PART I: BACKGROUND & POLICIES

PART II: RECOMMENDATIONS

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Chapter 1: Introduction

A. Planning Purpose

The impetus for this planning process was to update and unify the City's two planning documents, *The Bikeways and trails Facility Plan (TBFP)*, 1993 and the *Albuquerque Comprehensive On-Street Bicycle Plan (COSBP)*, 2000. By assessing and updating these plans and taking stock of current issues and the City's approach to bikeways and trails, we will be able to better manage the growth of the bikeway and multi-use trail system and achieve the goal of a more safe, interconnected, well-maintained network for transportation and recreation.

The purpose of the plan is to assess the current system, and to make recommendations for new facilities, administration processes, and education and outreach programs. The trail and bicycle network is part of Albuquerque's system of Parks, Open Space and Trails. This system is one of Albuquerque's prime attractions, connecting residents and visitors to Albuquerque's natural surroundings and providing the City a unique sense of place, while also providing the opportunity for healthy activities that many residents desire. Complementing the role of bikeways and trails as part of the P.O.S.T system is its role as transportation infrastructure, which contributes to a more balanced transportation system.

The intent of this Plan is to develop the city's bikeways and trails system in order to provide healthy and sustainable options for transportation and recreation, connections to nature, and local economic development stimulus.

B. Background and History of System

Previous Bikeway & Trail Planning in Albuquerque

In 1972, the City of Albuquerque began work on its bicycle network. A team effort involving an ad hoc Bikeway Advisory Committee and the City of Albuquerque Planning Department developed *The Bikeway Study*, which was published in March 1974. The total proposed network (i.e., trail and bike lanes), originally targeted for completion in 1978, has yet to be realized. With a mature system of close to 500 miles of facilities, the fact that some of these early envisioned routes have not yet been completed speaks to the challenges in developing the system.

The Bikeway Study led to the advent of the Long Range Bikeway System (formerly called the *Bikeways Master Plan*), which establishes policy regarding bikeways in the Albuquerque Metropolitan Planning Area. A permanent Bikeway Subcommittee of the Environmental Planning Commission was created to advise the City on implementation of the Plan recommendations. These efforts were jointly adopted by the City and County. The bicycle subcommittee eventually became the current Greater Albuquerque Bicycling Advisory Committee (GABAC).

Since 1974, various plans and documents, including the *Facility Plan for Arroyos*, the *Facility Plan for Major Public Open Space* and several *Arroyo Corridor Plans*, have addressed different aspects of trail

development, such as location, character, and even design. This first study came at a crucial point in time as it helped Albuquerque acquire trail right-of-way (ROW) at a time when it was either free or very inexpensive. Now that most of the city has built out, the cost for ROW can be expensive and many times physically limiting.

A more recent planning effort was undertaken by the City of Albuquerque Planning Department, which resulted in the *Bikeways and trails Facility Plan*, completed in 1993. The Greater Albuquerque Recreational Trails Committee (GARTC) was established to help with the development of this plan. This plan established long-range policies for off-street trails and bicycle facilities within the Albuquerque Metropolitan Planning Area and was adopted by both the City and Bernalillo County. A proposed trail system that serves both recreational and commuting purposes was envisioned. The plan recommended the creation of two positions, a Bicycle/Pedestrian Coordinator in the Public Works Department (now Department of Municipal Development), and a Trails Coordinator in the Parks & Recreation Department to oversee the development of the on-street and off-street bikeways. Both of these positions were created and are staffed to this day.

At the time the *Trails & Bikeways Facility Plan* was adopted, there were 39 miles of paved trails. Staffing for the planning and implementation of the trail and bicycle network has remained stagnant, and arguably has been reduced, while the size of the network has quadrupled. This is perhaps an indicator of the growing pains the managers of the system and users of the system are currently grappling with.

In late 1996, the Department of Municipal Development initiated the *Albuquerque Comprehensive On-Street Bicycle Plan,* based on a recommendation in the *Trails & Bikeways Facility Plan* to investigate on-street bikeways more closely. A steering committee was created and it consisted of members from bicycle advisory and advocacy groups, public agencies, and other parties. The *Albuquerque Comprehensive On-Street Bikeway Plan* was adopted in 2000. It includes goals and policies, funding strategies, design standards, recommended facilities, and an implementation plan. Recommended elements of this study are currently being implemented as funding becomes available.

GABAC and GARTC were originally City/County committees, but the County has withdrawn its participation. Each of these citizen committees was established by ordinance and is charged with representing cyclists, equestrians, and pedestrians, and advising governmental agencies on planning, projects, and programs affecting bicyclists and a variety of trail users.

Early Accomplishments

For many years, the he Paseo del Bosque Trail, also known as "the Bosque Trail," went from Marquez (south of the zoo) to the Rio Grande Nature Center (4.85 miles). Due to extensions north and south, trail users can now travel over 16 miles without encountering an at-grade intersection, making this trail the most heavily used trail in the system. The second most frequently used trail for cyclists is the combined Paseo del Nordeste and the North Diversion Channel Trails. The original Paseo del Nordeste Trail started at the University of New Mexico (UNM), went north to the Hahn Arroyo, and then east to Pennsylvania Street.

