrease after 2002. Every Fountain Creek tributary is enriched with selenium.

Groundwater

Groundwater is an essential part of the water system. Most subterranean aquifers are connected with aboveground streams and lakes. Such a connection is referred to as the *hyporheic zone*. About 22,000 wells have been drilled into various aquifers in eastern and northern El Paso County, the second highest number of any county in Colorado. Residents in El Paso County get groundwater from two possible sources:

- People that live in the northern portion of El Paso County, including Black Forest, generally tap the shallowest aquifer in the Denver Basin, a geologic formation that extends to Greeley.

- The Denver Basin, made up of four aquifers overlaying one another. These aquifers recharge so slowly that they are considered a non-renewable supply.

Declines in the water table are being shown throughout the region. Population growth in the region has caused a dramatic increase in the number of well permit applications.

Numeric standards for groundwater are different than surface water and are based on classifications of Domestic Use-Quality, Agriculture Use-Quality, Surface Water Quality Protection, Potentially Usable Quality and Limited Use and Quality. Standards are established to protect classified uses. An “Interim Narrative Standard” is used for all groundwater in which standards have not already been assigned in the state. The two regulation governing groundwater standards are Regulation No. 41: The Revised Basic Standards for Groundwater and Regulation No. 42: Site Specific Standards for Groundwater. The purpose of these regulations is to apply Regulation No. 41 to specific groundwaters in Colorado, and to adopt interim narrative standards to protect these groundwaters prior to the adoption of use classifications and numeric standards for specific areas. The specific areas covered in this Regulation No. 42 that are within this region are:

- Fountain/Security/Stratmoor Hills/Widefield Wellfields
- Upper Black Squirrel Creek Alluvial Aquifer
- Upper Cherry Creek and Denver Basin Alluvial Aquifers
- Woodmoor W&S District Wellfield

These aquifers are shown in Figure 3-15.

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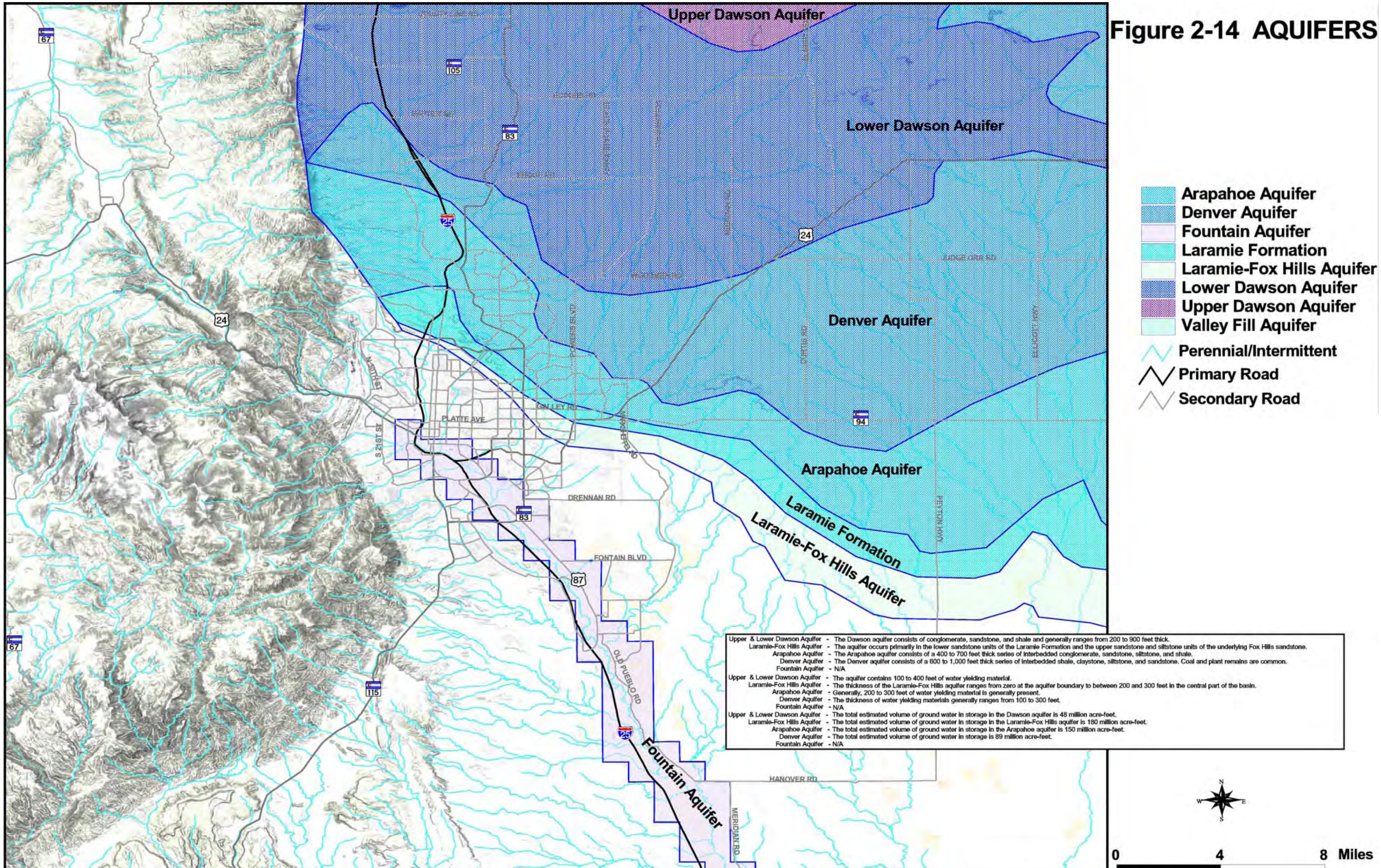
FIGURE 3-15: AQUIFERS



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Cultural Resources

Historic and Archaeological Resources

The effects of road building and transportation infrastructure improvements are not limited solely to classic environmental concerns, but in fact spread into a region's cultural legacy. Many historic objects and archaeological sites may be disturbed or destroyed by transportation expansion. Theses artifacts are resources which help define the individuality of the region and provide a context for understanding its cultural and physical heritage.

Identification and agreement for preservation are keys to successfully protecting historic resources. The National Historic Preservation Act (NHPA) assures that effects on historic resources be realized in the planning stages of projects. The act not only includes immediately recognizable features such as buildings and walls, but also archaeological artifact sites, particularly those pertaining to Native Americans, which may be uncovered as a project goes forth. Figure 3-16 identifies all locations within the MPO area for historic and archaeological preservation.

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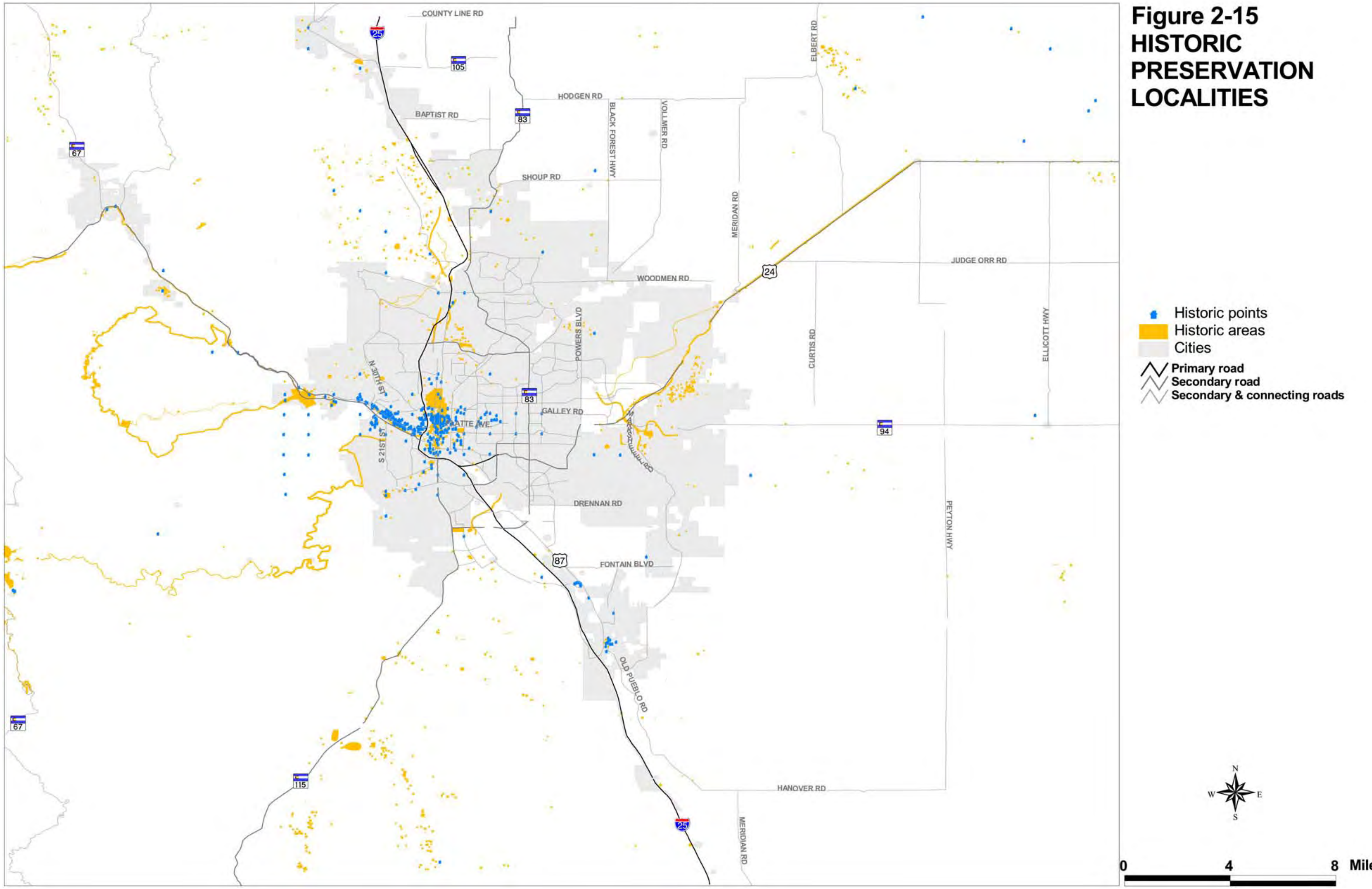
FIGURE 3-16: HISTORIC PRESERVATION LOCATIONS



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History Timeline

THE EARLY YEARS	
12,000 Years Ago	Early hunters roam the plains and follow the flanks of the Front Range. Geologists discover evidence of stone hearths and fire rings left by nomadic hunters in Garden of the Gods, circa 1300 B.C.
Unknown – 1870s	While no tribe makes the Pikes Peak Region its permanent home, several Indian tribes frequent the area following the seasonal migrations of their food supply. The Mountain Indians, or Utes, dominate the mountain and foothill regions while the Plains Indians, namely the Cheyennes and Arapohoes, gather in the plains to the east. Other tribes that frequent the area include the Kiowas, Sioux, Comanches, Pawnees, and Apaches.
AGE OF EXPLORATION	
1500s-1700s	France and Spain send explorers to the Pikes Peak Region naming rivers and mountains as they search for gold. Both countries alternate claiming the region. The Spanish introduce the horse to the Indians which provide the regional tribes greater mobility. Intertribal Indian warfare and conflict between the Spanish and the French continue throughout the 18th century.
1803	President Jefferson purchases the “Louisiana Territory” from France which includes the eastern and central portions of Colorado.
1806	Zebulon Pike, an army officer, becomes the first U.S. explorer to come into the Pikes Peak Region to map the southern part of the Rockies and investigate the strength of Spanish strongholds. He is the first man to document the sighting of Pikes Peak which now bears his name, but is unsuccessful at reaching its summit.
1820	Dr. Edwin James, a botanist who accompanies Major Long on his expedition to continue the exploration of the Louisiana Purchase, becomes the first man to successfully climb Pikes Peak. To honor James, Major Long names the mountain James Peak on his expedition map. Unfortunately for James, the name would not last long. Also during this expedition, James collects the first blue columbine known to science. The columbine would later become Colorado’s official state flower.
1821	The remainder of Colorado’s territory passes from Spain to Mexico following Mexico’s independence.
1842-1845	General John C. Fremont, a lieutenant in the Corps of Topographical Engineers, becomes the last of the famous explorers to reach the Pikes Peak Region. Fremont, sometimes called “the Pathfinder,” consistently refers to Pikes Peak in his accounts, thus cementing the mountain’s name. The real pathfinders of the region, the trappers, make it easy for the explorers by sharing the easiest passes, the best fording places along the rivers, and the most desirable watering holes. One of Fremont’s scouts on his 1842 expedition includes the legendary Kit Carson. In his lifetime, Carson is credited as being a trapper, scout, hunter, guide, Indian agent, and soldier.
1846	The United States declares war on Mexico.
1848	The Treaty of Guadalupe Hidalgo marks the end of the Mexican War and cedes the remaining portions of the Colorado territory to the United States.
1858	Gold is discovered along Cherry Creek and in South Park along the Front Range. Gold hunters rush into the area and the slogan “Pikes Peak or Bust” is coined. Mining camps are established and the narrow gauge railway system, which can maneuver over treacherous passes to deliver men and supplies to the gold mining camps, is invented. Julia Anne Holmes becomes the first woman to climb Pikes Peak. For the trip, she wears the reform dress of the suffragettes, the “bloomer” outfit.
1859	Colorado City becomes the first permanent settlement in the Pikes Peak Region.

TERRITORY DAYS	
1861	The Colorado Territory, with boundaries the same as today's state, is established by Congress with Colorado City as its capital. Due to primitive living conditions in Colorado City, the capital is moved to Denver less than six months later. El Paso County is created in the same year. Given the Spanish name of "the pass," El Paso County refers to Ute Pass west of Colorado Springs.
1862	The Homestead Act of 1862 brings new settlers into the area seeking land ownership for farming and ranching purposes. The fertile land along Fountain and Monument Creeks is converted to agriculture for the production of wheat, oats, and corn. After the end of the Civil War in 1865, a tremendous burst of railroad building springs up across the plains which further boosts the flow of settlers to the Pikes Peak Region.
1860s-1870s	Indian Wars – fighting breaks out over land rights between white settlers and the Arapahoes, Cheyennes, and later the Utes. By 1881, after continued skirmishes and even massacres by the U.S. Cavalry, the Indian title to the Pikes Peak Region is extinguished and the remaining tribes forced onto reservations. Adding to the Indians' demise is the mass extermination of the plains buffalo, a vital resource for all tribes. The population of the buffalo is estimated to be over 75 million as late as 1850. By the mid 1880s, almost every single buffalo is killed, either hunted for food or shot for sport by white settlers, trappers, and traders.
1871	General William Jackson Palmer founds the Fountain Colony that is quickly renamed Colorado Springs. A stake-driving ceremony at the corner of Pikes Peak and Cascade Avenues commemorates the occasion. General Palmer links Colorado Springs with Denver via his own railroad, the Denver and Rio Grande, and publicizes the city as a health resort of quality and gentility, far different from the rough frontier towns of the day. General Palmer helps design the city's layout and ensures its attraction with broad avenues, ample streets, and the planting of more than 600 cottonwood trees. The influx of English pioneers would later earn Colorado Springs the nickname of "Little London."
1872	The City of Colorado Springs is incorporated.
1874	Colorado College is founded by General Palmer.
1876	Colorado achieves statehood during the U.S. Centennial earning the motto of "The Centennial State."
1879	The Town of Monument is incorporated.
1880	The U.S. census for 1880 gives the population for El Paso County as 7,949.
1883	Within just a few years of founding the city, General Palmer opens his flagship resort, the Antlers Hotel, in 1883. When the Antlers Hotel burns down in 1898, General Palmer rebuilds a lavish second hotel on the same site in 1901. That hotel is razed in 1964 and is replaced by a third hotel in 1967, which still bears the Antlers name, but is now owned by the Hilton Hotel chain. The first standard gauge railroad, the Colorado Midland Railway, is incorporated. Originally projected to run between Colorado Springs and Salt Lake City, Utah, the line only made it as far as Grand Junction, Colorado.
1888	The City of Manitou Springs is incorporated.
1889	The Town of Palmer Lake is incorporated.