Since the North Diversion Channel Trail was completed and connects to the trail along Paseo del Norte, this has become part of a popular north-south trail, making connections to the Paseo del Bosque Trail and the Paseo del Nordeste with minimal at-grade crossings. AMAFCA has worked closely with the City on the trails using the channel and other AMAFCA rights-of-way. These trails carry regional cycling traffic, not just local traffic. Tramway Trail was originally developed in the early 1980's and has

undergone multiple renovations. It was extended to the north by Bernalillo County and the NM DOT has played a strong role in its development and maintenance. It is now approximately 8.5 miles long and is another of the region's most popular trails.

Recent Accomplishments

In the past several years, the City has constructed over $10 million dollars in bikeway and path improvements, new facilities, and system upgrades. Part of this large expenditure was made possible by the American Recovery and Reinvestment Act of 2009 (ARRA), which funded "shovel ready" projects across the nation. These improvements have been focused on bridging major barriers (the river and freeways) and providing grade separated crossings to improve the safety of the North Diversion Channel Trail.

In 2007, the City began construction of three bicycle boulevards, which provide an enhanced bicycle connection along Mountain Rd., 14th Street, and Silver Ave., which will ultimately connect the Rio Grande (River) to San Mateo Blvd. In 2010, the City completed the Gail Ryba bicycle and pedestrian bridge across the Rio Grande just north of I-40. At this time, the City also repaved the popular 16-mile long Paseo del Bosque Trail, which had become rife with large pavement cracks. In 2012, four new underpasses were built along the North Diversion Channel, creating a second, nearly uninterrupted north-south trail route across the City. In 2013, the Bear Canyon Arroyo Bridge was completed, connecting the east and west sides of I-25 for non-motorized travel. On-going education and encouragement programs have been coordinated by the Department of Municipal Development and the Parks and Recreation Department. These recent improvements are in line with the present vision and goals of improving the safety and quality of the facilities and addressing specific facility gaps, over focusing solely on increasing the extent of the system.

TABLE 2: EXISTING BIKEWAY AND TRAIL FACILITIES OVER TIME

Bikeways & Trails	1974	1993	2000	2010	2014	Total Proposed System
Multi-Use Trails	0	39	55	161	177	520
Unpaved Trails	-	-	-	-	100	100
Bike Boulevards	0	0	0	6	6	14
Bike Lanes	0	24	48	170	203	359
Bike Routes	0	0	56	134	134	212
Total System Length	**0**	**63**	**159**	**471**	**520***	**1105**
Total System (incl. unpaved)	-	-	-	-	**620**	**1205**
Grade-Separated Crossings	0	10	**15**	**26**	**31**	**46**

- No data exists for these facilities in the years shown.

* The total system length in 2014 excludes unpaved trails, because they were not considered part of the total in previous plans. This needs to be done to compare "apples to apples" over time. Including unpaved trails, the system comprises 620 miles in total.

The mileage of official bikeways and trail facilities in the City grew by almost 200% between 2000 and 2010 (see Table 2). From 2010 to the 2014, it has grown another 10%. This time period also saw significant upgrades in grade-separated crossings and pavement maintenance as described above. This plan proposes projects that would more than double the current mileage of bikeways and trails. The intent of

many of these new facilities is to increase continuity of the existing system by connecting gaps and bridging obstacles.

The City was presented a bronze level Bicycle-Friendly Community award from the League of American Cyclists in 2005 – a significant achievement for a first time submittal. This recognition is a direct indication that the City is proceeding in the right direction with its development of bicycle facilities.

C. Bikeways and Trails Benefits

Recent years have seen a nationwide trend toward the increased development and use of bikeways and trails for both recreation and transportation. Bikeways and trails provide communities with a myriad of benefits, including improved public health and safety, natural and cultural resource protection, environmental quality improvements, and economic growth.

Cycling and trail use is important to Albuquerque's future due to its potential to address several interrelated challenges, including traffic, air quality, and public health. By planning a metropolitan area that is more accessible to non-motorized transportation, practitioners can affect all of these areas, which collectively can have a profound influence on existing and future quality of life in Albuquerque. As the State *Bicycle-Pedestrian-Equestrian Advisory Plan* states, walking and bicycling are already "significant modes of transportation in New Mexico." Significant opportunities and reasons remain to expand the non-motorized transportation system and improve the quality of the user experience. Improving active transport can achieve planning objectives including economic development, reduced traffic and parking congestion, energy consumption and pollution emissions, improved public health outcomes, and more compact development.

Economic Benefits

There are many positive economic benefits associated with bikeway and trail development. Bikeway and trail use reduces costs associated with vehicle use. Commuting by bicycle costs, on average, less than half as much as driving when all internal and external costs, including travel time, maintenance of infrastructure, environmental impacts and ownership expenses, are considered. According to AAA, the average annual cost to own and operate a motor vehicle is around $9,000 per year in 2012. With robust transportation facilities for non-motorized travel, combined with transit, families may be able to get by with fewer cars per household.

A significant economic benefit of increased cycling is a reduction in motor vehicle traffic congestion, which has estimated annual congestion costs at over $100 billion nationally. These costs result from lost productivity while stopped or slowed in traffic. Each trip taken by walking or cycling is one less vehicle contributing to congestion and environmental pollution. The economic impacts of traffic congestion also affect the business community through slower delivery times, diminished employee morale, and an inability of patrons to easily access businesses.