THE GOLD RUSH	
1890s	Bob Womack, a prospector, discovers gold in Cripple Creek in 1890. News of his find attracts thousands to the region and spawns a number of millionaires. In just one year the north end of Colorado Springs is nicknamed "Millionaire's Row" due to the great number of mansions that line the streets. Notable among these wealthy men is Winfield Scott Stratton, a carpenter, who finds fortune in Cripple Creek when his mine, the Independence, strikes a huge vein of gold. In 1899 Stratton sells the Independence for $10 million. Contrary to the customary habits of most overnight millionaires, Stratton distributes much of his fortune locally. Some of Stratton's contributions include building an economical trolley line for the citizenry, financing the Short Line Railroad (between Colorado Springs and Cripple Creek), and establishing the Myron Stratton Home, a house for the elderly and children in need.
1891	The first cog train reaches the summit of Pikes Peak. The City of Woodland Park is incorporated.
1895	The first edition of *America, the Beautiful* is printed. Katherine Lee Bates penned the poem after a trip to the top of Pikes Peak in the summer of 1893.
1899	The western portion of El Paso County is broken off to create Teller County.
1900	The population of El Paso County reaches 31,602 and the population for Teller County reaches 29,002. During the height of the Gold Rush, the populations of Cripple Creek and Victor exceed that of Colorado Springs.
TUBERCULOSIS AND TOURISM	
1901-1920	With its natural scenic beauty, mineral waters, and dry and sunny climate, the Pikes Peak Region becomes a popular recuperation destination for tuberculosis (TB) patients prompting the construction of large sanatoria and health resorts. Notable sanatoria include the St. Francis Hospital and the Glockner Tuberculosis Sanatorium (now Penrose-St. Francis Hospital), the Union Printers Home, the Modern Woodmen Sanatorium, and the crown jewel of TB facilities, the Cragmor Sanatorium. Built as a self-contained community, the Cragmor is an open sanatorium allowing private physicians, not just resident physicians, to have their patients admitted and treated. These sanatoria are not the only thing that attracts travelers to the area. Tourism becomes the leading industry in the Pikes Peak Region. Booklets touting the many attractions and scenic beauty of the region are published. Some of the major attractions include the cog railroad line up to Pikes Peak, Cave of the Winds, Manitou Cliff Dwellings, and Garden of the Gods.
1903	The City of Fountain is incorporated.
1905	General Palmer completes Glen Eyrie, an estate patterned after the elegant castles in Europe. The estate includes a manor house and surrounding buildings, a dairy farm, landscaped gardens, elaborate horse stables and farmlands on 225 acres of crags, canyons, and meadows. The estate is built for Palmer's wife, nicknamed "Queen," and the canyon where Glen Eyrie lies is called Queens Canyon.
1907	General Palmer donates Palmer Park to the City of Colorado Springs. From 1871 till his death in 1909, General Palmer will donate more than 2,000 acres of parks.
1909	The children of Charles Elliott Perkins deed the 480-acre Garden of the Gods to the City of Colorado Springs. In so doing, the Perkin's heirs honor their father's wish that the park remain "free to all the world."

TUBERCULOSIS AND TOURISM (CONTINUED)	
1915-1916	The popularity of the automobile increases tourism in the Pikes Peak Region. New roads are built and existing ones improved. At this time, Spencer Penrose builds the Pikes Peak Toll Highway, which allows automobile travel to the top of Pikes Peak. He also establishes the Pikes Peak Hill Climb, the second oldest auto race in America. Penrose, an influential entrepreneur, had made his fortune by capitalizing on gold and copper mining claims during the beginning of the gold rush.
1917	The U.S. switches to silver for its coinage. This marks the end of the gold boom. Fred Barr completes the 13-mile trail up Pikes Peak that now bears his name.
1918	Spencer Penrose opens the landmark Broadmoor Hotel in 1918. At a cost of $3 million, the hotel is designed by the same architect that drafted Grand Central Station in New York City.
1920	The population of El Paso County is 44,027 with Colorado Springs at around 30,000. The population of Teller County is 6,696, a considerable drop from twenty years ago.
1926	The Cheyenne Mountain Zoo is founded by Spencer Penrose. A year earlier, Penrose built the Cheyenne Mountain Highway which facilitated travel to the zoo as well as the Broadmoor Hotel.
1927	The Colorado Springs Airport, consisting of two short gravel runways on 640 acres of grassland, begins operations.
1935	The Memorial Day Flood of 1935 devastates the area. Every stream in the Pikes Peak Region overflows, several people are killed, and property damage is estimated to be in the millions.
1937	Spencer Penrose sets up and endows the El Pomar Foundation, a charitable trust designed to "assist, encourage and promote the general well-being of the inhabitants of the State of Colorado."
THE MILITARY INDUSTRY	
1942	Camp Carson is established south of Colorado Springs. Camp Carson started with just 30,000 soldiers on 60,000 acres of land. It is named in honor of Kit Carson, the legendary frontiersman. During World War II, the camp holds over 9,000 prisoners of war. Previously known as the Colorado Springs Army Air Base, Peterson Field is established in May, 1942. Located at the site of the Colorado Springs Municipal Airport, Peterson Field is originally used for heavy bomber combat crew training and fighter pilot training.
1950	El Paso County numbers 74,523 people and Teller County numbers 2,754 people.
1951	ENT Air Force Base is established. It had been the Colorado Springs Tent Camp from 1943 to 1949.
1953	The Navigators, a faith ministry, purchase Glen Eyrie Castle in 1953 and own it to this day.
1954	Camp Carson is declared a permanent post and renamed Fort Carson. That same year, the Secretary of the Air Force announces the selection of the permanent site of the United States Air Force Academy, seven miles north of Colorado Springs.
1958	The North American Air Defense Command (NORAD) is founded through an agreement signed between the U.S. and Canada. The U.S. Air Force Academy opens its facilities to over 1,000 cadets.
THE SPACE AGE	
1960s-1980s	The Pikes Peak Region feels the impact of the Space Age industry. Aerospace products, aircraft instruments, computers, electronics, solar energy, and other industries settle in the region. Notable among these defense contractors and high tech companies are Kaman Sciences (now ITT Industries), Hewlett-Packard, LSI Logic Corporation, Quantum Corporation, and SRC Computers. SRC Computers is founded by Seymour R. Cray, the legendary computer architect known as the "father of supercomputing."
1963	NORAD's underground facility is built inside Cheyenne Mountain. It is also around this time the extension of NORAD's mission into space led to a name change, the North American Aerospace Defense Command.

THE SPACE AGE (CONTINUED)	
1965	The flood of 1965 causes significant damage to Colorado Springs and severe damage farther downstream. Many bridges wash away isolating the Broadmoor Hotel from the rest of Colorado Springs.
1976	ENT Air Force Base closes. Peterson Field is reclassified and upgraded to Peterson Air Force Base.
1977	Focus on the Family, an evangelical political group, is founded by Dr. James Dobson. It was at this time that Colorado Springs city leaders began recruiting evangelical organizations to the region as an economic development strategy.
1978	Built on the former home of ENT Air Force Base, the United States Olympic Training Center opens and becomes the official administrative headquarters of the United States Olympic Committee.
1979	The ProRodeo Hall of Fame and Museum of the American Cowboy opens and the United States Figure Skating Association National Headquarters and Hall of Fame moves to Colorado Springs.
1980	The population of El Paso County is 309,424 and the population of Teller County is 8,034.
1983	Groundbreaking takes place for the Falcon Air Force Station (AFS), the Air Force's primary satellite control facility.
1984	Ted Haggard founds New Life Church. Over the years the church will grow into a megachurch with 14,000 members, and Haggard will go on to become President of the National Association of Evangelicals, until resigning amid scandal in 2007.
1988	Falcon AFS is re-designated Falcon Air Force Base (AFB). Banning-Lewis Ranch, just over 21,000 acres, is annexed by Colorado Springs.
1990	Voters approve small-stakes gambling in historic gold mining towns such as Cripple Creek.
1994	The Colorado Springs Municipal Airport opens a new 16-gate terminal building at a cost of $140 million.
1998	Falcon AFB is renamed Schriever AFB in honor of General Bernard Schriever, a pioneer in the development of the nation's ballistic missile program.
1999	The flood of 1999 washes out bridges and utility lines, and causes wastewater system backups in Colorado Springs resulting in the declaration of federal flood disaster areas across the region.
2004	The first phase of development begins at Banning-Lewis Ranch.
2005	The population of El Paso County reaches 565,350 and the population of Teller County grows to 22,346. The Department of Defense announces 10,000 new troops for Fort Carson.
2006	NORAD announces its day-to-day operations will be consolidated at Peterson Air Force Base and the facility at Cheyenne Mountain will be kept only as a backup in "warm standby."

C. **Prehistoric and Historic Cultural Sequences *(Excerpt from Fort Carson Transformation Environmental Impact Statement Attachment F.1: Prehistoric and Historic Cultural Sequences at Fort Carson provided by Fort Carson Directorate of Environmental Compliance and Management, Cultural Resources Program)***

Prehistoric Cultural Sequence

Three general stages of prehistory have been delineated for southeastern Colorado: the Paleoindian, Archaic, and Late Prehistoric. An earlier stage, the Pre-Clovis, has been proposed, but direct evidence of this stage in the region is lacking. The Paleoindian, Archaic, and Late Prehistoric stages in southeastern Colorado are each subdivided into three periods. These periods represent specific changes or innovations in the material culture of prehistoric peoples that suggest broader changes in environmental conditions and/or political and socio-economic structure. These periods span from approximately 11,500 Before Present (B.P.) to 275 B.P.

Paleoindian 11,500-7,800 B.P.

The Paleoindian (11,500-7,800 B.P.) represents the earliest stage of cultural evolution in the archeological record of southeastern Colorado. This stage in southeastern Colorado is commonly divided into three periods based on diagnostic projectile points.

Clovis Period (11,500-10,950 B.P.)

The Clovis Period (11,500-10,950 B.P.), the earliest Paleoindian manifestation, has been delineated based on findings of large, fluted lanceolate spear points and prismatic blades, blade cores, and blade tools. The latter were most likely used as knives, scrapers, and core/choppers. These characteristic artifacts have been found in association with the remains of mammoth, horse, and other Pleistocene fauna suggesting economies were hunting-focused. The Hahn site represents the only site of this age in southeastern Colorado.

Folsom Period (10,950-10,250 B.P.)

The Folsom Period (10,950-10,250 B.P.) has been delineated based on fluted points found in association with extinct *Bison bison antiquitus*, as well as pronghorn, hare, wolf, fox, coyote, and turtle. The period coincided with early Holocene warming that saw the extinction of many large Pleistocene mammals. Besides fluted points, other Folsom period tools included knives, gravers, spokeshaves, scrapers, cores, drills, burin-like implements, choppers, abrading stones, awls, beads, and needles. There is some evidence for the processing of vegetal products and for the grinding of pigments.

Plano Period (10,250-7,800 B.P.)

The Plano Period (10,250-7,800 B.P.) comprises several complexes characterized by different flake styles of lanceolate projectile points. Complexes include Midland, Agate Basin, Hell Gap, Alberta, Cody, Frederick, and Lusk. These complexes are thought to reflect a cultural continuum with adaptive modifications resulting in tool variability. An increasingly complex lifestyle is indicated by the presence of more varied tool kits, including a variety of stone and bone tools. The presence of milling stones indicates a greater emphasis on processing plants. A great variety of kill, processing, and camp sites also occur, some with evidence suggestive of religious practices. Evidence of Plano occupation in southeastern Colorado is plentiful. In the Pikes Peak area, two Cody complex projectile points and two unidentified Plano projectile points fragments have been recorded as surface finds.

Archaic 7,800-1,850 B.P.

The beginning of the Archaic Stage (7,800-1,850 B.P.) marks another turning point in the natural environment with the onset of the Altithermal climatic episode, a prolonged early Holocene period of general warming and drying in western North America. The Archaic Stage represents a shift from economies geared toward big game hunting to more generalized hunting and gathering. More importance was placed on wild plant foods like *Chenoams*, and the procurement of game became more diversified, with large and small mammals like rabbits and gophers represented. Ground stone implements became common and are the predominant artifact class at many Archaic sites. Lithic tool assemblages exhibit more variability, and many artifacts reflect specialized local adaptation.

Based on changes in projectile point morphology, the Archaic stage has been divided into Early, Middle, and Late periods. Archaic projectile points are nearly all stemmed and are not as delicately flaked as those of the earlier Paleoindian stage. Generally, Archaic complexes in the region have been poorly defined.

Early Archaic Period (7,800-5,000 B.P.)

The Early Archaic Period (7,800-5,000 B.P.) reflects human adaptations to a hotter and drier climate. In response to this drastic climate change, southeastern Colorado may have become partially depopulated, with some groups possibly relocating to the relatively cooler and wetter foothill and mountain regions.

In southeastern Colorado, Early Archaic projectile points have been reported from nine sites. In the Pikes Peak area, a component of the Gooseberry Shelter site has been radiocarbon-dated to the Early Archaic. The lack of Early Archaic remains results from either a cultural hiatus, brought on by drought, or poor site preservation resulting from natural geologic processes.

Middle Archaic Period (5,000-3,000 B.P.)

The Middle Archaic Period (5,000-3,000 B.P.) witnessed a widespread reversion to more mesic climatic conditions following the Altithermal event. Middle Archaic sites indicate broad spectrum adaptations by hunter-gatherers to plains, basin/valley, foothills, and montane environments. Sites display evidence of diverse resource procurement. Remains of large and small mammals, birds, reptiles, and shellfish occur, as do seeds of numerous wild plants. Hearths are common and spaced-stone circles also appear. Characteristic projectile points of this period include large, basally concave or indented points such as McKean, Duncan, Hanna, and Mallory types. Other artifacts include formalized manos and grinding slabs, bifaces, scrapers, drills, spokeshaves, bone awls, and hammerstones.

In southeastern Colorado, one Middle Archaic site has been excavated revealing mixed levels of Duncan, McKean, and Hanna projectile points. In the Pikes Peak area, components of the Recon John Shelter site, the Gooseberry Shelter, and the Two Deer Shelter have been radiocarbon-dated to the Middle Archaic.

Late Archaic Period (3,000-1,850 B.P.)

The Late Archaic Period (3,500-1,800 B.P.) saw the continued specialization in subsistence practices, and maize probably first spread into the region at this time. Evidence of communal bison procurement is abundant for this period and suggests the development of complex intergroup cooperation in conjunction with population growth. In southeastern Colorado, Late Archaic sites are much more common than Middle Archaic sites. Diagnostic projectile points of the period include basal corner-notched types like Ellis, Garza, Marcos, Shumla, Williams, Palmillas, Ensor, Edgewood, and Yarbrough.

In the Pikes Peak area, Late Archaic components have been discovered at many locations, including a number with Middle Archaic components, such as the Recon John Shelter, the Gooseberry Shelter, and the Two Deer Shelter.

Late Prehistoric 1,850-275 B.P.

The Late Prehistoric Stage (1,850-275 BP) observed important changes in subsistence patterns, artifact complexes, and demographics on the southern Plains. The beginning of the stage coincides with innovations like the bow and arrow, ceramics, and permanent or semi-permanent houses. The use of cultigens reached a significant level during this time, though few pollen or macrobotanical samples attest to this change in southeastern Colorado. The final centuries of the Late Prehistoric Stage reflect the effects of European incursions, including both direct intrusions by Europeans and diffusion and spread of material goods of European origin by indigenous groups.

Developmental Period (1,850-950 B.P.)

The Developmental Period (1,850-950 B.P.) corresponds with what has traditionally been referred to by archeologists as the Plains Woodland Period or the Early Ceramic Period. At this time, cordmarked and plain pottery, small corner-notched arrow points, circular slab masonry architecture and some agriculture first appeared.

Ground stone tools are more common than chipped stone in this period. This suggests that vegetal materials, possibly including maize, and other cultigens probably constituted larger portions of the human diet. Faunal remains from excavated sites indicate that animals like deer and antelope were exploited, as well as small animals like cottontail rabbits and prairie dogs. Aquatic species like fish, frogs, and fresh water mussels were also consumed.

Developmental Period sites are much more numerous in the region than those of earlier periods. It has been noted that this increase in the number of recorded sites could be the result of improved site visibility due to the presence of architectural features. Observed site types include circular masonry architecture, rock shelters, brush and hide shelters with circular rock foundations, and open camps.

Diversification Period (900-500 B.P.)

The Diversification Period (900-500 B.P.), also termed the Middle Ceramic, marks the local variant of the Plains Village tradition. It is subdivided into the Sopris (900 to 750 B.P.) and Apishapa Phases (900 to 500 B.P.) in southeastern Colorado. Sites of the Sopris phase have never been found in the Pikes Peak area and will receive little discussion here.

There is little doubt that subsistence practices during the Diversification Period were geared more toward horticulture than those of the Developmental Period. However, floral and faunal evidence from Diversification sites still indicates that hunting and gathering predominated and that horticulture was supplemental. The degree to which architectural developments are reflective of permanent habitation is also uncertain. Where surface architecture is common, it is difficult to envision permanent habitation and a horticultural subsistence base, due to the marked absence of substantial middens.

Cultigens have been recovered from excavations on Diversification Period sites. Maize has been recovered from many rockshelters in the region and maize pollen has been recovered from open architectural sites along the major rivers of southeast Colorado.

Deer and antelope remains are common on Apishapa Phase sites, but bison bones are rarely encountered. Communal hunting of ungulates is portrayed in rock art of this time period with human figures portrayed herding or chasing quadrupeds.

Technologically, the most distinctive lithic characteristic of the period is the small triangular projectile point, either unnotched Fresno or side-notched Washita. Ceramics are also varied, but generally consist of cord-marked, globular, or conoidal jars. Bone artifacts are common and include awls, fleshers, wrenches, and beads. Ground stone includes manos, metates, and shaft abraders.

Protohistoric Period (500-275 B.P.)

The Protohistoric Period (500-275 B.P) extends from roughly 1450 A.D. to 1725 A.D. The earliest European incursions into the region occurred during the first half of the sixteenth century, and the material cultures of indigenous populations were altered significantly over the course of the ensuing three centuries. Three principal indigenous groups entered southeastern Colorado during this period. In chronological order of appearance, they are the Apache, Comanche, and Cheyenne-Arapaho. In addition, southeastern Colorado was on the margin of Ute territory throughout Protohistoric times.

The Protohistoric Period marks the start of the Plains Nomad Tradition. Material remains include metal artifacts, micaceous pottery, Pueblo pottery, chipped glass artifacts, and side-notched points. Most sites from this period are tipi encampments found along canyon heads though some earth ovens have been found. Spanish expeditions onto the southern Plains reported groups of nomadic bison hunters that also subsisted on corn, other large and small game, native plant seeds, greens and tubers, mussels and fish.

Historic Cultural Sequence

Within southern Colorado, the initial European contact occurred mid 16th century. The Late Prehistoric aboriginal way of life probably changed little until the Spanish began settling in the region. The transition between the Protohistoric to the Historic begins around A.D. 1725. Though there is a paucity of ethnographic and historical data for the region, records document aboriginal/European contact beginning with Fray Marcos DeNiza's expedition of 1539. Archaeologically, the recognition of Historic Indian sites in the region has been rare. Because of this, only the European cultural history will be discussed.

Spanish Period (A.D. 1540 – A.D. 1822)

Initial European exploration into southeastern Colorado was associated with Spanish colonialism. In 1539, Viceroy Medoza sent Fray Marcos DeNiza to investigate the "Seven Cities of Cibola" described by Cabeza DeVaca. In 1540, Francisco Coronado led another large expedition in search of the Seven Cities as far north as south-central Kansas. Though neither of these expeditions actually crossed into Colorado, the entire region became part of the territory claimed by Spain in the New World.

The migration of the Utes and Comanches was part of a broader pattern of rapidly shifting tribal territories, a pattern which had begun before the Spaniards reached the region and continued into the late-nineteenth century. The Uto-Aztecan speaking Ute Indians may have been the first historic tribe to enter Colorado when they migrated southeastward from the Great Basin. Following herds of bison, and because of ameliorating climatic conditions, Apaches entered the area from the north by the beginning of the 16th century. The Navajos and Apaches conducted both trade and warfare with the older pueblo groups further to the south. By the 1660s, the Apaches had become a mounted military threat to the Pueblos and the Spanish. The Utes also had horses in the 1700s and they too began to raid villages.

In the 1700s, French traders operating on the northern Plains and along the Mississippi River began to trade goods and arms to the various Indian groups including members of the Pawnee family and the Comanche. These enemies of the Apache pushed back across the southern Plains, and along with the Utes who had guns at this time, established military dominance. This is because the semi-sedentary Apache were tied to crops on a seasonal basis and their more mobile, and better equipped, adversaries could pattern their locations and dominate cavalry warfare. In 1704, the Comanches began to raid Spanish settlements. Competition between Comanches and Utes for the upper Arkansas River basin eventually led to general warfare between those former allies, with the remaining Apaches allied with the Utes.

The Spanish military pattern at this time was one of infantry and cavalry and expeditions into the southern Plains as a show of force. To control the Indians of the southern Plains, and to assess French influence in the area, Spanish leaders dispatched a party led by Antonio de Valverde in 1717 and Pedro de Villasur in 1729. On the Platte River of Nebraska, Villasur's party was attacked by the Pawnee and was the last Spanish expedition across eastern Colorado until 1779.

In the 1770s, Comanche and Apache raiding parties terrorized the edge of the Spanish frontier. To combat these attacks, Governor Juan Bautista de Anza led an army of 600 solders, militiamen, and Indian allies against the Comanche. This Spanish victory initiated lasting peace with the Comanche in 1786. This new alliance led not only to the demise of the Apache on the Plains, but began the *Comanchero* period (1786 to 1860) where the Spanish, New Mexicans, and Comanche came together for trading on the southern plains.

The French threat to the Spanish in the southern Plains disappeared in 1763. Napoleon, in the early 1800s, needed money to support the French Empire elsewhere, and came to an agreement with Spain to return the former French colony of Louisiana to France. In 1803, in one of the greatest land deals of its time, France sold the recently secured Louisiana to the United States. The boundaries of the Louisiana, largely disputed by Spain, but claimed by the United States included the land extending west from the Mississippi River to the Rocky Mountains and the Rio Grande. It was not until 1819 that the Adams-Onis Treaty would establish the Arkansas River as the northern boundary of Spanish New Mexico.

President Jefferson did not waste any time in procuring federal funding for scientific expeditions to explore the natural resources, and to gain knowledge of the Indians, and the transportation routes of this uncharted territory. One of the first explorations, the renowned Lewis and Clark Expedition (1803-1806), explored the area along the Missouri River and the Northwest region. Two later expeditions that followed are directly associated with the Pikes Peak area. The expedition of Captain Zebulon Pike (1806) explored the geography, natural history, and topography of the lands in the southwest portion of the newly acquired territory, leading Pike up the Arkansas River Valley into Colorado. The entourage of twenty-two men split into two groups, one to seek the headwaters of the Red River, and the other along the Arkansas River. During this expedition Pike would observe the mountain peak that bears his name today. Pike and three other men continued northwest in an attempt to climb the peak looming on the horizon, an attempt that proved unsuccessful. After the official boundaries of Louisiana were established, Long's expedition (1820) would explore the western mountains in search of the source of the Platte River, returning by way of the Arkansas and Red Rivers. Three of the men in Long's expedition would be the first Americans to climb what Long referred to as James' Peak, but would forever be referred to by the public as Pike's Peak.

Fur trappers and traders were among the first Euro-Americans to venture forth in this unknown land, exploring the region in the process of economic enterprise. Trading and trapping networks had been in place by the early 19th century, and while private parties of New Mexico traders were encouraged by Spanish authorities to travel north and east to trade with the Indians, American traders were not always welcomed.

Mexican Period (A.D. 1822 – A.D. 1848)

The Mexican Period coincides with much of the early American presence in the Colorado territory. In the spring of 1821, Spain granted Mexico independence as addressed in General Agustin de Iturbide's publication of the *Plan of Iguala*. Aware of the advantages that trading with the United States could bring, New Mexico eagerly sought the business of American traders from the northern frontier. Establishment of a viable fur trade in the region brought about exploration of previous sections of unknown territory, thus expanding geographical knowledge of the mountain west.

As the door opened for trade in New Mexico, the price of furs was rising in the United States, which brought with it a renewed interest in the fur trade. In 1823, Mexican soldiers warned trappers there were laws against foreigners trapping beavers in Mexican waters. American trappers did not easily give up the rich trapping areas in New Mexico, and many found ways around the law like smuggling furs by alternative routes, or by obtaining Mexican citizenship. Many American trappers, however, moved on, as early as 1827, into the Rocky Mountains to work the mountain streams for beaver. The "golden era of beaver trapping" dates between 1828 and 1833. The demand for beaver fur fell from favor in the early 1830s, replaced by the demand for the hide of the American bison, which lasted close to three decades.

The success of the fur trade brought about the construction of many trading posts inside the United States territory north of New Mexico. Entrepreneurs such as William and Charles Bent and John Gantt established trading posts along the Upper Arkansas River between 1821 and 1835. The most successful trading post was Bent's Fort, established in the early 1830s by the Bent, St. Vrain and Company on the north side of the Arkansas River. The location of the fort encouraged initial attempts of the first permanent settlements in the region.

As the fur trade waned in the late 1830s, many trading posts continued to serve as supply stops along established trails and trade routes. Agricultural settlement of the region coincided in conjunction with fur trading activities. As the fur trade became less lucrative many fur traders gave up their roaming lives and some, with Spanish or Indian wives, settled down to farm. Corn and other produce of these farms found a ready market at the fur trading posts. While trappers probably worked the streams throughout the Pikes Peak area, their temporary campsites most likely have been lost through natural processes or latter human interaction with the land. The most well-known campsite called Jimmy's Camp was located on Jimmy Camp Creek approximately eight miles east of present day downtown Colorado Springs.

The Arkansas River was the international boundary of the Louisiana Territory from 1819 to 1848. To promote settlement in Mexico's northern frontier, the Mexican government issued a series of land grants between 1833 and 1843 to individuals for the development of towns and natural resources. Before the establishment of any permanent Mexican settlements, the land grants transferred to the United States in 1848 after the war with Mexico. Humble farmers raised families, tilled the soil with crude wooden plows, dug irrigation ditches, and raised crops of wheat, corn, and beans. These small Hispanic communities were the first permanent agricultural settlements in Colorado. By 1860, more than 2,000 emigrants had settled in the area establishing at least forty irrigation ditches.

American Frontier (A.D. 1849 - A.D. 1858)

The Mexican War officially ended in 1848, with the Treaty of Guadalupe Hidalgo. The United States annexed the Mexico territory from Texas to the Pacific Ocean, from the Rio Grande to the forty-second parallel, the present American Southwest, including the area of Colorado south of the Arkansas River. The postwar period brought several significant changes resulting in permanent occupation of the region. American population in Colorado increased as a direct result of gold and silver mining and emigrants seeking fortunes through mineral prospecting in California, or settling on farms or ranches in Utah and Oregon. While wagon wheels continued to furrow deeply along the Santa Fe Trail, the rush to gold fields and cattle drive routes contributed to the emergence of formal communication and transportation systems, linking frontier posts and villages. Frontier building increased hostilities between emigrants and the indigenous tribes eventually resulting in systematic removal of the Indians as early as the 1860s.

Enthusiastic reports brought back by Lewis and Clark in 1806 of the fertile valleys of Oregon, and the Fremont expeditions (1842, 1843 and 1844) returning with maps of the major trails over the mountains to Oregon and California territories, encouraged many emigrants to head west. The Fremont expedition of 1842 employed the seasoned frontiersman Kit Carson as their guide to survey the area between the Missouri River and South Pass for passable routes and sites for the development of military posts. Bent's Fort established in the 1830s continued to serve as a portal from which many expeditions and emigrants began their journey into the western frontier.

Originally, emigrants made the journey west in search of land to establish farms and ranches. The discovery of gold in 1848 on a ranch belonging to John Sutter in California altered the purpose, and demographics of those traveling west changed. By 1849, the gold rush brought many seekers of fortune over the Great American Desert and the Rocky Mountains. While the Pikes Peak area is not located along the most frequently traveled Oregon Trail that took emigrants through central

Wyoming, or the Overland Trail through northeastern Colorado and southern Wyoming, important "feeder" trails of the Oregon Trail did traverse through the immediate area. A number of exploration parties traveled along the Fountain Creek route: George Ruxton (1847), the Sumner Kansas Territory Survey (1857), and the Hayden Geological Survey (1873). The Cherokee Trail may have originated as early as 1849 with the Evans party of 124 gold prospectors, including 15 Cherokee Indians, on their way to the gold fields north of Denver. The trail followed along Fountain and Jimmy Camp Creeks to the headwaters of the South Platte drainage, then north to Denver. The trail became a frequently used thoroughfare after 1858, as news spread quickly through the Kansas and Missouri frontiers of the discovery of gold in the Pikes Peak area. Following the path of the gold prospectors, came freight wagons with needed supplies to outfit and feed those seeking their fortunes.

Settlement, along with the appearance of smallpox, increased tensions between Native Americans and emigrants. Indian hostilities often caused abandonment of early settlements and ranches before the decade of the 1850s closed, and prior to the 1858 Colorado gold rush. Indian populations adapted to the limited presence of American traders and fur trappers, but became more agitated as Americans began to extensively travel through and settle in the Colorado Territory. The Treaty of Fort Laramie established in 1851 between the United States government and nine Plains tribes allowed Americans the right to build forts and roads within the tribal territories. The tribal territories agreed upon in the treaty set aside eastern Colorado from the Arkansas River to the North Platte River in Wyoming for the Cheyenne and Arapahoe. The central Rockies and the western slope was the land of the Ute, who resisted the gradual emigration of Hispanic American groups from New Mexico into the San Luis Valley.

Increased traffic along the Santa Fe Trail and the establishment of the cattle drive routes in the new territory created further problems with Native American populations. In 1861, under pressure from the U.S. Government and white settlers, the Cheyenne and Arapahoe surrendered in the Treaty of Fort Wise the bulk of their land, which included the heart of their hunting lands at the base of the mountains. While most of the Cheyenne peace chiefs, lead by White Antelope and Black Kettle, supported the agreement, many of the young men and members of the warrior society claimed they had not agreed to the cessation of their land. The amount of game necessary to support the tribes was not plentiful enough on the fraction of the land north of the Arkansas allotted to the tribes. Stealing livestock from farms and ranches became a way to supplement the lack of game.

In the spring of 1864, Cheyenne and Arapahoe Indians began raiding isolated ranches, running off horses, and antagonizing detachments of cavalry primed for action after a long winter. Reprisals by the military led to a series of events that culminated in the Sand Creek Massacre of 1864. William Bent, associated through marriage with a Cheyenne woman and his trade relationship with the Cheyenne from the 1830s – 1840s, helped open negotiations for a new treaty in late 1865. However, intensive raiding of settlers continued into 1867. A major military campaign occurred in the winter of 1868-1869, resulting in the Treaty of Medicine Lodge, where most of the Southern Cheyenne and Arapaho agreed to relocate to a reservation in Oklahoma.

Colorado Territory
The formation of the Colorado Territory coincided with the onset of the Civil War in 1861. Geographically the newly established territory included portions of western Kansas and Nebraska, eastern Utah, and northern New Mexico. However, due to political infighting, the prospect of attaining actual statehood was less and less attractive to many Coloradans. From 1868 to the approach of the presidential election of 1876, Colorado statehood was a dead issue. Then, with the national elections fast approaching, President Grant promised Colorado statehood in return for three Republican electoral votes. The proclamation was issued on August 1, 1876, and that fall Hayes defeated Tilden by a one-vote margin.

By 1860, the population of Colorado had expanded to almost 35,000, with 82.4% of the working force employed in mineral extraction. The Colorado Territory gold rush was short lived with the primary gold deposits in the Leadville district depleted by 1863, and the mining industry entered a depressed phase lasting through the 1860s. By the 1870s, the work force employed in the mining industry had dropped to 12.5%, a dramatic change from the 82.4% indicated in the 1860s census. Most prospectors eventually left, some turned to agriculture, and some stayed on to bolster new communities.

Settlement and Development Period (A.D. 1858 – A.D. 1929)

The Pikes Peak area would greatly expand as a result of the gold rush of 1858, bringing with it population and economic fluctuations. The demand for fresh meat in mining camps played a role in the development of the Colorado cattle industry which developed gradually beginning in 1860. The Civil War, depletion of readily accessible minerals, the difficulty in transportation and the transportation of goods, and growing conflicts between settlers and native tribes tempered growth between the mid-to late-1860s. With the cessation of Indian hostilities in 1868, development of better transportation alternatives and communication mechanisms, settlement gradually increased within the region. Resurgence in population and community development resulted from the mining industry in Leadville in the 1870s and the discovery of large gold deposits in Cripple Creek in the 1890s.

The discovery of gold in 1858 in the mountains near present day Denver and in Leadville (1859) brought approximately 100,000 gold-seekers to Colorado in 1859, where they spread like wild fire up the South Platte into the upper reaches of the Arkansas River drainage to pan for gold. Not all emigrants came to seek fortune by panning for gold, but rather they took advantage of the needs of those who did. Thousands of would-be miners eventually stayed and became ranchers and farmers. Towns and villages emerged out of the wilderness in the late 1850s. A few communities developed to serve as supply points and agricultural centers such as Colorado City. Colorado City was located along the foot of the mountains on trails that lead to gold mines in South Park. Attributes of the city – the scenery, fresh mountain air, and fertile soil near streams – made settling in the area favorable.

Colorado City received its name because it was located along the natural gateway leading to the upper branches of the Colorado River. By 1860, the population of Colorado City had reached 1,000; many were merchants and forwarders. In a marketing campaign in May 1860, Colorado City advertised free access to the South Park Mines, abundant agricultural resources, medicinal springs, and inspiring views of the Garden of the Gods. From 1861 to 1862, Colorado City briefly held the distinction as capital of the Colorado Territory. The growth of Colorado City would go through a period of decline as the mining industry entered a depressed phase in 1863. By the end of the decade, Colorado City was virtually deserted.

The cattle industry in Colorado Territory developed as a direct result of the 1859 gold rush. Prior to the gold rush, ranches were located at widely scattered locations. In 1860, the cattle industry found its official beginnings in Colorado when the Lovell and Reed Cattle Company brought Texas longhorn cattle to the area. Over the summer, cattle grazed, until sold in small packs to resident ranchers or for butchering. Many small ranches, established as early as 1860, continued to grow, and their success encouraged the establishment of others between 1869 and 1872. The home ranch or ranch headquarters often was located on a stream with at least semi-permanent water, and the cattle would graze the adjacent public domain land.

Agricultural settlement in the area was limited almost entirely to raising stock because of the rough and arid landscape and the lack of surface water. The term "settlement" does not accurately apply to occupation and use of the area until at least 1880. Scattered and usually isolated ranches were established throughout the region the early 1870s, but most of the southern and eastern portions of the area were hinterland ranges for ranches. Virtually all of the territory remained unfenced range, and therefore used as common range by the ranchers.

Colorado’s cattle industry was growing, with an estimated 147,000 cattle in 1867. As early as 1868, El Paso County stock growers held meetings to discuss concerns that Texas cattle traveling through the region could transport tick fever and other diseases that would endanger Colorado herds, and possibly affect the efforts of selective breeding to improve range stock. Petitions passed against the importation of Texas cattle, and armed men soon turned back Texas herds entering the Colorado Range, causing the search for ranges and slaughterhouses further north that welcomed Texas longhorns.