Studies show that walking, hiking, or biking a few times a week can improve a person's health and reduce healthcare costs. A cost-benefit analysis of using bike/pedestrian trails in Lincoln, Nebraska to reduce health care costs associated with inactivity showed that for every $1 investment in trails for physical activity led to $2.94 in direct medical cost reduction. Another study reported that those who exercise regularly "filed 14% fewer health claims, spent 30% fewer days in the hospital, and had 41% fewer claims greater than $5,000" (Greenways, Inc., p. 14). Surveys indicate far fewer medical bills, lower

insurance reimbursements, and fewer hospital stays by people who regularly use trails for transportation or recreation.

Trails build strong communities and are a valuable amenity for neighborhoods. According to a National Association of Homebuilders study cited by the New York Times, trails are the number one amenity potential homebuyers look for when they are considering moving into a new neighborhood. Homes near trails are easier to sell and homeowners see a direct correlation between trails and positive impact on quality of life. Trails translate into higher housing values. Trails revitalize neighborhoods; new houses and businesses take advantage of locations adjacent to trails.

Finally, bikeways and trails support tourism by providing additional destinations and opportunities for visitors, who patronize nearby motels, bed and breakfasts, cafes, or shops. Cities with well-developed cycling and trail infrastructure have become destinations in themselves – look at Portland, OR, Davis, CA, Sedona, AZ, Boulder, CO, Ketchum, ID, San Antonio, TX, and even Manhattan, NY. These places have branded themselves as bike-friendly vacation locations. Albuquerque could benefit from increased revenues by attracting active or sport tourism. Local businesses selling bicycles, biking gear, walking and hiking shoes, and equestrian gear also stand to benefit from increased demand for their products. Trails build local businesses; bicycle tourism is a growing segment of the tourism market benefiting businesses that are well connected to trails. "Bicycle Friendly Districts" is a new concept, started in Long Beach, CA, that is focused on improving bicycle facilities in select districts that have neighborhood and business support in order to build community, increase physical activity, and make streets less congested.

Traffic Safety

Roadway improvements to increase bicycle safety and attractiveness enhance motorists' safety as well. Bike lanes or bikeway shoulders minimize traffic flow impacts by providing bicyclists with a designated space and decrease degradation of the roadway edge, thereby increasing roadway life and decreasing roadway maintenance costs.

Vehicle speed differential is the primary cause in a large percentage of roadway crashes and a deterrent to potential cyclists. A traffic calming approach being used successfully in local communities is the striping of bike lanes to create narrower vehicular travel lanes. For cyclists, this approach serves the more important benefit of creating wider and safer non-motorized travel lanes.

Social Equity in Mobility

According to the U.S. Census, nearly one-third of Americans do not drive —this includes children under 16, about 20% of residents over 65, and other residents over 16 that cannot afford or choose not to own a motor vehicle. Also included in this user-base are people that own cars but choose to walk or bike and people that would like to walk and bike but feel that significant barriers exist (e.g., physical barriers such as missing facilities or perceived barriers such as a lack of time). Safe options for transportation, mobility, and recreation should be provided for all residents and visitors to the City.

Public Health Benefits

Regular physical activity has a beneficial impact on health through its role of prevention of various diseases and health conditions and of protection against injury and disability.

In recent years, public health professionals and urban planners have become increasingly aware that the impacts of motor vehicles on public health extend far beyond asthma and other respiratory conditions caused by air pollution. There is a much deeper understanding of the connection between the lack of

physical activity resulting from auto-oriented community designs and various health-related problems such as obesity and other chronic diseases. Although diet and genetic predisposition contribute to these conditions, physical inactivity is now widely understood to play a significant role in the most common chronic diseases in the US, including coronary heart disease, stroke, and Type II diabetes. In response to these trends, the public health profession has begun to advocate for the creation of walk-able and bike--able neighborhoods as one of the most effective ways to encourage active lifestyles. Studies show that 43% of people with safe places to walk within ten minutes of home meet recommended daily activity levels, compared to only 27% of those without safe places to walk.

Sixty-percent of the total New Mexican population is considered overweight or obese. Data collected by the Center for Disease Control (CDC) between 1995 and 2010 indicates that the percentage of New Mexican residents classified as obese has increased from the 10 - 14% range in 1995 to the 25% in 2010. As Albuquerque becomes more inviting to non-motorized transportation, residents will have more opportunities to exercise, ideally resulting in a higher proportion of residents achieving recommended daily activity levels.

Physical activity is directly linked to our overall physical and mental health. Even moderate levels of exercise have been shown to aid in weight control, the prevention of heart disease and certain cancers, and the alleviation of anxiety and depression. However, making the choice to exercise can be a difficult one. "Lack of time or access to convenient outlets for healthy transportation and recreation opportunities" is a commonly cited barrier to increasing physical activity (Rails to Trails Conservancy). One way to ensure adequate amounts of exercise is to choose active transportation for one or more of your weekly trips to work, the store, or social gatherings.

Safe, dedicated paths and bikeways encourage the use of non-motorized modes of transportation for everyday errands and commuting. This allows people to build physical activity into their daily routines, rather than having to carve out extra time for exercise alone. Additionally, attractive, outdoor settings can make exercise more enjoyable and trails can provide cost-effective exercise options when compared to gym or health club memberships.