The route of trail drives probably changed somewhat depending upon the time of year and condition of the grass and streams. Some Texas herds possibly trailed through Fountain Creek on a trail reportedly used in the 1870s and 1880s until fencing and railroad construction made the overland cattle drive unprofitable and unnecessary. After the Union Pacific Railroad was built through Wyoming in 1868-1869 a vast opportunity for ranching opened up on the Central and Northern Plains, and primary cattle drives moved eastward away from the Pikes Peak area. With the arrival of railroad service, ranchers shipped most of their stock by rail from Colorado Springs, Fountain, or Pueblo. However, the high cost of shipping led several members of the association to drive herds of cattle overland to Kansas City. The last trail drive from the Pikes Peak area probably occurred in the early 1880s.

Stagecoach lines were one of the first modes of transportation to provide passenger and mail service to supply stations and gold camps. Stagecoach and mail service between Denver and Santa Fe in the 1860s was irregular. The line apparently ran “…from Denver…through Russellville, Jimmy’s Camp, the Fountaine and Jenk’s Ranch; then” left “over the hill to the Arkansas near the mouth of the Huerfano….” Several stage stations were located near the eastern boundary of the Fort Carson. The Widefield Stage Station was about two miles south of the present junction of

Colorado Highway 83 and U.S. 85. The Fountain Stage Station was on the southern edge of the present city limits of Fountain, on the north bank of Jimmy Camp Creek.

In the 1870s, sporadic new gold and silver strikes were discovered in the mountains west of the region nearest the Pikes Peak area. The Union Pacific Railroad completed its mainline through Cheyenne, Wyoming in 1868, and the transcontinental link by 1869. When Coloradans learned the Union Pacific would not be extending a line to Denver, citizens with financial backing built the Denver Pacific Railroad in 1870, with a line extending from Denver to Cheyenne, where it connected with the transcontinental line of the Union Pacific. The Kansas Pacific Railroad completed its line from St. Louis to Denver that same year. As these two railroad lines reached completion, W.A.H. Loveland began building the Colorado Central Railroad, which extended out of Denver to Golden and on to the mines on Clear Creek. By 1871, the Denver and Rio Grande Railroad (DRG), directed by General William Palmer, began building a line southward, reaching Colorado Springs on October 21, 1871. The DRG extended its line south, east of Fountain Creek reaching Pueblo on June 15, 1872, eliminating the stage line along that route.

During the late nineteenth century Euro-American interests came to control and dominate southeast Colorado. Several factors contributed to the intensive settlement of the plains in the area by the early twentieth century, including the passage of the Enlarged Homestead Act of 1909 and the Stock Raising Act of 1916. Methods of dryland farming also improved, and new wheat strains better adapted to arid environments were introduced. World War I was a major factor in the spread of dryland agriculture in the region, as the United States became an important exporter of wheat and corn to Europe. This period resulted in significant changes for southeastern Colorado, rivaling the gold rush era in terms of demographic effects.

The railroad stimulated growth in the Pikes Peak Region and in areas on the Front Range. The mining industry in the 1870s also significantly affected the area, resulting in the establishment of several towns and rural railroad stations. Colorado Springs, originally Fountain Colony, established by General William Jackson Palmer in 1871 near the nearly abandoned town of Colorado City, was located on the new Denver and Rio Grande Western route from Denver to Pueblo. By 1879, the population of Colorado Springs had grown to about 5,000 people, and included members of Fountain Colony, a Quaker agricultural colony within the environs of the township. Recreation and tourism greatly influenced the early development of Colorado Springs, however the 1890 gold strikes in Cripple Creek expanded economic and societal development as it became an important ore-smelting center.

When the Denver and Rio Grande Railroad built its mainline south of Colorado Springs through the mouth of Jimmy Camp Creek in 1872, the town/siding of Fountain was probably established. Various sources seem to confuse the Fountain community with Fountain City, a precursor to Pueblo established in 1859, and Fountain Colony at Colorado Springs. Early settlement around Fountain relied on irrigation, and the community became a farming and stock shipping center. In 1888, the town had a population of around 200 persons, but in that year a runaway train struck rail cars filled with naphtha and blasting powder in the Fountain switchyard destroying most of the town. The town was rebuilt and remains a small farming center.

Unlike other areas of the Plains, the Pikes Peak area did not have distinct homestead settlement periods. Sizable ranches prior to the 1940s involved a combination of purchasing land claims and filing claims on available land. Generally, later homesteaders, often limited to marginal land, characteristically claimed land under laws requiring a period of residence and improvement. The number of land entries rose dramatically from the 1860s to the end of the 1880s. After a quieter decade of the 1890s, land entries jumped to a peak during 1900-1909. Homesteading remained strong in the 1910s and 1920s, with a large drop off in the 1930s.

Sixty percent of all land entries occurred between 1900 and 1929. This corresponds with the prime homestead period on the Plains when the government encouraged the establishment of family farms and dryland agriculture. Laws that encouraged dryland farming and the system's inappropriateness are demonstrated in the number of failing land entries. The high volume of land entries in the 1920s, when climate and the economy of the region made any agricultural existence difficult, may be attributable to inertia from the preceding decades and/or attempts by previous claimants to obtain sufficient land to make a living.

By the early 1870s sawmills were producing milled lumber in the area called "The Pinery" near Colorado Springs. Milled lumber could also be obtained at the railroad sidings along Fountain Creek. Most settlement structures were probably simple wood frame buildings, but some true sod, adobe brick, and mortared stone masonry buildings are known to have been constructed in the region in the early settlement period. Mounding of clay material around some foundations indicates either that superstructures were partially composed of earthen materials (or insulated with stacked sod) or, more likely, the roofs were covered with earth or sod. Ethnic reflections in settlement architecture are apparently rare in the region, other than the ephemeral association of adobe with Mexican Americans. Regional urban stylistic preferences during the period 1865 to 1920 tended toward "Western Victorian" forms and decorations, but rural structures in the region were characteristically utilitarian in design with little if any ornamentation.

Community Resources

Socio-Economics

The frequency and type of transportation of people and goods is fundamentally interconnected to how their economic and social activities are distributed. The demand for transportation rises in proportion to increases in population, employment, and socio-economic conditions. Following is a look at the existing socio-economic conditions in El Paso and Teller Counties through 2005. Forecasting estimates through 2035 for both counties are included in the Small Area Forecast (Chapter Five).

Population

El Paso County grew at a pace above the state average during the early part of the 1990's due to the influx of manufacturing and aerospace companies, and continued attractiveness to religious organizations. The county saw a slower growth rate during the second half of the 1990's, below the state average, as the economy began to cool and the county started to head into the recession of the early 2000's. The City of Colorado Springs is the largest municipality in El Paso County with a population in 2005 of 384,876. Although most of the growth that occurred recently in El Paso County was in Colorado Springs, the future forecasts suggest that more growth is expected in the unincorporated areas of El Paso County. Table 3-14 shows the populations of the cities and towns of El Paso County.

TABLE 3-14: EL PASO POPULATION BY MUNICIPALITY AS A PERCENTAGE OF COUNTY

Entity	2005 Population	Percent of County
Calhan	889	0.16%
Colorado Springs	384,876	68.08%
Fountain	19,470	3.44%
Green Mountain Falls	866	0.15%
Manitou Springs	5,324	0.94%
Monument	4,510	0.80%
Palmer Lake	2,397	0.42%
Ramah	120	0.02%
Unincorporated	146,898	25.98%
El Paso County	565,350	100.00%

Source: July 2005 State Demography Estimates

Teller County had population growth above the state average between 1990 and 2000, but grew more slowly than the state between 2000 and 2005. A significant amount of growth in Teller County can be traced to the Woodland Park area. The City of Woodland Park is home to a number of residents who commute to Colorado Springs for employment. The strong growth is expected to continue in the coming years. Table 3-15 shows the populations of the city and towns of Teller County. Green Mountain Falls is only partially located in Teller County, with a significant portion located in El Paso County. Woodland Park is the only incorporated area experiencing appreciable growth, however this growth is occurring at a moderate pace and most of the county's population will continue to be concentrated in the unincorporated areas of the county.

TABLE 3-15: TELLER POPULATION BY MUNICIPALITY AS A PERCENTAGE OF COUNTY

Entity	2005 Population	Percent of County
Cripple Creek	1,071	4.79%
Green Mountain Falls	49	0.22%
Unincorporated	13,601	60.87%
Victor	443	1.98%
Woodland Park	7,182	32.14%
Teller County	22,346	100.00%

Source: July 2005 State Demography Estimates

Households and Group Quarters

In 1990 there were a total of 146,965 occupied households in El Paso County. By 2005 this number increased to 210,477 households. The majority of the county's housing units were built after 1980 and homeownership has increased steadily in the last few years. Group quarters are made up of people living in correctional institutions, nursing homes, mental (psychiatric) hospitals, juvenile and other institutions, college dormitories, military quarters, emergency shelters for homeless persons, and other non-institutional group quarters. With seniors living longer and its attractiveness to military retirees, El Paso County will see an increased need for group quarters in the future. In 2005, 75% of those in group quarters live in non-institutionalized quarters, such as college dormitories and military quarters, compared to 49% statewide. El Paso County has over 97% of the state's military group quarters population with 8,321 out of a total of 8,512 in all of Colorado. El Paso County's population, number of households, and people living in group quarters are summarized in Table 3-16.

TABLE 3-16: POPULATION, HOUSEHOLDS, GROUP QUARTERS AND HOUSEHOLD SIZE IN EL PASO COUNTY

Year	Population	Population in HH	Group Quarters	Households	Average HH Size
1970	235,972	214,409	21,563	67,581	3.17
1980	309,424	294,104	15,320	108,203	2.72
1990	397,014	381,460	15,554	146,965	2.60
2000	521,060	495,237	25,823	192,409	2.57
2005	561,825	533,323	28,502	210,477	2.59

Source: U.S. Census Bureau

Overall, Teller County has a newer housing stock when compared to the state and nation. According to the 2000 Census, Teller County had 7,993 households occupied by 20,435 people. More people living in Teller County are in the household income band between $25,000 and $99,000 than in the state, and more households own homes. Higher median ages, incomes, and families with earnings may contribute to the higher home ownership rates. Unlike El Paso County, people living in group quarters represent only 0.6% of the total population for Teller County and this proportion is projected to remain stable through the coming years. Table 3-17 summarizes the population, households, group quarters and household size in Teller County.

TABLE 3-17: POPULATION, HOUSEHOLDS, GROUP QUARTERS AND HOUSEHOLD SIZE IN TELLER COUNTY

Year	Population	Population in HH	Group Quarters	Households	Average HH Size
1970	3,316	3,281	35	1,127	2.91
1980	8,034	7,992	42	2,865	2.79
1990	12,468	12,407	61	4,754	2.61
2000	20,555	20,435	120	7,993	2.56
2005	24,041	23,894	147	9,631	2.48

Source: U.S. Census Bureau

Age Distribution

El Paso County experienced a dramatic increase in population between 1970 and 2000. In fact, every age group gained population. From 1970 to 1990, the 25-34 age group was the dominate age comprising 13.5% to 19.6% of the population. In 2000, that age group was surpassed by the 35-44 age group following the aging trend of the baby boomer generation. Even with a dominate older age group, the median age of 33 in the county (versus 34.3 in the state and 35.3 in the nation) reflects a slightly younger population. Table 3-18 tracks age group data from 1970 through 2000 and gives the percentage of the total for the given year.

TABLE 3-18: EL PASO COUNTY FOUR DECADES OF AGE DISTRIBUTION AND % OF TOTAL

Age	1970	Percent	1980	Percent	1990	Percent	2000	Percent
<5	20,872	8.8%	24,324	7.9%	33,770	8.5%	39,038	7.6%
5 - 9	24,380	10.3%	24,137	7.8%	31,581	8.0%	40,104	7.8%
10 - 14	24,950	10.6%	24,616	8.0%	28,147	7.1%	40,298	7.8%
15 - 19	22,243	9.4%	32,072	10.4%	29,031	7.3%	38,708	7.5%
20 -24	36,060	15.3%	37,957	12.3%	35,152	8.9%	38,678	7.5%
25 - 34	31,932	13.5%	57,586	18.6%	77,854	19.6%	77,145	14.9%
35 - 44	27,235	11.5%	36,859	11.9%	63,980	16.1%	91,006	17.6%
45 - 54	21,347	9.0%	28,886	9.3%	37,959	9.6%	69,241	13.4%
55 - 59	7,245	3.1%	12,474	4.0%	15,187	3.8%	21,807	4.2%
60 - 64	5,796	2.5%	9,716	3.1%	12,679	3.2%	16,117	3.1%
65 - 74	8,258	3.5%	12,564	4.1%	19,925	5.0%	25,305	4.9%
75+	5,654	2.4%	8,233	2.7%	11,749	3.0%	19,482	3.8%
Total	**235,972**		**309,424**		**397,014**		**516,929**	

Source: U.S. Census Bureau

The median age of Teller County residents was 39.4 in the 2000 census. By this measure, Teller County had an older population compared to El Paso County, the state and the nation. The higher median age reflects the older baby boomers that may have moved from El Paso County with the intent to retire in Teller County, but still commute to work. As the decade advances, they will spend more time in the rural area of Teller County as they begin to move towards retirement. Table 3-19 tracks age group data from 1970 through 2000 for Teller County and gives the percentage of the total for the given year.

TABLE 3-19: TELLER COUNTY FOUR DECADES OF AGE DISTRIBUTION AND % OF TOTAL

Age	1970	Percent	1980	Percent	1990	Percent	2000	Percent
<5	291	8.8%	558	6.9%	1,163	9.3%	1,179	5.7%
5 - 9	253	7.6%	649	8.1%	854	6.8%	1,408	6.8%
10 - 14	410	12.4%	738	9.2%	1,026	8.2%	1,706	8.3%
15 - 19	272	8.2%	697	8.7%	795	6.4%	1,512	7.4%
20 -24	174	5.2%	455	5.7%	318	2.6%	674	3.3%
25 - 34	435	13.1%	1,670	20.8%	2,174	17.4%	2,045	9.9%
35 - 44	429	12.9%	1,193	14.8%	2,860	22.9%	4,372	21.3%
45 - 54	370	11.2%	815	10.1%	1,379	11.1%	4,039	19.6%
55 - 59	168	5.1%	359	4.5%	516	4.1%	1,219	5.9%
60 - 64	163	4.9%	314	3.9%	481	3.9%	861	4.2%
65 - 74	255	7.7%	408	5.1%	583	4.7%	1,090	5.3%
75 - 84	75	2.3%	145	1.8%	249	2.0%	370	1.8%
85+	21	0.6%	33	0.4%	70	0.6%	80	0.4%
Total	**3,316**		**8,034**		**12,468**		**20,555**	

Source: U.S. Census Bureau

Employment & Income

In terms of income from wages, salaries, and proprietor income, El Paso County is dominated by the military and government sectors. In fact, the county's three largest employers are military: Fort Carson, the U.S. Air Force Academy, and Peterson Air Force Base. Colorado Spring's School District #11 and Memorial Hospital finish the top five. The State Demography Office prepares estimates of base industries by economic sector. Table 3-20 shows the Services and Government sectors continue to be the largest employers in El Paso County, followed by Wholesale and Retail Trade and Manufacturing. The Agriculture and Mining sectors show low employment, and this is likely to continue in the future as El Paso County becomes more and more urbanized. El Paso County showed strong growth during the second half of the 1990's but took a downturn between 2001 and 2003 following the national recession. In 2005, the unemployment rate was 5% and the median household income was $50,714, up from $46,844 in 2000, which exceeded the national median. The rise in income levels can be attributed to the growing number of technology-based sector companies that have located in the Colorado Springs area, over the last decade. Occupational categories such as software development, chemical engineering, aerospace engineering and bio-technology require a highly educated workforce and these occupations tend to pay higher salaries than other occupations.

TABLE 3-20: EL PASO COUNTY EMPLOYMENT BY ECONOMIC SECTOR, 2000

Economic Sector	# Employed	% of Total
Services	97,997	31.1%
Government	67,060	21.3%
Wholesale & Retail Trade	60,377	19.2%
Manufacturing	29,986	9.5%
Construction	20,787	6.6%
Finance, Insurance & Real Estate	19,553	6.2%
Transportation, Communications, Utilities	15,482	4.9%
Agriculture	3,523	1.1%
Mining & Extractive Industries	112	0.0%
Total	**314,877**	**100.0%**

Source: Colorado Department of Local Affairs

The small towns in Teller County along Ute Pass and Fountain Creek are historically associated with mining and the railroad industry. The county's intimacy with mining continues to this day as is evidenced by the Cripple Creek and Victor Mining Company. It is Teller County's fourth largest employer with over 330 employees, exclusive of contract seasonal construction workers. For every mine job, 1.9 additional permanent jobs are supported in the local region. Today, tourism is the county's biggest economic base industry and gaming is the largest source of tourism-based jobs, employing more than 600. Tourism accounts for 2,243 of the jobs in the Services Sector (see Table 3-21). The county's largest employer is the Woodland Park School District RE-2, with over 350 employees. The Midnight Rose Hotel and Casino and the Double Eagle Resorts, both gaming-related industries in Cripple Creek, are in second and third place, respectively. Seasonal and part-time positions are included in these rankings. Teller County was late to enter the recession of the early 2000's, lagging the nation by at least six months. In 2005, the unemployment rate was 5% and the median household income was $53,830, exceeding El Paso County, the state and the nation.