Tangible benefits include an improved mental outlook and enhanced well-being. Walking and cycling as transportation modes are an ideal form of exercise to maintain or improve one's health which will eventually impact the national goal of reducing health care costs.

Environmental Benefits/Natural and Cultural Resource Protection

Trail preservation and development have positive impacts on environmental health and resource conservation. The designation of trail corridors can be used as a tool for preserving important natural landscapes in the face of increased development. Trails can provide an attractive alternative to driving for daily activities within the City.

The development of safe trail and bikeways for use in everyday commuting and errands can significantly reduce our consumption of fossil fuels and our emission of pollutants. Each time an Albuquerque driver chooses to walk or cycle, one less motor vehicle trip is made. It is the intent of this plan to increase the numbers of shopping, dining, school, and recreational trips made via multi-use bikeways and trails. Further, bicycling does not consume petroleum products, thereby providing energy conservation and emission reductions.

Bicycling could have a significant impact on air quality by replacing motor vehicles for short trips of less than 5 miles. This represents trips that are less fuel-efficient and generate the highest emission rates per mile traveled. Transportation alternatives, including bicycling and walking, are viable solutions to reducing vehicle miles traveled and air quality impacts. Cumulatively, this pattern may reduce traffic in some neighborhoods, which would also improve air quality.

Quality of Life Benefits

Corporate relocation evidence shows that quality of life of a community is an increasingly important factor in corporate relocation decisions and may be more important than purely business-related factors when it comes to attracting new businesses, particularly in the high-tech and service industries. St. Mary's County Maryland found over a ten year period that businesses that moved to the county because of tax incentives tended to leave as soon as the incentives expired. However, businesses that moved to the county because of its quality of life remained to become long term residents and taxpayers.

In the end, a more balanced and flexible transportation system will give greater choice and independence to more members of the community. Neighborhoods will experience fewer environmental and transportation impacts from traffic congestion. Like the motor vehicle, the bicycle provides personal mobility. The public, of all ages, will feel safer and more are ease in using the transportation system, whether cycling or walking in their neighborhood, due to the traffic calming impacts of bikeways. As more and more people use the streets and trails using a variety of transportation modes for a variety of purposes, the sense of community will be strengthened, pollution will be reduced for a healthier physical environment, and health care costs will be reduced.

D. The Planning Process

Beginning in 2008, the City began an update of the two existing bicycle and trail plans with the intention of combining both documents to reflect a consolidated approach to developing and managing the system. Both plan documents needed to be updated to address current conditions, goals, policies, issues and future priorities. Gannett Fleming West and Alta Planning were selected as the consultant team for the effort. They completed an extensive amount of data collection and analysis that have informed the recommendations in this plan. A *Draft Bikeways & Trails Master Plan* was completed in 2011, but it did not have a clear implementation approach, nor did it adequately address the trail system and recreational concerns.

In 2012, the plan was transferred to the City Parks & Recreation Department from Department of Municipal Development, for revisions to incorporate trail and recreation related concepts into this new Plan. In late 2013, the Planning Department began work consolidating the previous two plans with the updated research and analysis done for the 2011 *Draft Bikeways & Trails Master Plan*. Efforts were made to directly respond to public comments collected in the earlier planning effort, and to update the vision, goals, and policies to reflect the concerns raised by the public, advisory groups, and agency interviews. An implementation plan and design guidelines were developed to guide design and construction of future facilities, support current and new education and outreach programs, and to guide development of the proposed 15 new grade-separated crossings, 242 miles of new bikeways, 343 miles of new trails, and numerous intersection enhancements.

Public Involvement Summary

In the initial data collection and analysis stages of this effort, the consultant team held several public open house meetings, a stakeholder workshop, and user and agency interviews. They developed a project website with updates and draft materials as the project progressed. A survey was also administered to get targeted feedback about bicycle facility preferences and the needs and desires of cyclists in the City. City Staff have performed a careful review of these documents, and used them to inform additional plan content and revisions that are in this current plan. Over 550 individual comments were received throughout this process. Additional information was gathered by staff by regularly attending both the GABAC and GARTC meetings. This public input was reviewed throughout the planning process to guide development of this *Bikeways and Trails Facility Plan*.

Data Collection & Analysis

Gannett Fleming West and Alta Planning also completed a range of studies to better understand opportunities to improve our bikeway and trail system. They collected bikeway and trail user counts at 37 locations in 2010, which was compared to a smaller user count performed in 1997. A crash analysis was performed to understand the overall severity, where, and when reported collisions occurred. The planning and engineering studies – Cycle Zone Analysis, Bikeway Quality Index, the engineering gap analysis, StreetPlan, and public input – were used to develop the recommended facility improvements and programs. The detailed methodology and results from these analytic approaches is included as appendices; a summary of each approach and salient findings are included in Chapter 3, Section C.

Additional work has gone into understanding and developing recommendations related to the way the City administers bikeways and trails, as well as how the advisory groups can be most effective. More recent work, such as DMD's Bollard Study, Parks and Recreation's Trail Design Guidelines, the Mayor's ABQ the Plan 50-Mile Activity Loop, and newly adopted AASHTO and ITE guidance are incorporated.

E. Using the Plan

The information gathered throughout the planning process was used to identify the strengths and weaknesses of our current bikeway and trail system (Chapter 3), updated goals and policies (Chapter 2), the recommended network (Chapter 4), recommended programs (Chapter 5), the implementation approach (Chapter 6), and the design standards (Chapter 7).

This plan provides guidelines for implementing new projects identified during the planning process. (Chapter 4: Recommended Network and Chapter 6: Implementation Strategies). It also provides policies for developing paths and bikeways in newly developing areas and in areas that need improved quality facilities (Chapter 2: Planning & Policy Framework). When a portion of the City has been identified for new development or redevelopment, whether by public or private means, this plan and the updated facilities map should be consulted to identify the need for bikeways or trails to be incorporated into the improvements.

This plan also provides the general guidelines for the design of those facilities (Chapter 7: Design Guidelines). Developing facilities in accordance with the goals and policies of this plan, and designed to be consistent with the Design Guidelines and most recent AASHTO, ITE, AADAG, and/or NACTO guidelines will help ensure that their development is consistent with the long-range goals of the City, which include bicycle and trail use as a transportation option, recreation opportunity, and to enhance general quality of life.

F. Definitions

Accessible — describes a trail, or a portion thereof, which complies with the American National Standards Institute (ANSI) Guidelines and is accessible to people with disabilities.

Activity Center — location such as employment center, schools, downtown and uptown, entertainment, museums, etc. that tend to attract cyclist for education, recreation, shopping or employment.

ADA Accessibility Guidelines (ADAAG) — accessibility guidelines and standards for the built environment, transportation, communication, medical diagnostic equipment, and information technology. They are developed by the U.S. Access Board, a federal agency that promotes equality for people with disabilities through leadership in accessible design.

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) — the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) was created in 1963 by the New Mexico Legislature and tasked to prevent injury, loss of life and property damage due to flooding. AMAFCA does this by building and maintaining flood control structures which help alleviate flooding.

American Association of State Highway and Transportation Officials (AASHTO) — an organization that publishes guidelines and specifications which are used in transportation design and construction throughout the United States.

Americans with Disabilities Act (ADA) — the 1990 Federal law establishes the civil rights of people with disabilities. It prohibits discrimination and ensures equal opportunity for access in employment, State and local government services, public common spaces, commercial facilities, and transportation.

At-grade Crossing — a junction where multi-use trail or sidewalk users cross a roadway at the same level as motor vehicle traffic, as opposed to a grade-separated crossing where users cross over or under the roadway using an overpass or underpass.

Average Annual Daily Traffic (AADT) — the total volume of vehicle traffic of a highway or road for a year divided by 365 days. AADT is a useful and simple measurement of how busy the road is. It is also sometimes reported as "average annual daily traffic."

Bicycle (Bike) — a human-powered vehicle with two wheels in tandem designed to transport by the act of pedaling one or more persons seated on one or more saddle seats on its frame. "Bicycle" includes, but is not limited to, a human-powered vehicle designed to transport by the act of pedaling which has more than two wheels when the vehicle is used on a public roadway, public bicycle path, or other public road or right-of-way, but does not include a tricycle for children.

Bike Boulevard — a bike route that is designed to prioritize the through movement of bicycles while maintaining local access for motor vehicle travel. Traffic calming devices are used to control motor vehicle speeds and discourage vehicle through trips. These devices may include diverters, speed humps, traffic circles, or pocket parks which allow through access by bicycles. A bicycle boulevard may be constructed with wide curb lanes or with standard travel lanes and bike lanes. Bicycle boulevards should limit bicycle stops to one per quarter-mile or preferably one per half-mile spacing.

Bicycle Facilities — the infrastructure that accommodates or encourages bicycling including bikeways, shared roadways not specifically designated for bicycle use, bicycle parking and storage facilities, and bicycle signal actuation hardware.

Bicycle Network — a system of public bicycle facilities that can be mapped and used by bicyclists for transportation and recreational purposes.

Bike Route — a segment of a system of bikeways designated on a roadway with appropriate directional and informational signing, with or without a specific bicycle route number, in accordance with the MUTCD. Bike routes are primarily located on local streets and low-volume, low-speed collector streets.

Bike Lane — a lane on the roadway that has been designated by striping, signing, and pavement markings for preferential or exclusive use by bicyclists. Bike lanes or paved shoulders are part of the standard arterial and collector cross-section. At signalized intersections, bike lanes should have bicycle-sensitive actuation capability such as loop detectors, video detection, curbside push buttons, or other detection devices approved by the City Traffic Engineer.

Bikeway — a generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designed for the exclusive use of bicycles or are to be shared with other transportation modes.

Bikeway Quality Index (BQI) — a metric developed to indicate the likely comfort of bicyclists riding on an existing bicycle facility. Bikeway Quality Index factors are variable depending on facility type but typically include surface quality and wayfinding.

Crosswalk — any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Cycle Zone Analysis (CZA) — a zone-based system developed to analyze existing bicycling conditions. Zones consists of a more-or-less homogeneous cycling environment based on employment and population density, land use mix, road network density, connectivity, and topography.

Directional or wayfinding signs — signs typically placed at road and bicycle path junctions (decision points) to guide bikeway users toward a destination or experience.