TABLE 3-21: TELLER COUNTY EMPLOYMENT BY ECONOMIC SECTOR, 2000

Economic Sector	# Employed	% of Total
Services	3,577	41.2%
Wholesale & Retail Trade	1,468	16.9%
Government	1,167	13.4%
Finance, Insurance & Real Estate	851	9.8%
Construction	633	7.3%
Mining & Extractive Industries	310	3.6%
Transportation, Communications, Utilities	275	3.2%
Manufacturing	251	2.9%
Agriculture	160	1.8%
Total	**8,692**	**100.0%**

Source: Colorado Department of Local Affairs

Environmental Justice

Jurisdictions should recognize that the transportation and environmental impacts within minority populations, low-income populations, or Indian tribes may be different from impacts on the general population due to a community's distinct cultural practices. Executive Order 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*," prevents federal policies and actions from creating disproportionately high and adverse health and environmental impacts to minority and low-income populations.

In 2000, persons of minority races represented 23.8% of the population of El Paso County. Minority races include Black/African American, American Indian & Alaska Native, Asian/Pacific Islander, Other, and those persons with two or more races. Hispanic ethnicity is reported separately from racial characteristics. Approximately 58,400 El Paso County residents or 11.3% of the total county population are of Hispanic origin, considerably lower than the 17.1% proportion of the state. By contrast, minority races in Teller County only account for 7.1% of the population with nearly half or 3.5% of the residents being of Hispanic origin.

Measures of poverty are based on monetary income thresholds that vary by family size to determine who is poor. For example, a family of four would fall below the poverty level if the family's annual income was less than $17,603. In 2000, the poverty rates for El Paso County and Teller County were 8.0% and 5.4% respectively, each below the 9.3% state level. Small geographic areas where more than 20% of the population lives below the poverty level are scattered throughout the metropolitan area.

TABLE 3-22: RACE, ETHNICITY, AND POVERTY STATUS (2000)

	El Paso	Teller	Colorado
White	76.2%	92.9%	74.5%
Hispanic or Latino	11.3%	3.5%	17.1%
Black or African American	6.3%	0.5%	3.7%
American Indian and Alaska Native	0.6%	0.8%	0.7%
Asian/Pacific Islander	2.7%	0.6%	2.3%
Some other race	0.2%	0.1%	0.1%
Two or more races	3.9%	2.0%	2.8%
Total Minority Population	23.8%	7.1%	25.6%
Total Population	**516,929**	**20,555**	**4,301,261**
Poverty Rate	8.0%	5.4%	9.3%

Source: U.S. Census Bureau

Public Services and Facilities

The Pikes Peak region is serviced through multiple agencies and districts providing the basics for utilities, law enforcement, safety, education, and emergency services.
A region's public services and facilities are vital components to the health, safety and welfare of its residents. The quality of these services is a direct relationship between population and the level of personnel, equipment, technology, and programming of the agency or provider. As the population

in each jurisdiction within the region increases so does the demand for public services. Low taxes and increasing costs to provide services are becoming a regional problem since services funded by tax dollars tend to lag behind population growth. In addition, the annexation and/or development of land greatly affect the need for and cost of public services and facilities. Rapid growth in outlying areas can far outpace the ability of a district to construct new facilities and maintain an adequate level of service.

Land Use

Land use or landscape patterns refer to the type, size, arrangement and use of parcels of land. The arrangement of these landscape components is critical from both a biological and human perspective for sustaining quality of life. The Pikes Peak region reflects a variety of possible land uses as is evidenced by the following categories:

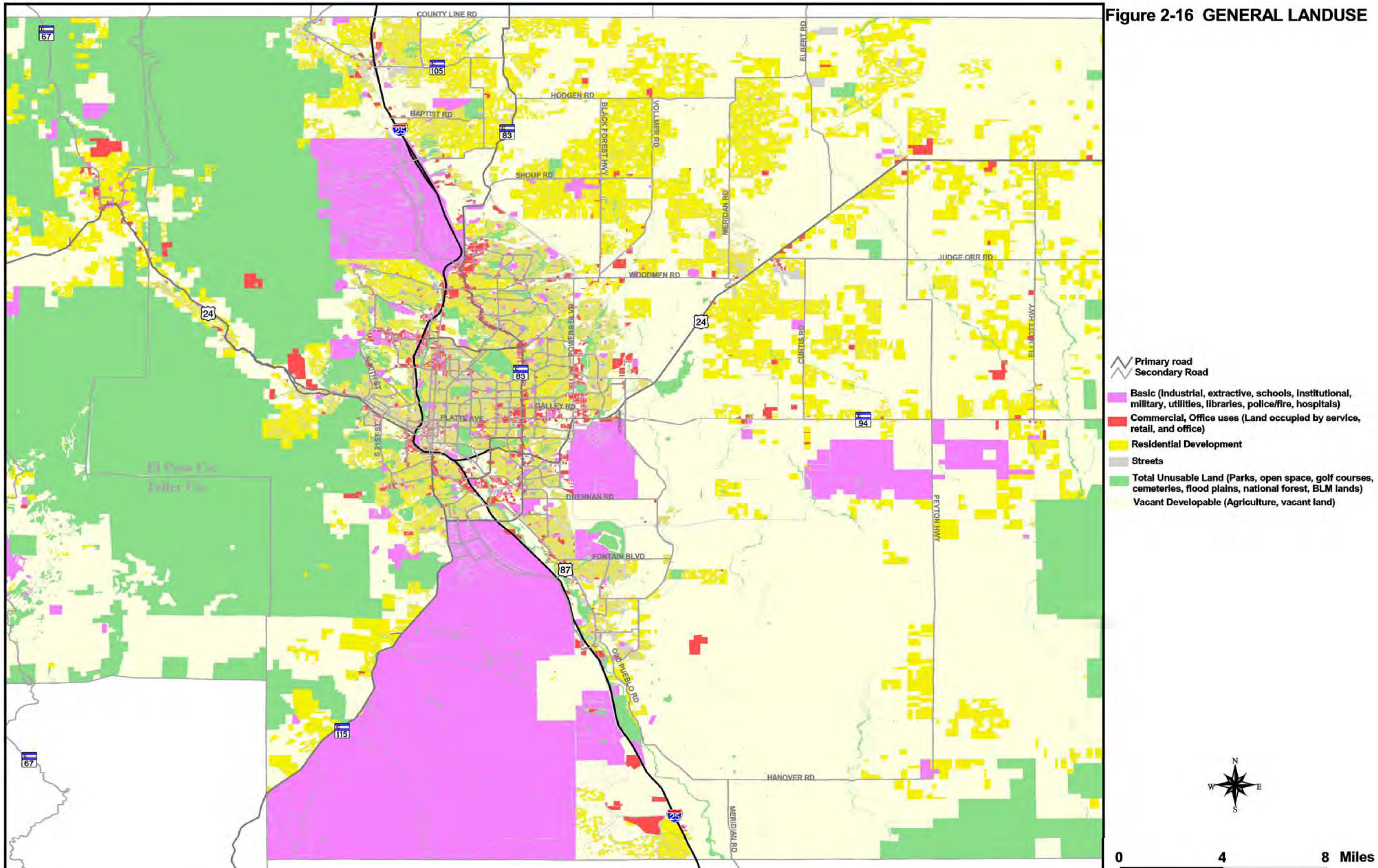
- Basic: industrial, schools, institutional, military, utilities, libraries, police/fire, hospitals
- Commercial: service, retail, office
- Residential Developable
- Unusable Land: parks, open space, golf courses, cemeteries, flood plains, national forest, BLM lands
- Vacant Developable: agriculture, vacant land

Figure 3-17 shows the General Land Use for the MPO. All of these land uses affect the development pattern of the region. The MPO area ranges from low density to urbanizing segments to near build-out conditions in Colorado Springs.

Neighborhoods

Neighborhoods are a fundamental part of any city or town. The homes, schools, churches, parks, and businesses which form the places where people live represent a large portion of most urbanized areas. More importantly, these neighborhoods directly contribute to the vitality of the community and to the quality of life in the urban environment. Different areas in the community can be defined as distinctly identifiable neighborhoods. Some are defined by natural or man-made features while others may be defined by characteristics such as income, race, or ethnic status. Still other neighborhoods can be identified by the age and style of their buildings. New neighborhoods tend to lack a true sense of character or atmosphere initially but a sense of character may develop as landscaping matures and residents individualize the homes in the area. It is important to protect and enhance the unique characteristics and investments made in neighborhoods in order to maintain the atmosphere of the community. In addition, it is important to add to the character of neighborhoods which lack a sense of identity through various physical improvements.

FIGURE 3-17: GENERAL LAND USE OF MPO



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Noise and Vibration

Noise is generally defined as unwanted sound. It invades the life of citizens, both rural and urban. Unfortunately, noise is a part of modern life that for now is here to stay. Noise comes from many sources, but the most noticeable and omnipresent is that from transportation related sources. Transportation related noise mainly comes from roads and highways, but may also be caused by railroad and aviation sources. Construction, industry, and even lawn mowing are non-transport related sources of noise that are also a site-specific problem. As traffic numbers in the Pikes Peak region continue to grow, noise emanating from roadways will increase. According to one source, as vehicle miles double, noise levels will increase by 3 decibels. Noise levels in the region have been increasing at a steady rate. Noise levels will continue to do so unless mitigation strategies are examined and implemented.

Parks and Recreation

The Pikes Peak region boasts myriad recreational possibilities. Parks and other recreational sites allow for citizen's to relax, improve fitness, and admire the beauty. Lands exist at multiple levels. Federally, Pike National Forest encompasses over 1,000,000 acres and provides many opportunities to outdoor enthusiasts. At the state level, there are parks such as Cheyenne Mountain State Park as well as various game reserves. Both El Paso and Teller Counties provide many parks, both urban and rural, for the enjoyment of the general public (see Figure 3-17). County and city agencies also maintain a network of trails for use by pedestrians and bicyclists. Preservation of parks and open space conserves natural and scenic resources, provides recreational opportunities, and is a means of shaping growth.

Air Quality

Air quality has been measured in the Colorado Springs area since 1970 as a result of requirements mandated by the Clean Air Act. The Clean Air Act established the requirement for cities to monitor for six criteria pollutants to be certain the amount was below the national standard. These six criteria pollutants are carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter and sulfur dioxide. The pollutants which are the focus of this report include particulate matter (both PM_{10} and $PM_{2.5}$), carbon monoxide, and ozone, primarily due to of the contribution automobiles make to these pollutant levels and the effect on airshed and human health that these pollutants have. These three pollutants will be discussed below with trends and possible mitigation steps which could be taken to reduce their current levels.

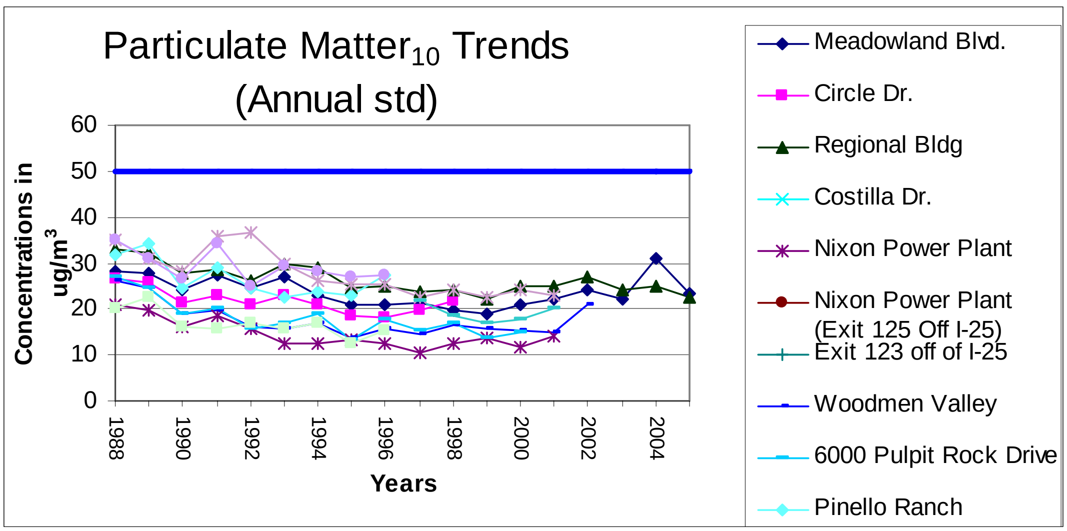
Particulate Matter

Particulate matter on roadways comes from two main sources. The first is construction, and with its high rate of disturbance causes high levels of particulate matter in the air. Another, and probably the largest, cause of particulate matter in the air is from the automobiles which add dust to the air, affecting visibility and air quality. Particulate matter can also increase the effects of respiratory problems, such as asthma. There are two standards for particulate matter in the national regulations, depending on the size.

PM$_{10}$

PM$_{10}$, defined as particulates less than 10 micrometers in diameter, is mostly created by humans, and is most generally thought of as common dust. It can be caused by wind moving debris from unpaved roads, street sanding, construction, and wood burning. Its primary source is from roadways. Usually, PM$_{10}$ levels are highest in winter when there is a high amount of street sanding, wood burning in fireplaces, and the layers of cold air in the atmosphere prevent the rising of warm air, trapping the pollutants close to the ground. The highest historic level of PM$_{10}$ measured in the Colorado Springs area was a result of the street sanding during a winter storm. Figure 3-18 shows that the PM$_{10}$ levels have been decreasing since 1988, primarily because of technological advancement in car engines, and sand being used in more strategic ways to prevent its blowing into the air.

FIGURE 3-18: PM$_{10}$ TRENDS

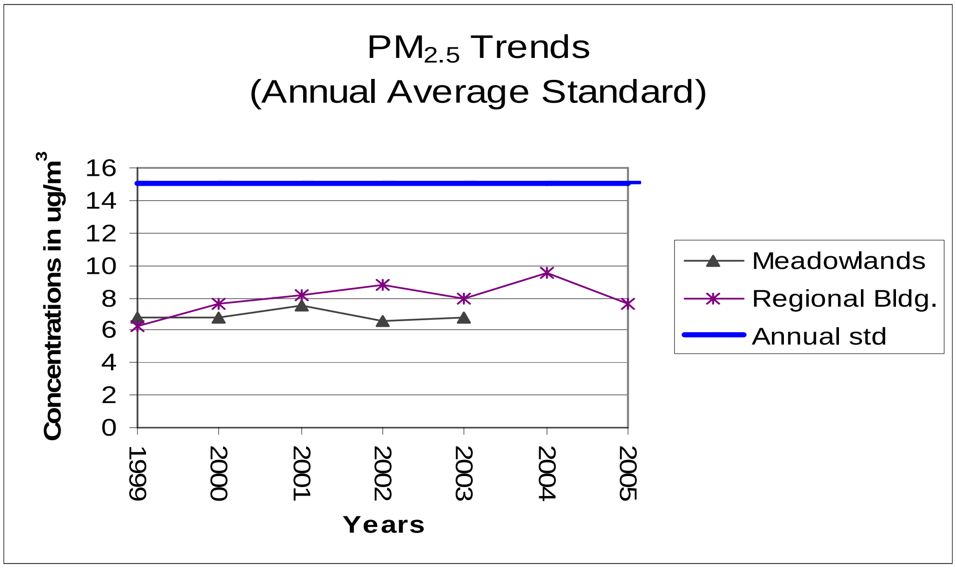


Source: PPACG, 2003b

PM$_{2.5}$

PM$_{2.5}$, defined as particulates less than 2.5 micrometers in diameter, comes from similar sources to PM$_{10}$, but additionally is created from combustion byproducts, restaurants, and grills. Figure 3-19 shows the current levels are below the standard.

FIGURE 3-19: $PM_{2.5}$ TRENDS

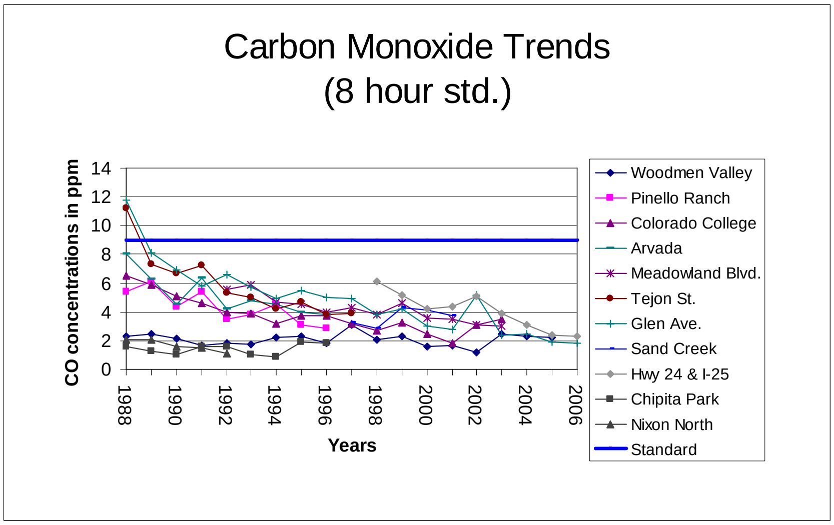


Source: PPACG, 2003b

Carbon Monoxide

Carbon monoxide is a colorless, odorless gas which is formed from incomplete combustion of carbon-based fuels like gasoline in cars, wood in a fireplace, or coal in a power plant. Carbon monoxide concentrations are oftentimes highest in the winter months when the particles can become trapped in the atmosphere for long periods of time due to the layer of cold air, which prevents the carbon dioxide from escaping. Carbon monoxide affects health by preventing oxygen from getting to organs and tissues, including the nervous system. Motor vehicles are the predominant source of carbon monoxide emissions into the atmosphere, creating more than two-thirds of the total amount nationwide and in the Colorado Springs area. These numbers have been projected to change with increased development in the future for Colorado Springs. The population in this area is increasing, and trends show individuals driving more vehicle miles. Even though these miles will be driven in vehicles whose emissions are decreased, because of the increased quantity of cars, emissions are still expected to rise. With new development, other sources will be creating carbon monoxide including construction equipment. Figure 3-20 shows the CO 8-hour monitoring station concentration trend as compared to the 8-hour standard.