Federal Highway Administration (FHWA) — the agency under US Department of Transportation responsible for the approval of transportation projects that affect the defined federal highway system.

Grade-separated crossing — an overpass or underpass allowing multi-use trail users to cross a major roadway without motor vehicle conflict.

Greater Albuquerque Bicycling Advisory Committee (GABAC) — a citizens advisory committee that reviews and comments on projects that effect on-street cycling within Albuquerque.

Greater Albuquerque Recreational Trails Committee (GARTC) — a citizens advisory committee that reviews and comments on policy and projects affecting regional trails (bike, pedestrian, equestrian, in line skates, etc.) within Albuquerque.

Hard Surface Trail — a trail surfaced with asphalt, concrete, soil cement, or other hard, stabilized surface.

Highway — a road or thoroughfare, such as a street, boulevard, or parkway, which functions as a main route for any form of transport or travel and is available to the public for use.

Institute of Transportation Engineers (ITE) — an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs.

Level of service (LOS) — Refers to the measurement of how well automobile traffic "flows" on a roadway system or how well an intersection functions.

Loop detector — a device placed in the pavement, real or virtual, at intersections to detect a vehicle or bicycle and trigger a signal to provide a green light for through traffic. They are also used to count bicyclists on multi-use trails.

Manual on Uniform Traffic Control Devices (MUTCD) — a Federal manual that designates standards for signage and pavement markings.

Medians — the area in the center of the roadway that separates directional traffic. Medians may be painted and leveled with the surrounding roadway or raised using curb and gutter. Medians may include landscaping, concrete, striping or any combination thereof.

Median Refuge — an area within an island or median that is intended for pedestrians or cyclists to wait safely away from travel lanes for an opportunity to continue crossing the roadway.

Metropolitan Planning Organization (MPO) — an organization of elected officials in urbanized regions with 50,000 or more population which provide a forum for local decision-making on transportation issues of a regional nature.

Midblock Crosswalk — a legally established crosswalk that is not at an intersection.

Middle Rio Grande Conservancy District (MRGCD) — an organization established to control irrigation facilities in the valley. It manages Rio Grande flows to miles of ditches and hundreds of farmers in the Middle Rio Grande Conservancy District. MRGCD policy is established by an elected board.

Mid-Region Council of Government (MRCOG) — the Metropolitan Planning Organization representing the counties of Bernalillo, Valencia, Torrance, and Sandoval, MRCOG provides planning services in the areas of transportation, agriculture, workforce development, employment growth, land use, water, and economic development.

Multi-Use Trail — see ***Trail***

Pavement Marking — any marking on the surface of the pavement that gives directions to motorists and other road users in the proper use of the road. The MUTCD determines the standard marking in New Mexico for state and local use.

Pedestrian — someone who walks or journeys on foot; a walker.

P.O.S.T — a City of Albuquerque interdepartmental planning effort for Parks, Open Space, and Trails. Also, the physically connected system of Parks, Open Space, and Trails.

Right-of-way (ROW) — a general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes. It may also be used as a legal term to denote the right of one vehicle or pedestrian to proceed in preference to another vehicle or pedestrian, i.e., bicyclists should yield right-of-way to equestrians and pedestrians on multi-use trails.

Roadway — the portion of the highway, including shoulders, for vehicle use.

Shared Roadway — a shared roadway is any roadway that may be legally used by both motor vehicles and bicycles and is not specifically designated as a bikeway.

Shared-use Path — see ***Trail.*** Also defined by the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) – a multi-use path designed primarily for use by

bicyclists and pedestrians, including pedestrians with disabilities, for transportation and recreation purposes. Shared use paths are physically separated from motor vehicle traffic by an open space or barrier and are either within the highway right of way or within an independent right-of-way.

Shared Lane Marking (Sharrow) — a pavement marking symbol that indicates an appropriate positioning of cyclist within a travel lane shared by both bicycle and motor vehicles. This is used in Albuquerque on low traffic volume streets, typically classified as collector or below.

Shoulder Bikeways (Paved Shoulders) — a bicycle facility located along uncurbed arterials and collectors. It consists of a smooth paved surface that covers all or part of the roadway shoulder. Shoulder bikeways, or paved shoulders, are similar to wide curb lanes on roadways with curb and gutter.

Sidewalk — the portion of a street or highway, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians. Sidewalks are typically, but not always, curb-separated from the roadway and made of concrete, brick, asphalt, or other hard surface material.

Soft-surface Trail — an unsurfaced natural trail or trail surfaced with compacted earth, crusher fines, bark, or gravel. It is not surfaced with a hard, durable surface such as asphalt or Portland cement.

Statewide Transportation Improvement Program (STIP) — a statewide compilation of local, regional, Metropolitan Planning Organization (MPO), and rural Transportation Improvement Programs (TIPs) as required by federal regulation.

StreetPlan — a GIS-based street evaluation model used in this Plan that graphically shows where bike lanes or wide curb lanes can be provided based on existing roadway configuration.