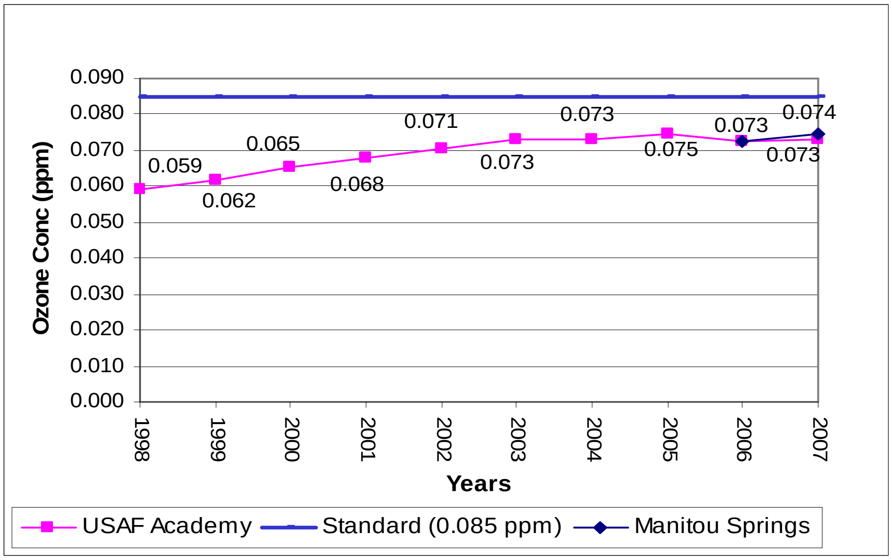
FIGURE 3-20: CARBON MONOXIDE TRENDS



Ozone

Ground level ambient ozone is a powerful pollutant which is formed from the combination of several different emissions, including hydrocarbons (volatile organic compounds – VOCs) and nitrogen oxide. Ozone can appear as brown smog above cities, can cause many health problems including respiratory infections and diseases, and can also reduce the growth and yield of plants and reduce ecosystem health. Both VOCs and nitrogen oxide are produced from vehicle emissions, emissions from power plants, industry, and chemical solvents. In 1980, Colorado Springs was in violation of the ozone standard, but has not had a violation since that instance. Recently, the trends in ozone have been rising and although they are below the national standard, the levels are rapidly approaching and will continue to rise if nothing is done. Figure 3-21 shows the three year average of the 4^{th} Max 8-hour ozone concentrations trend as compared to the standard.

FIGURE 3-21: THREE YEAR AVERAGE OF 4TH MAX 8-HOUR OZONE CONCENTRATIONS



Source: PPACG, 2007

On June 20, 2007 EPA proposed to lower the primary health standard for ozone to a level within the range of 0.070 and 0.075 ppm. If the standard were to be between 0.070 and 0.075 ppm, based on current concentrations (0.073 ppm at U.S. Air Force Academy and 0.074 ppm at Manitou Springs), PPACG could be found to be in non-attainment which would have the following implications for transportation:

- Conformity requirements for 8-hour standard take effect one year after designation.
- Until SIP is effective, plans/programs must meet build/no-build test.
- Upon EPA adequacy finding, plans and programs must achieve VOC and NO_x emission budgets established in SIP.

Development of Attainment State Implementation Plan (SIP) which contains control measures, contingency plan, motor vehicle emissions budget.

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CHAPTER 2: PLANNING FRAMEWORK AND PUBLIC INVOLVEMENT

STRATEGY

The *MOVING FORWARD* process enhanced collaboration and achieved consent by using dynamic, interactive methods to develop regional goals for resources that impact or are impacted by transportation systems and services. The outcome was a proactive and transparent process that sought out participants and evaluated, prioritized, and communicated the desired, needed, and affordable investments in transportation systems and services through 2035.

Federal requirements place several demands on the regional transportation planning process. Those demands are summarized and stated in federal regulations as factors to be addressed by the transportation planning process:

1) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2) Increase the safety of the transportation system;
3) Increase the security of the transportation system;
4) Increase accessibility and mobility of people and freight;
5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7) Promote efficient system management and operation; and
8) Emphasize the preservation of the existing transportation system.

A SAFETEA-LU[6] compliant transportation planning process will achieve at least these two new outcomes:

[6] The **S**afe, **A**ccountable, **F**lexible, and **E**fficient **T**ransportation **E**quity **A**ct: A **L**egacy for **U**sers (SAFETEA-LU), which governs United States federal surface transportation spending through 2010, was signed into law by President George W. Bush in Montgomery, Illinois on August 10, 2005.

1) Facilitating a more cost- and time-effective NEPA[7] process for individual projects by developing regional social, economic, and ecological implications that would result from implementing regional transportation plan alternatives, and

2) Informing planners, decision makers and the public on how the regional transportation plan and other planning efforts (land-use, conservation, economic development, etc.) can work together and where they conflict.

The product, a strategic plan for improving the transportation system, the *MOVING FORWARD* Plan formally documents the comprehensive, coordinated, and continuing transportation planning process. This "snapshot" of the transportation planning process describes how stakeholder input was obtained and how that input helped shape the planning framework components: the regional values and goals used to select transportation projects. It also lists the affordable transportation investments and when they are estimated to be implemented.

Most of the planning framework components discussed below are similar to those used during prior plan making and will, therefore, be familiar. In large part, these components mirror steps that could be expected to occur in any quality planning process. A successful outcome of *MOVING FORWARD* was increasing trust among the decision-makers, the public, and technical partners from the various agencies.

Framework Purpose

The PPACG transportation team refined components of the transportation planning framework to increase both the customer orientation of the plan and the transparency of the process. The principle outcome was a collaborative effort that united the regional community in identifying transportation system needs, issues, and impacts. This input was used to develop alternative system concepts, determine how to analyze potential benefits and impacts of those concepts, and refine the concepts to assemble the preferred future transportation system for inclusion in the regional transportation plan and, ultimately, the transportation improvement program.

To support the decision-making process and to more clearly articulate the impacts of the investment decisions, these processes require increased collection and evaluation of transportation, social, economic, and ecological conditions prior to, during, and after implementation of the plan. The information collected supports the baseline to facilitate the on-going selection of the projects utilizing both the objectives developed during the planning process and issues discovered during project evaluation. Providing the linkages between regional planning and the conduct of NEPA studies is a key objective to streamline the environmental review process. In order to accomplish this, procedures were undertaken to ensure the transportation planning framework is:

[7] **N**ational **E**nvironmental **P**olicy **A**ct (NEPA), as amended (42 U.S.C. 4321, et seq.) is a United States environmental law that was signed into law on January 1, 1970 by U.S. President Richard Nixon.

- **LEGITIMATE:** The process must actively reach out and be accessible to all potentially affected interests.

- **RIGOROUS:** The process should not allow those who voice their concerns most loudly, most often, or most articulately to wield disproportionate influence. Instead, the impacts and alternatives must be evaluated using scientific standards for data and analysis so that competing claims are assessed fairly.

- **TIMELY:** The complexity of decision-making can lead to very lengthy deliberative processes. There is a need to expedite decision-making, though not at the expense of public legitimacy.

Decision-Making

When the term "decision-making" is used in planning, it is generally thought to mean the final approval of a policy or plan. However, the PPACG Public Involvement Procedures (Appendix C) provides emphasis on obtaining public input into the information as it is developed and provided to decision-makers. This ensures that the public has the opportunity to remain in step with the plan development process. In the regional transportation planning context, this would include socio-economic forecasting decisions, project cost information, future funding level assumptions, or other information required to support the analytical work involved in plan development.

Decisions need to be informed by high-quality, scientifically-based analysis to communicate to the public and decision makers on the social, economic, and ecological consequences of transportation projects. Technical appraisal is, therefore, more than a procedural exercise; it is itself inseparable from the decision-making process. Technical appraisal must be designed to address the complex and potentially contradictory goals espoused by the public in a way that meets both the needs of decision-makers and those whose interests are at stake. "Best practice" approaches should not only expedite decision-making, but also enhance the legitimacy of the final decision.

Uncertainty in Planning

Decision-makers need useful information about potential impacts and trade-offs between alternatives in order to make the best decision possible. Because of the potential of negative consequences that can result from transportation investments, many people expect assurance that transportation decisions were based on complete and accurate information. Unfortunately, with the complexity of the land development process, evolving travel decisions, rapidly changing forms of industry, a swiftly shifting population structure, changing lifestyles, increasing motor vehicle fuel costs and alteration in the value of time, means that even with a perfect set of transportation forecasting models, uncertainty will exist.

Likewise, other social, economic, and political information unrelated to transportation, but that impacts transportation decision-making, is rarely complete. As a result, transportation policymakers cannot wait until they are totally certain of the trade-offs between biological, ecological, and social impacts of a decision before a decision must be made. A good technical process will include uncertainty and adopt a precautionary approach to decision making, while still enabling consideration of the broader and more complex issues and interactions such as land-use and environmental (social, economic, and ecological) protection. This process must be well-documented in order for the information to be carried from long-range planning into the individual project development processes, as directed by SAFETEA-LU.

Total certainty, even if achievable, is not necessary. Even when more detailed and certain information becomes available, it may not lead to better decisions because all decisions involve choosing between a range of positives and negatives, and which way the decision goes depends on the relative importance given to each trade-off by each decision-maker. A change in an absolute amount of impact may not change a decision when weighted against other factors.

Use of high-quality, scientifically-based analysis regarding the severity, extent, duration and likelihood of changes to transportation, social, economic, and ecological conditions that are a direct, indirect, or tertiary result of transportation investments should be made; all while acknowledging incomplete or imprecise information. Analysis of the sensitivity of a decision to each information piece should be undertaken when time and resources permit. If this is done early in the transportation process it can help the public and decision-makers understand trade-offs and lead to better regional decisions.

An example is acknowledging that the travel demand model forecasts daily volumes to plus or minus 10%. Peak hour traffic forecasts, which are used for many planning purposes, can and when measured, regularly do, vary more than this amount. Some of the limitations of standard transportation forecasting models are reduced by using integrated models such as TELUM©, CommunityViz©, and Vista©, which the PPACG transportation team utilized.

The PPACG transportation team initiated limited scenario-based planning to minimize uncertainty by determining common transportation needs irrespective of the future locations of households and employment. The aim of using scenarios is to introduce plausible possibilities that overcome natural human tendencies to:

- Give more weight to recent events,
- Deny evidence that does not support our views,
- Overestimate the probability of desirable events,
- Disregard futures that are hard for us to imagine,
- Underestimate uncertainties,
- Overestimate our ability to influence events beyond our control, and
- Be overconfident about our own judgments.

An additional consideration is that no decision is ever objectively “right” and so will always be subjective and thus “contestable.”

MOVING FORWARD PARTICIPATION PROCESS

SAFETEA-LU requires Metropolitan Planning Organizations (MPO) to develop and utilize a participation plan that provides reasonable opportunities for interested parties to comment on the metropolitan transportation plan and metropolitan transportation improvement program (TIP). Further, this participation plan must be developed "in consultation with all interested parties," and the public must have input on the participation plan. The participation plan must describe "explicit procedures, strategies, and desired outcomes" for elements of the participation program.

PPACG recognizes and emphasizes the importance of community involvement in all of its planning efforts and maintains public involvement procedures that are used to guide public participation in its regional transportation planning and programming processes. PPACG adopted the latest update to the *Regional Transportation Planning Process Public Involvement Procedures* in October 2005, and that document serves as PPACG's participation plan to address new SAFETEA-LU public participation and consultation requirements. The *MOVING FORWARD* process was committed to ensuring the region's transportation system stakeholders had a voice in shaping its transportation system. Through the use of multiple outreach techniques, citizens were empowered to get involved at every stage of the plan development process.

Formulation of the *MOVING FORWARD 2035 Regional Transportation Plan* involved its own extensive public participation process, which included a number of techniques to encourage citizen input at all levels of interest and involvement. Each step in the planning process included outreach and public participation techniques to align the final recommendations in the *MOVING FORWARD 2035 Regional Transportation Plan* with the region's goals and values. Through this public process, a comprehensive assessment of the region's long-term transportation needs was made. In developing the transportation plan, the MPO received input from:

1) Citizens,
2) Affected economic development, land development, and conservation planning agencies,
3) Representatives of public transportation,
4) Providers of freight transportation services,
5) Private providers of transportation,
6) Representatives of users of public transportation,
7) Representatives of users of pedestrian walkways and bicycle transportation facilities,
8) Representatives of the disabled, and
9) Other interested parties.

PPACG's website was used to draw input and information from the public via an on-line transportation survey. The website was also used to publicize public participation activities and provide plan-related information. PPACG routinely publishes all committee agendas and meeting materials as part of its regular public information process.

For the *MOVING FORWARD* process, the Public Participation Working Group was formed to facilitate two-way communication with key transportation stakeholders in the region. Participants in the Public Participation Working Group were recruited from advisory committees, commissions, and boards who have interest in transportation planning in the Pikes Peak Region. This group was very helpful in reviewing materials, methodology, and strategy and assisted PPACG in “getting the word out” about public participation activities.

Under direction of the Board of Directors, the staff of PPACG, with assistance from the Transportation Advisory Committee (TAC), the Community Advisory Committee (CAC), and the Air Quality Technical Committee, advises the Board regarding transportation and air quality planning efforts in the region. Membership on these committees, detailed in Chapter 11, Consultation and Coordination, reflects geographic and modal diversity.

METHODOLOGY

MOVING FORWARD used a modified Multi-Criteria Analysis (MCA) approach, adapted to its unique organizational structure, to facilitate the decision-making process. MCA is a widely used decision-making tool developed for complex multi-criteria problems that include both qualitative and quantitative information in the decision-making process. It is based upon soliciting and synthesizing data and input from both technical staff and stakeholders to arrive at a collective set of weighted criteria based upon objectives and indicators. The ability to separate the decision elements and communicate both how the decision-making process evolved and its result makes MCA ideally suited to transportation decision-making. In many situations, the ability to communicate and document how the decisions were reached is as important as the decisions themselves. Specific strengths of MCA in transportation project assessment are:

- Educating the public and participants of the importance of each goal and indicator to their interests.

- Assessing the relative importance of individual goals and indicators in order to select a set deemed most significant to the group.

- Aggregating all the goal and indicator evaluations to arrive at a group decision. A precautionary note: this process rarely results in community consensus due to fiscal limitations and broadly perceived needs and impact distribution.

The *MOVING FORWARD* process adapted the Multi-Criteria Analysis approach to build upon the strengths of PPACG’s organizational structure. PPACG’s standing advisory committees on transportation planning efforts, the Community Advisory Committee (CAC) and the Transportation Advisory Committee (TAC), were called upon to provide in-depth input into the process to develop alternatives, evaluate impacts, and select the best options for implementation. The Public Participation Working Group (PPWP), composed of citizens and representatives of various planning committees in the Pikes Peak Region, provided additional perspective. Members of the CAC, TAC, and PPWP met jointly in workshop sessions to aid PPACG staff in conducting critical tasks in the alternatives analysis process.

Systematically documenting the process, the information used, and the results of each step is critical to ensuring transparent public involvement and that the information and decisions made during long range planning can be carried into the NEPA process. Proper documentation of both the technical and decision-making processes is the mechanism that ensures that this information is useful and useable in ensuing planning processes, and particularly environmental impact assessments.

Presenting the *MOVING FORWARD* process step-by-step in the order in which they occurred, the following section explains the planning components that PPACG completed in developing the 2035 Regional Transportation Plan. Note that several steps proceeded in sequence or in tandem as the planning process progressed.

Step 1: Establish the Foundation for Decision Making

The first step in a planning process is to develop a vision that provides an overarching statement of the desired outcomes. A vision should be lofty, compelling, and inspiring to the participants. Defining the transportation system that a region desires to implement is a complicated process bringing together diverse interests, perspectives, and needs to consider an endless combination of challenges, options, and impacts. For a regional transportation plan to succeed, the process to develop it must seek the varied perspectives of all the system users, be perceived as "fair," and strive to articulate the desires of the regional community.

PPACG's visioning process laid the groundwork for preparation of the 2035 Regional Transportation Plan and articulates what the region collectively desires to achieve through the transportation planning effort. The Vision,

VISION, MISSION AND PRINCIPALS

Vision:

Create a pre-eminent multi-modal transportation system that meets regional mobility and accessibility expectations as essential elements of the Pikes Peak Area's quality of life.

Mission:

Plan multi-modal transportation facilities and services that efficiently move people and goods and support economic vitality while sustaining and improving the quality of life in the Pikes Peak Region.

Principles:

1. Preserve the function of the existing transportation system.
2. Provide efficient transportation for people and goods.
3. Develop a multi-modal transportation system that provides access to employment, services, military installations, and other destinations.
4. Fully integrate connections within and between modes for people and for freight.
5. Increase the safety of motorized and non-motorized travel.
6. Increase the security of the multi-modal transportation system.
7. Support the economic vitality of the Pikes Peak Area.
8. Improve mobility of people and goods.
9. Protect and enhance the environment by implementing transportation solutions that are sensitive to natural and human contexts.

Mission, and Principles are components of a strategic process that establish the foundation and bases to focus data gathering efforts, shape alternatives to be considered, and select the best options for future implementation.

- The Vision "paints" a picture of the desired future regional transportation system. The *MOVING FORWARD* Vision is responsive to the needs of the region's citizens, encompasses the varied plans of the jurisdictions within the region, and challenges participants to develop a system that addresses the region's quality of life.

- The Mission provides guidance on how those involved in this planning effort will move forward to achieve the desired outcomes.
- The Principles are standards that describe the integrated multi-modal transportation system we are striving to achieve and provide an overview of the factors that must be addressed in the plan. The Principles establish the framework in which objectives are defined to reach those standards and measurements calculated to gauge how well various proposals succeed in meeting those standards

MOVING FORWARD VISION, MISSION AND PRINCIPLES DEVELOPMENT PROCESS

PPACG initiated the *MOVING FORWARD* 2035 Regional Transportation Plan development process through a series of public meetings designed to obtain citizen reaction and input on the draft *MOVING FORWARD* Vision, Mission, and Principles. Six public meetings held around the region in September 2007, each set in a different community to allow the opportunity for citizens to provide input on the draft Vision, Mission and Principles. The Colorado Department of Transportation and respective local entity staffs assisted PPACG Transportation Planning staff in providing information to participants. Participants were encouraged to inform PPACG Transportation Planners of respective local and regional transportation concerns.

Key PPACG advisory committees: the Community Advisory Committee (CAC); the Transportation Advisory Committee (TAC) and two subcommittees, the Specialized Transportation Advisory Subcommittee and the Transportation Enhancement Subcommittee used the citizen input to develop an initial draft for further public comment. The committees considered a number of elements including: Board direction, Federal planning factors, the transportation-related vision and goals of local governments, previous planning efforts, and public input. The initial draft was completed at a joint workshop of the Community Advisory Committee and the Transportation Advisory Committee in June 2006 and released by the PPACG Board of Directors for citizen input in July 2006. In order to increase public awareness of th process and increase coments on the vision, mission and principles the PPACG Transportation Team participated in the Council of Neighbors and Organizations (CONO) Forum. The products of Step 1, the Vision, Mission, and Principles, were adopted by PPACG's Board of Directors in December 2006 to serve as the basis for preparing the 2035 Regional Transportation Plan elements.

Step 2: Gather Baseline Conditions

Effective evaluations require reliable information describing the current transportation, social, economic, and ecological environments. Baseline information plays an important role in informing planners, decision makers and the public about the nature and scale of current issues. It also provides an essential reference point against which to predict and monitor the outcomes of different transportation investments. However, gathering baseline information can be time-consuming and expensive, particularly if field monitoring is necessary to acquire new data. The PPACG transportation team strived to obtain data assembled through the feasibility and/or environmental studies of various projects around the region.

Based on an on-going appraisal of data availability and quality, as outlined in Chapter 13, Mitigation and Monitoring, future activities are needed to collect new or additional data for the evaluation process. This will be based on evolving knowledge of investment types and locations and the likelihood of impact occurrence. This effort will be guided by previous studies and local knowledge to identify data deficiencies and needs.

The primary products of Step 2 are two chapters of the plan that present in-depth information on the decision-relevant conditions in the Pikes Peak Region, Chapter 3, Regional Setting, and Chapter 5, Future Regional Development. In addition, throughout the plan document, topic specific data weaves context into the narrative.

Step 3: Develop Transportation Goals and Decision-Relevant Performance Measures of Effectiveness

A widely acknowledged principle of good planning is that it is guided by clear goals that define the desired outcome of plan implementation. The term “goal-oriented decision making” is sometimes used to refer to this principle. Setting clear, measurable, goals requires the participation of many stakeholders fulfilling their roles as technical experts, policy analysts, and decision makers. Most importantly, it requires the involvement of all citizens who have a stake in the transportation system as users, investors, and those whose quality of life will be impacted by the decisions made.

Using the adopted Principles as the foundation, these goals for the 2035 Regional Transportation Plan were developed with awareness of legal requirements and the transportation, social, economic, and ecological goals, policies, and plans of agencies that can impact or be impacted by transportation investments. Through a credible goal development process, stakeholders identified key issues and expressed desired transportation-related outcomes from regional transportation system investment in four categories: safety, maintenance, operations, and expansion.

By weighting the goals, as discussed in Step 7 Multi-Criteria Analysis, the relative importance of one goal in relation to another helped develop a regionally-customized approach to balancing issues and concerns. Through this balancing approach, the *MOVING FORWARD* process outcome was an effective, sustainable multi-modal transportation system that addresses the regional vision, principles, and goals.

PPACG's process to develop goals and performance measures was responsive to the SAFETEA-LU Planning and Environmental Linkages Program which directs:

> *. . . An integrated approach to transportation decision-making that takes into account environmental, community, and economic goals throughout the project life cycle, from the planning stage through development, design, construction, and maintenance.*

PPACG implemented a variety of public involvement techniques to encourage widespread participation in the *MOVING FORWARD* process that promoted transparency and accountability, along with establishing a solid foundation for subsequent stages of alternatives development and refinement. The specific techniques are more fully discussed below in Public Participation Activities.

The public had input into this step during outreach activities at numerous public events held throughout the region between September 2006 and October 2007, by filling out the on-line survey implemented on PPACG's website in May 2007, and through PPACG's ongoing advisory committee meetings. The Regional Transportation Roundtable, held on October 2, 2007, served as a culminating event, blending the public input received from multiple sources into an analysis and evaluation framework anchored to the adopted Vision, Mission and Principles.

The product of Step 3 was the framework for goal and performance measures analysis and evaluation.

Step 4: Define Analysis Parameters

A growing regional and national desire is to consider how transportation fits within the surrounding natural and human contexts. In order to accomplish this as part of the decision-making process it is necessary to identify the regional issues, problems, and opportunities that make up the regional context early in the planning process. These contexts encompass transportation-related social, economic, and ecological values, issues, and the role of non-transportation agencies in the transportation planning process. Important constraints to these analyses are the time, resources, and data available, as these will impact on the choice of methods and the level of detail of analysis.

Another role the context definition process was to provide additional opportunities for public participation. At this stage the public and other planning agencies identified key issues and information needs that they hope or are concerned will be changed by transportation investments. Providing a proactive and open process also promoted transparency and accountability. Coordination with other planning agencies also revealed additional considerations that are not now considered during the long-range transportation planning process but will benefit by inclusion in the long-range transportation planning process.

PPACG employed a straightforward methodology in assembling and refining the set of issues, problems and opportunities that were to progress through the analysis steps for the *MOVING FORWARD* long-range transportation plan development:

1) A list of transportation needs and concerns was compiled from information provided by the community at public participation activities, such as the *MOVING FORWARD* traveling booth and open houses, from technical analysis to identify system deficiencies, and from local jurisdictions professional staff. Perspective was gained from the data compiled through public outreach efforts and surveys.

2) The Regional Transportation Roundtable held in October 2007 brought together nearly 150 participants to distill the information from these sources and facilitate the compilation of specific projects and programs to improve regional transportation. Participants were first presented with a compilation of the data and information gathered to date. Working together in 19 randomly assembled groups, participants were then asked to map a two-tiered regional transportation system for 2035: the first based on a conservative fiscally constrained financial forecast and the second adding a tier based on a more robust financial forecast.

   These proposals were all included initially, and none were excluded or pre-judged as to their relevance, value, or validity. This helped to identify the depth and breadth of community concerns and ideas. Through a series of working sessions involving Community Advisory Committee, Transportation Advisory Committee, and Public Participation Working Group members, and PPCG Staff, these proposals were organized into unconstrained alternatives.

3) PPACG's Community Advisory Committee, Transportation Advisory Committee, and Board of Directors were asked to review and comment on the initial unconstrained alternatives to provide guidance for subsequent series of refinements. This guidance helped the PPACG Transportation team to identify information critical for and issues that will play a significant role analyzing needs, composing and refining alternatives, and, ultimately in decision-making.

The principle product of Step 4 was a list of unconstrained needs that progressed to alternatives formulation.

Step 5: Forecast Future Conditions

PPACG has completely renovated its regional modeling system over the past three years to include:

- An entirely new transportation demand model based in the (VISUM software platform. This model is used to forecast travel patterns and demand levels;

- An integrated, iterative socio-economic forecasting tool, the Transportation Economic Land-Use Model (TELUM). This software forecasts population and employment patterns iteratively with traffic forecasting;

- A conservation planning tool, VISTA. This software is a conservation planning and ecological impact add-on to ArcGIS. It is being used to help develop the required mitigation planning; and

- A socio-economic impacts tool, CommunityViz.

Using this updated toolset the PPACG transportation team developed information to help inform technical staff, decision-makers, and the public on the investment alternatives. The analytical limitations of the various models were acknowledged and the measures of effectiveness and evaluation criteria were completed to help translate the vision and goals of the region into a meaningful decision-support system.

The PPACG transportation team initiated limited scenario-based planning to minimize uncertainty by determining common transportation needs irrespective of the future locations of households and employment. The aim of using scenarios is to introduce plausible possibilities that overcome natural human tendencies to:

- Give more weight to recent events,
- Deny evidence that does not support our views,
- Overestimate the probability of desirable events,
- Disregard futures that are hard for us to imagine,
- Underestimate uncertainties,
- Overestimate our ability to influence events beyond our control, and
- Be overconfident about our own judgments.

The PPACG Transportation Team developed instructive socio-economic scenarios by combining input from standing committees and other interested parties. PPACG intends to mature its scenario planning capability to lend its value to all aspects of the transportation planning process.

> *The point is not so much to have one scenario that gets it right, as to have a set of scenarios that illuminate the major forces driving the system, their interrelationships and the critical uncertainties.* Peter Wack *(1985)*

The product of Step 5 is forecasts of future conditions with different socio-economic scenarios.

Step 6: Create Transportation Investment Scenarios

Borrowing from the field of economics, in times of uncertainty, the successful company (region) will focus on enhancing its resilience and adaptability. Increasing the transportation system's resilience means focusing on maintaining its ability to function in the face of unexpected disruptions, such as the collapse of an interstate bridge. Increasing its adaptability means improving the ability of the transportation system to react after unexpected structural changes, such as $5-per-gallon gasoline.

An alternatives comparison approach is useful to identify and compare the tradeoffs among scenarios and focus on desired outcomes in regards to mobility, safety, accessibility, social equity, economic development, fiscal responsibility, environmental quality and community quality of life. The *MOVING FORWARD* framework was designed to alert decision-makers to potential strengths, weaknesses, opportunities, and challenges from difference transportation system investments.

Facilitated advisory committee workshops were conducted to consolidate the individual comments into alternatives for comparison and comment. Integrating input from PPACG's advisory committee and public process, the *MOVING FORWARD* traveling booth and the Regional Transportation Roundtable, the PPACG transportation team listed, grouped, mapped, and compared transportation system needs. Seven initial alternative networks were prepared, modeled, and analyzed:

1) **2015 EXISTING SYSTEM PLUS COMMITTED PROJECTS** - The adopted 2035 Socioeconomic Forecast of Households and Employment Scenario was used to prepare a forecast of travel patterns which was evaluated a network consisting of existing facilities and those most likely to be implemented by 2015: projects in the current adopted Transportation Improvement Program Strategic and locally funded projects, including the PPRTA projects in the "A" list. The 2015 Existing Plus Committed System network also served as the base for comparison of the remaining alternatives.

2) **2030 REGIONAL TRANSPORTATION PLAN PROJECTS** – The current adopted long-range plan projects that had not yet been funded or built.

3) **ALL INTERCHANGES** – This alternative was prepared to conduct a sensitivity analysis to test impacts of upgrading existing facilities with grade-separated interchanges.

4) **DISPERSED PROJECTS** – This project alternative was composed of proposed projects that meet or reduce a mobility need and/or are included in local entity transportation plans but were not in a previous alternative.

5) **STRATEGIC CORRIDORS SYSTEM** – Emphasized the regionally significant roadway projects and improving transit on regionally significant corridors.

6) **BALANCING INVESTMENTS SYSTEM** – Emphasized improved transit coverage and frequency; express bus and bus rapid transit and lower impact roadway improvements.

7) **REDUCING ENVIRONMENTAL IMPACTS** - Concentrated primarily on transit improvements, ITS (intelligent transportation systems), and limited roadway improvements.

The products of Step 6 were seven alternative visions for further evaluation and refinement.

Step 7: Evaluate and Refine Alternatives

The *MOVING FORWARD* 2035 Regional Transportation Plan used a customized Multi-Criteria Analysis (MCA) process to aid evaluation of alternatives. MCA is a decision-making tool developed for complex multi-criteria problems that include both qualitative and quantitative information in the decision-making process. MCA is based upon obtaining input from both experts and stakeholders. These inputs are solicited and synthesized to arrive at a collective decision, or choice, regarding the selection and use of a weighted set of criteria based upon adopted goals and performance measures. PPACG tailored and integrated components of MCA into its extensive committee and public involvement procedures, further enhancing the open decision-making process that it has fostered in this community for over four decades.

Three focus groups composed of randomly selected participants from throughout the region that were a statistically valid sample of the region based on ethnicity, income, age and geography were conducted December 4 and 5, 2007. The purpose of the focus groups was to gather information and perspective of citizens on the relevant importance of the *MOVING FORWARD* goals, one to another (pair-wise comparison). The focus group participants were each asked to fill out a questionnaire designed to obtain demographic data and gain an understanding of their values and concerns. Participants then were polled electronically to compare the relevant importance of transportation goals. Both the Transportation Advisory Committee and the Community Advisory Committee were asked to complete the polling exercise that mirrored the Focus Group effort.

The information provided by the focus groups added dimension to the information received through other channels, such as the events and festivals traveling booth, the transportation survey, stakeholder interviews, the Regional Transportation Roundtable, the PPACG advisory committee input, and other meetings. The three refined vision alternatives, presented at the December 11, 2007, open house public meeting for input, were:

1) **STRATEGIC CORRIDORS SYSTEM –** Emphasized the regionally significant projects such as completing Powers as a freeway with extensions north and south; widening I-25 and US-24, east and west; central Colorado Springs east-west improvements; and improving transit on regionally significant corridors.

2) **BALANCING INVESTMENTS SYSTEM –** Emphasized improved transit coverage and frequency; express bus, and bus rapid transit; improvements to US-24, east and west; extending Briargate Parkway to Meridian, extending Powers north and south and adding interchanges; central Colorado Springs east-west improvements; widening Woodmen Road.; and improving Proby Expressway.

3) **REDUCING ENVIRONMENTAL IMPACTS -** Concentrated primarily on transit improvements adding new bus routes, enhancing existing routes; and adding bus rapid transit and commuter rail along I-25, US-24 to Woodmen Road. This alternative would include ITS (intelligent transportation systems) and limited roadway improvements:

completing Powers extensions north and south and adding an interchange at Powers and US-24, widening US 24.

The products of Step 7 are three refined visions for transportation investment.

Step 8: Create a Fiscally Constrained Version of Each Vision Alternative

From each of the three refined vision alternatives, a fiscally constrained subset of improvements was derived. Input on category weights were compiled from focus group and advisory committee input. Each group's input and resulting score is shown in Figure 2-2. The Community Advisory Committee (CAC) and the Transportation Advisory Committee (TAC) met in joint session on January 8 to evaluate these alternatives. PPACG staff presented the scores relative to the 17 measurements, to which weights were applied. Sub-category weights were decided by the joint TAC and CAC for the weighting categories that had more than one criterion. This joint advisory committee recommended a preferred fiscally constrained alternative for public comment. Based on the initial application of weights, the alternatives ranked in order were:

1) Reduced Environmental Impacts System
2) Balanced Investment System
3) Strategic Corridors System

The alternatives were initially scored by PPACG staff. CAC and TAC used a two-part evaluation tool consisting of 17 measurements and 10 weighting factors that were based on the *MOVING FORWARD* Goals and Performance measures. These are shown in Figure 2-1. The individual improvements that are selected for inclusion in each fiscally constrained alternative was determined based on discussions with the public at the transportation summit, entity staff, and during the discussions of the advantages and disadvantages of each project during the joint session. All three were very close in score and Reduced Environmental Impacts System was not a clear front-runner because it required local entities to change their adopted land-use plan to increase density along rapid transit corridors and it did not adequately address economic development. After thorough discussion of the initial results, both committees agreed that the regional perspective was best addressed by the Balanced Investments System and made that recommendation to the PPACG Board of Directors.

The products of Step 8 are a recommended set of weights for the performance evaluation criteria and a recommended fiscally constrained alternative based on those scores and weights.

Step 9: Identify Methods to Minimize and Mitigate Undesirable Impacts

PPACG transportation planning Principle 9 states that the transportation solutions that are selected should be sensitive to the natural and human contexts. SAFETEA-LU requires a transportation plan to discuss mitigation measures that protect, enhance, and restore social, economic, and ecological functions that are the unavoidable result of transportation projects (23CFR 450:322).

The following are the two primary outcomes desired of this step: Select transportation system options that avoid and/or minimize negative environmental impacts and identify and eliminate fatally flawed projects.

The product of Steps 9and 10, below, is Chapter 13, Mitigation and Monitoring.