Trail — a separate pathway that is physically separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. It is designated by signs for use by non-motorized traffic only, including pedestrians, bicyclists, skaters, wheelchair users, joggers, other non-motorized users, and equestrians. Not all trails may accommodate all of these uses. Most trails are designed for two-way travel. Trails may be either hard-surface or soft-surface; or paved or unpaved. See also, ***Soft-surface Trail***

Transportation Improvement Programs (TIPs) — a capital improvement program developed cooperatively by local and state transportation entities. TIP projects are drawn from and consistent with a statewide rural long-range plan and include a list of multi-modal transportation (a connected transportation system that supports cars, bicycles, pedestrians, and public transit) projects. All regionally significant projects must be in the TIP regardless of intended funding source.

Traffic Calming — changes in street alignment, installation of barriers, and other physical measures employed to reduce traffic speeds and/or cut-through traffic volumes in the interest of street safety, livability, and other public purposes. Traffic Calming measures may include diverters, speed humps, traffic circles, or pocket parks which allow through access by bicycles.

Traffic Control Devices — Signs, signals, push buttons, or pavement markings whether permanent or temporary, placed on or adjacent to a travel way by authority of a public body having jurisdiction to regulate, warn, or guide traffic. MUTCD designates standards.

Utilitarian Trips — trips that are not primarily for recreational purposes, such as running errands.

Wide Curb Lanes — wide curb lanes are located on shared roadways with outside lane widths of 14 to 16 feet. Wide curb lanes are similar to shoulder bikeways, or paved shoulders, on roadways without curb and gutter.

Chapter 2: Planning & Policy Framework

A. Plan Vision, Goals, and Objectives

This section defines the vision statement, goals, and policies of the *Bikeways and Trails Facility Plan*. Plan objectives and action items/strategies, along with methods to measure success in implementing the Plan, are included in the Implementation Chapter. A project management team (PMT) consisting of members from public agencies and plan development team members adapted the *Bikeways and trails Facility Plan* and the *Albuquerque Comprehensive On-Street Bicycle Plan* goals and objectives to reflect current issues and concerns about the bikeway and trail system.

Vision

The City of Albuquerque envisions a system of bikeways and trails that connect throughout the city to support active transportation and recreation. The city envisions the bikeways and trails network to be an integral part of its system of Parks, Open Space and Trails, which is one of Albuquerque's most valuable assets and is an integral part of attracting economic growth. The bikeways and trails will allow people of all ages and abilities to experience the city using active transportation, such as walking, biking, or skating. The city aims to increase the numbers of shopping, dining, school, and recreational trips made via bikeways and trails in order to improve public health, air quality, congestion management, and quality of life for residents of Albuquerque.

> *The City will provide access for cyclists, pedestrians, and trail users to all areas of Albuquerque, in order to provide recreation opportunities and to encourage cycling and walking as a viable transportation options, which result in an improved quality of life in the Albuquerque Metropolitan Area.*

This Plan will foster the construction and preservation of bikeways and trails; striving for improved safety and improved connectivity; and the encouragement of healthy, outdoor activity. The system will be implemented in partnership with multiple agencies and will be founded on consensus and sensitivity to the diverse viewpoints within the community.

With over **600 miles** of bikeways and trails already constructed, we recognize that improving the continuity, maintenance, and quality of existing routes should generally take precedence over investment in new routes.

Goals & Policies

The goals and policies section provides general guidance for the development of the trails & bikeways system. For more detailed implementation strategies and actions related to these goals, please see Chapter 6, Implementation Strategies, and in particular, Section F, the Implementation Matrix.

1. **Improve bicycle and pedestrian safety.**
    a. **Policy:** Develop a legible and predictable trail and bikeway system through planning, design, and implementation of physical improvements.
    b. **Policy:** Provide engineering and multi-disciplinary reviews for user safety in all new and reconstructed bicycle and pedestrian facilities.
    c. **Policy:** Improve the utility of trail and bikeway facilities through programmatic activities, such as safety audits and assessments, education, outreach, and maintenance practices.

d. **Policy:** Provide a more welcoming and comfortable environment for all travelers along roadways and trails.

e. **Policy:** Balance the need to discourage unauthorized motorized vehicle access on a trail with the need to provide the trail users a facility without unnecessary obstructions through application of the best practice guidance for bollard placement in the design guidelines.

2. Develop a continuous, interconnected, and comprehensive system of bikeways and trails.

a. **Policy:** Develop an integrated system of bikeways and trails, with facilities distributed City-wide. A metropolitan area-wide recreational and commuter bicycle and trail network which emphasizes connections among Activity Centers shall be constructed and promoted.

a. **Policy:** Focus on achieving connectivity of the existing bikeway and trail system when planning and programming all trail and bikeway improvements.

b. **Policy:** Work towards addressing and improving challenging intersections and physical barriers, and consider pedestrian and bicycle movement in the planning stages for new or reconstructed facilities.

c. **Policy:** Provide convenient access to destinations, such as Activity Centers, schools, parks, open space, shopping areas, and employment areas, for pedestrians and cyclists as part of a multi-modal approach.

d. **Policy:** Consider connections between transit and bicycle and pedestrian facilities and reduce barriers where possible.

e. **Policy:** Reduce implementation costs by including bicycle facilities in all new and rehabilitation street projects.

f. **Policy:** Include paralleling paths and safe crossings for bicycles, pedestrians, and equestrians where appropriate in street and highway projects.

g. **Policy:** Create a multi-purpose network of open areas and trail corridors along arroyos and appropriate ditches. Acquire, regulate, or appropriately manage trail corridors to protect natural features, views, drainage and other functions or to link other areas within the Open Space network.