Step 10: On-Going Monitoring and/or Adaptive Management of the *Moving Forward 2035 Regional Transportation Plan*

Adaptive planning requires that policies, programs, plans and projects integrate monitoring techniques to systematically assess whether a strategy or plan is delivering its desired outcomes. It also assists in the early identification of unintended environmental impacts and provides information to update and fill gaps in baseline data necessary to inform future strategy development. Appraisal techniques themselves must be evaluated and their effectiveness in predicting the outcomes of particular decisions put to the test. In this way, the quality and utility of investments can be improved.

The public will have input into Step 10 as part of a continuing, coordinated and comprehensive planning program. There will also be opportunity during project implementation.

FIGURE 2-1: GOALS AND PERFORMANCE MEASURES

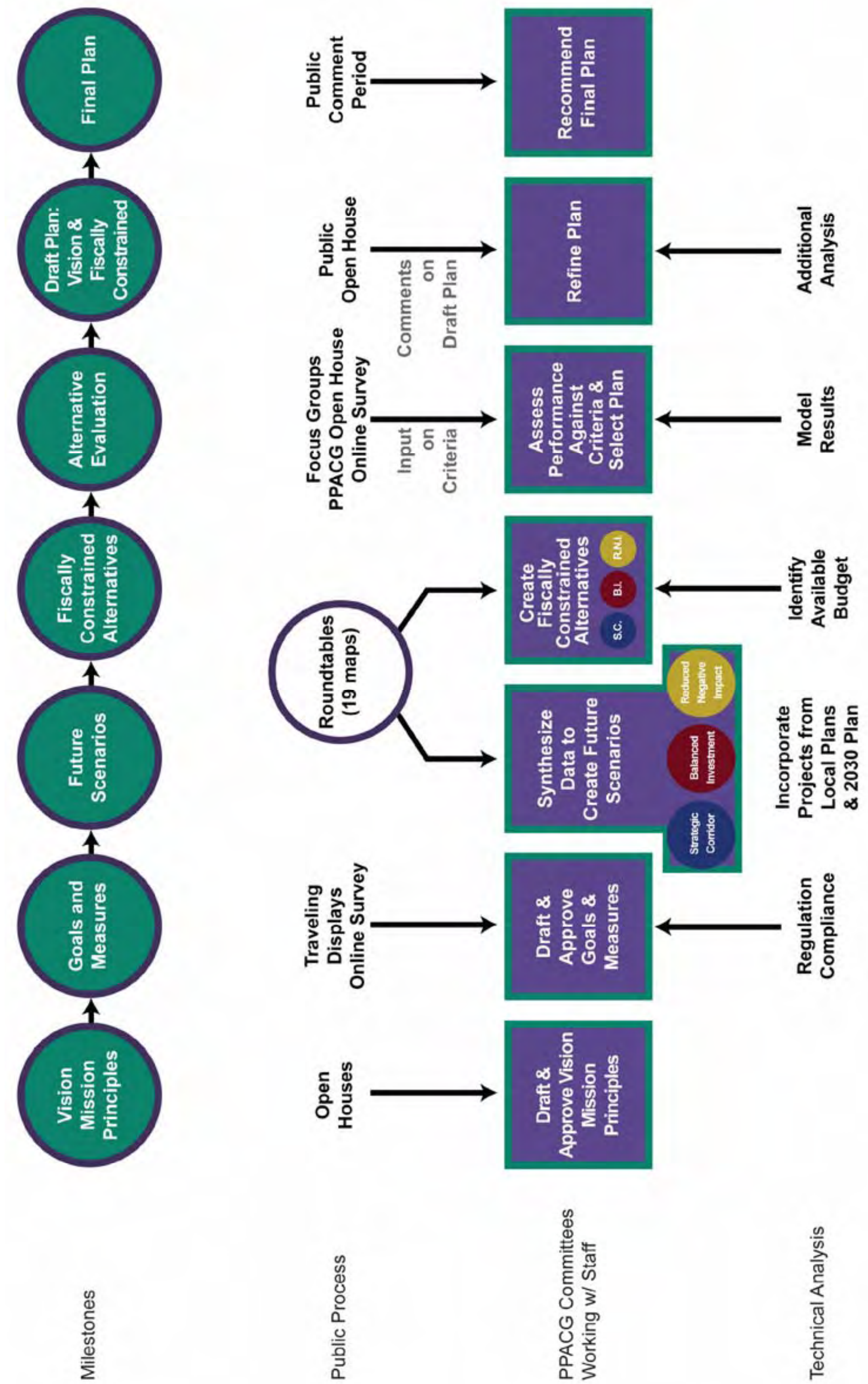
FIGURE 2-2: FOCUS GROUP AND ADVISORY COMMITTEE INPUT

PLAN DEVELOPMENT, REVIEW AND ADOPTION PROCESS

Development of the *MOVING FORWARD 2035 Regional Transportation Plan* followed the process depicted in Figure 2-3. The PPACG Board of Directors was asked to release the document for public review during a special Executive Committee meeting February 4, 2008.

The *MOVING FORWARD 2035 Regional Transportation Plan* draft document will be prepared and distributed for public review for a minimum 30-day period prior to its adoption. During the 30-day public review period, a public meeting for comment on the plan will be held on date. Advisory committee meeting agendas during the 30-day public review period will include an opportunity for public comment on the plan. The document will be available in multiple formats, including a downloadable electronic version published on the PPACG's *MOVING FORWARD* webpage on www.ppacg.org. The document can be prepared in accessible formats upon request. The information on how participants can request accessible formats will be published in all publicity documents. The PPACG Board of Directors will be asked to take final action on the *MOVING FORWARD 2035 Regional Transportation Plan* in its entirety on March 12, 2008.

FIGURE 2-3: MOVING FORWARD 2035 REGIONAL TRANSPORTATION PLAN DEVELOPMENT PROCESS



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CHAPTER 14: UNFUNDED PROJECTS

FIGURE 14-1: BICYCLE VISION PLAN

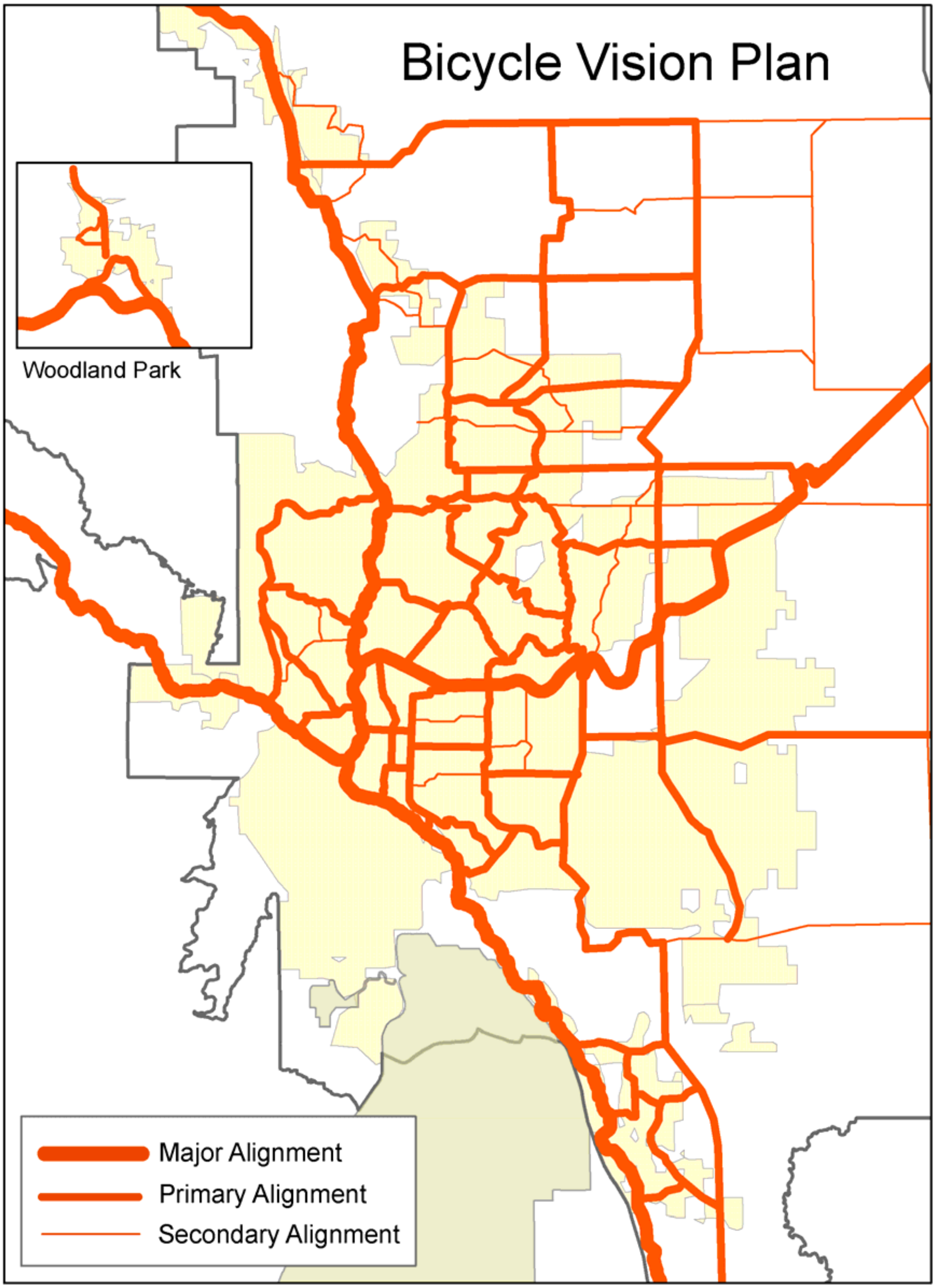


FIGURE 14-2: TRANSIT VISION NORTH

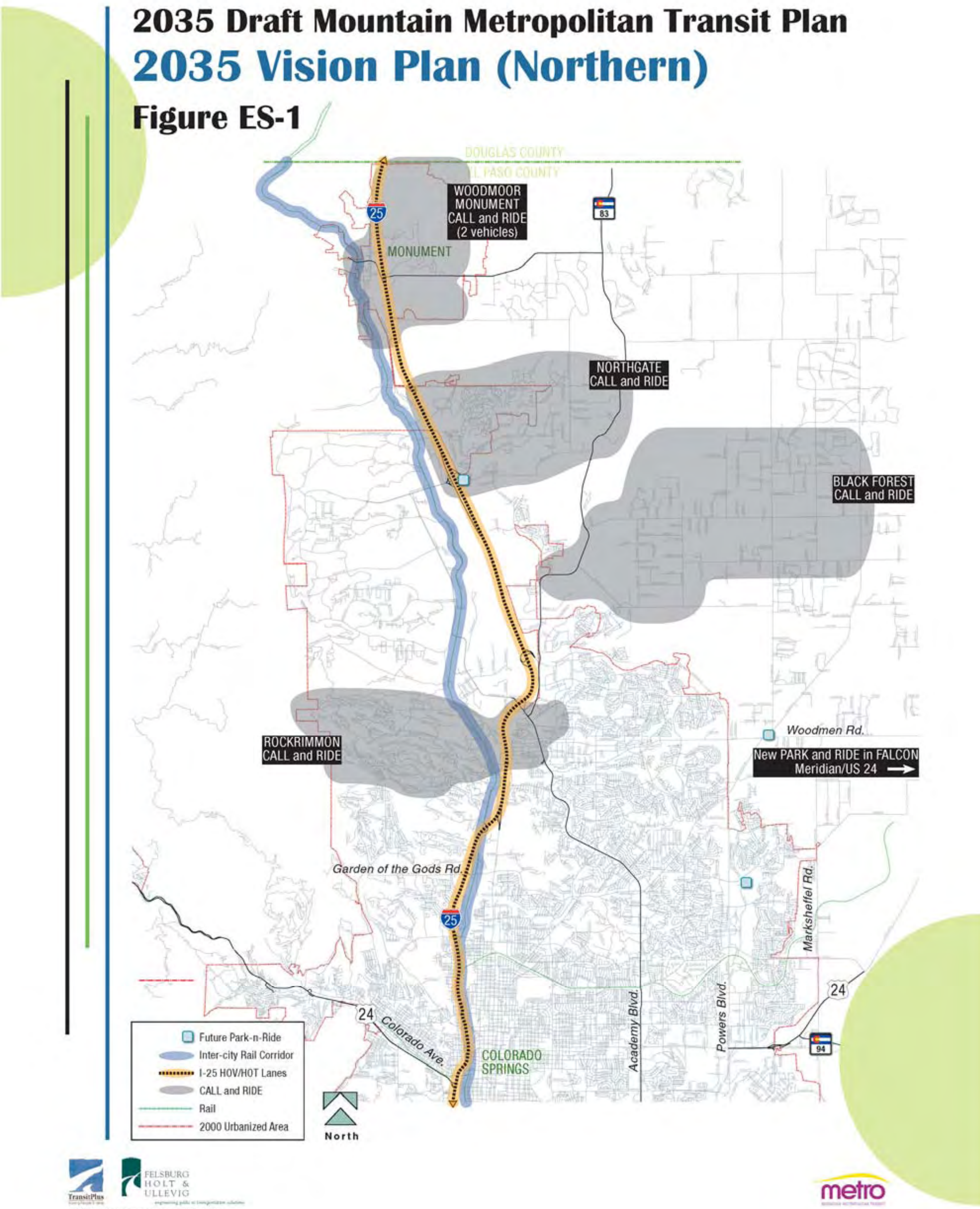
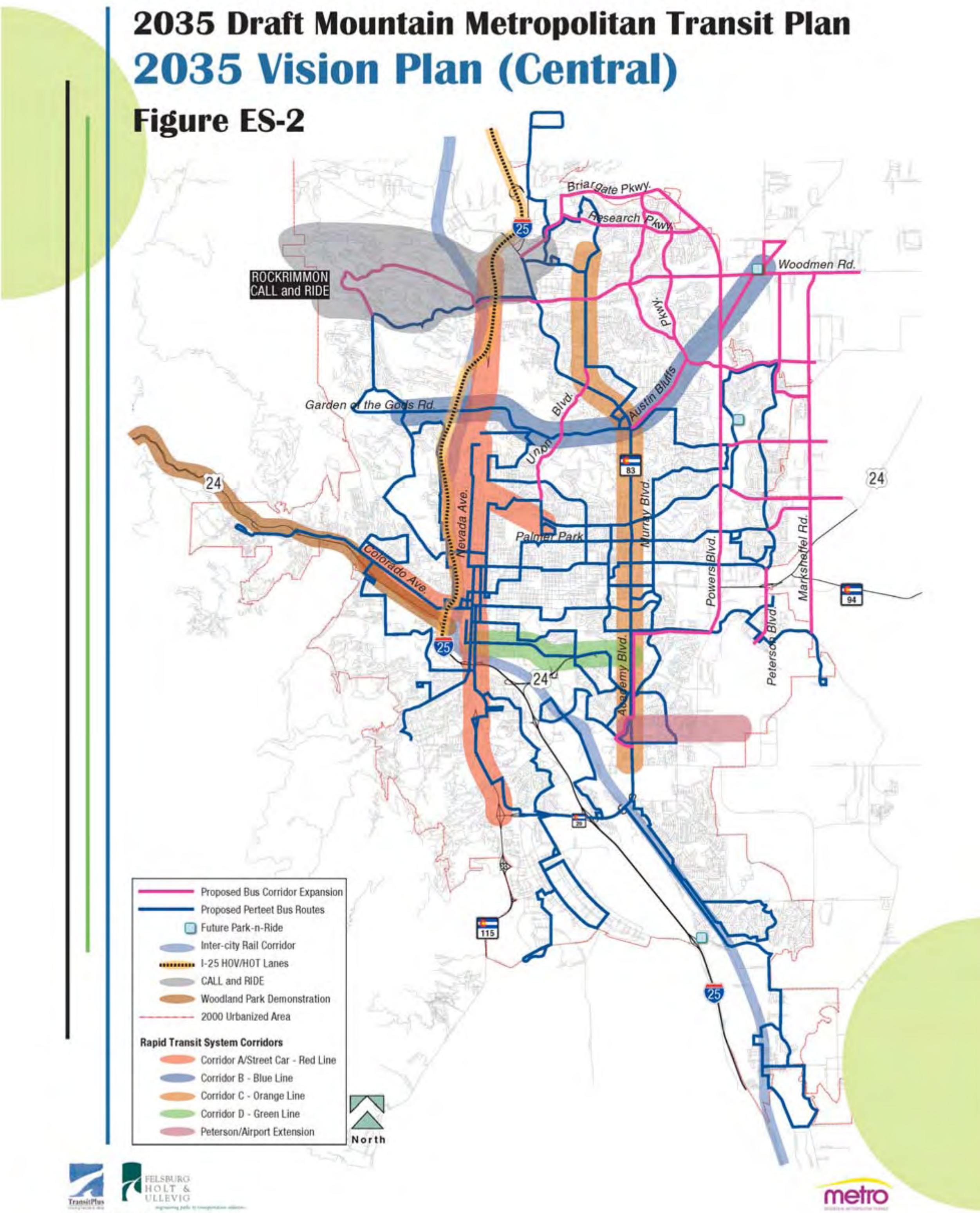


FIGURE 14-3: TRANSIT VISION CENTRAL



Pikes Peak Area
Council of Governments
Communities Working Together

MOVING
FORWARD
2035 REGIONAL TRANSPORTATION PLAN