3. Enhance maintenance of all bikeways and trails.

a. **Policy:** Develop maintenance practices appropriate for each facility type.

b. **Policy:** Implement prioritization of maintenance as appropriate for each facility type, including trail corridors and bikeways, based on the recommendations in Chapter 6, Section C, Maintenance and Operations.

4. Increase use of the bikeway and trails network.

a. **Policy:** Support the development of an integrated bikeways and trails system that serves the interests and needs of transportation and recreation.

b. **Policy:** Support use of non-motorized infrastructure as part of everyday life for daily activities.

c. **Policy:** Accommodate all ages and abilities of users in a comfortable manner throughout the system, although not necessarily on each individual facility.

d. **Policy:** Support the development of bikeways and trails as in integral part of the City's transportation infrastructure.

e. **Policy:** Facilitate and encourage commuter cycling and utilitarian trips.

f. **Policy:** Reduce conflicts between vehicular traffic and trail and bikeway users.

g. **Policy:** Reduce conflicts between different types of trail users.

h. **Policy:** Accommodate the following users in the trail system recognizing that not all can be accommodated on every trail: cyclists (including upright, recumbent, and children), pedestrians (including walkers, runners, people using wheelchairs, people with baby strollers, people walking dogs), skaters, equestrians, and physically challenged individuals.

i. **Policy:** Support the development of bikeways and trails as in integral part of the recreation Parks, Open Space, and Trails system (POST), including recreational loops, secondary trails, and neighborhood-scale connecting routes.

j. **Policy:** The bikeways and trails network should connect with public transit, providing flexibility and choice for travel options and enhancing recreational opportunities.

5. Increase public awareness and education related to bikeways and trails.

a. **Policy:** Implement a comprehensive program to increase public awareness of bicycling and trail use and to encourage healthy living and active lifestyles through use of the City's trail and bikeway system.

b. **Policy:** Educate all bicyclists, pedestrians, and other trail users on legal, safe, and predictable behavior including the rights and responsibilities of each mode of travel.

c. **Policy:** Educate motorists on the rights of pedestrians and cyclists.

6. Recognize and leverage the bikeway and trail network as an integral part of economic development and quality of life in Albuquerque.

a. **Policy:** Promote bikeway and trail use as a non-polluting, cost-effective and healthy mode of transportation and recreation.

b. **Policy:** Promote pedestrian and cycling opportunities and integrate into development to foster safe and pleasant non-motorized travel conditions.

c. **Policy:** Maintain a dedicated local funding source for construction and maintenance of bikeways and trails. Establish specific budget line items to support the provision of on-street and off-street bicycle systems and programs.

d. **Policy:** Increase the attractiveness and activity along this system through enhanced streetscape and trail aesthetics, landscaping, and amenities along bikeways and trails where feasible.

e. **Policy:** Plan, design, construct, operate and maintain City roads to promote safe and convenient access to all legal users of roads, streets and highways in a manner that promotes efficient movement of people and goods whether by car, truck, transit, assistive device, foot or bicycle.

f. **Policy:** Institutionalize walking and bicycling as legitimate forms of transportation in all planning, design, and programming efforts.

7. **Streamline administrative practices and coordination.**

   a. **Policy:** Provide adequate staff as necessary to implement the Bikeways and Trails Facility Plan with appropriate office budgets to promote bicycling and trail use.

   b. **Policy:** Foster ongoing coordination among critical departments within the City to communicate and coordinate activities related to design of bikeways and trails.

   c. **Policy:** Organize and coordinate implementation of this Plan among City Departments and other agencies to produce well-designed facilities and a connected network of bikeways and trails that are safe and enjoyable for the public to use.

   d. **Policy:** Coordinate with Bernalillo County, NMDOT, AMAFCA, MRGCD, and MRCOG and other local jurisdictions as appropriate regarding connectivity, design, implementation, and maintenance.

   e. **Policy:** Develop and maintain databases useful for trail and bikeway planning, inventory, prioritization of improvements, and accident reduction.

   f. **Policy:** Develop and implement a traffic law education and enforcement program that teaches pedestrians, bicyclists, and motorists about relevant laws for each mode of travel.

   g. **Policy:** Create and support opportunities for public and user input and engagement into the bikeways and trail system. Advisory groups and/or ad hoc committees should support the City's efforts to implement these policies and this Plan.

   h. **Policy:** Bicycles and pedestrians should be regularly accommodated, while recognizing that these facilities may not be appropriate on every roadway, and should be considered in the planning of every road project and by all departments when setting policy and programs.

B. Relationship to Other Plans

This section summarizes relevant documents and policies that regulate and establish a framework for bicycling and walking in Albuquerque. Plans and policies are considered relevant if they directly address bicycle or trail facilities or land-use patterns which directly affect non-motorized transportation. The chapter consists of the following sections:

Existing Bicycle and Trail Plans provides a summary of plans that have led to the current bike and trail facilities, policies and programs in Albuquerque.

City Plans and Policies summarizes relevant Albuquerque plans, and provides specific policies related to biking, walking and riding in the City.

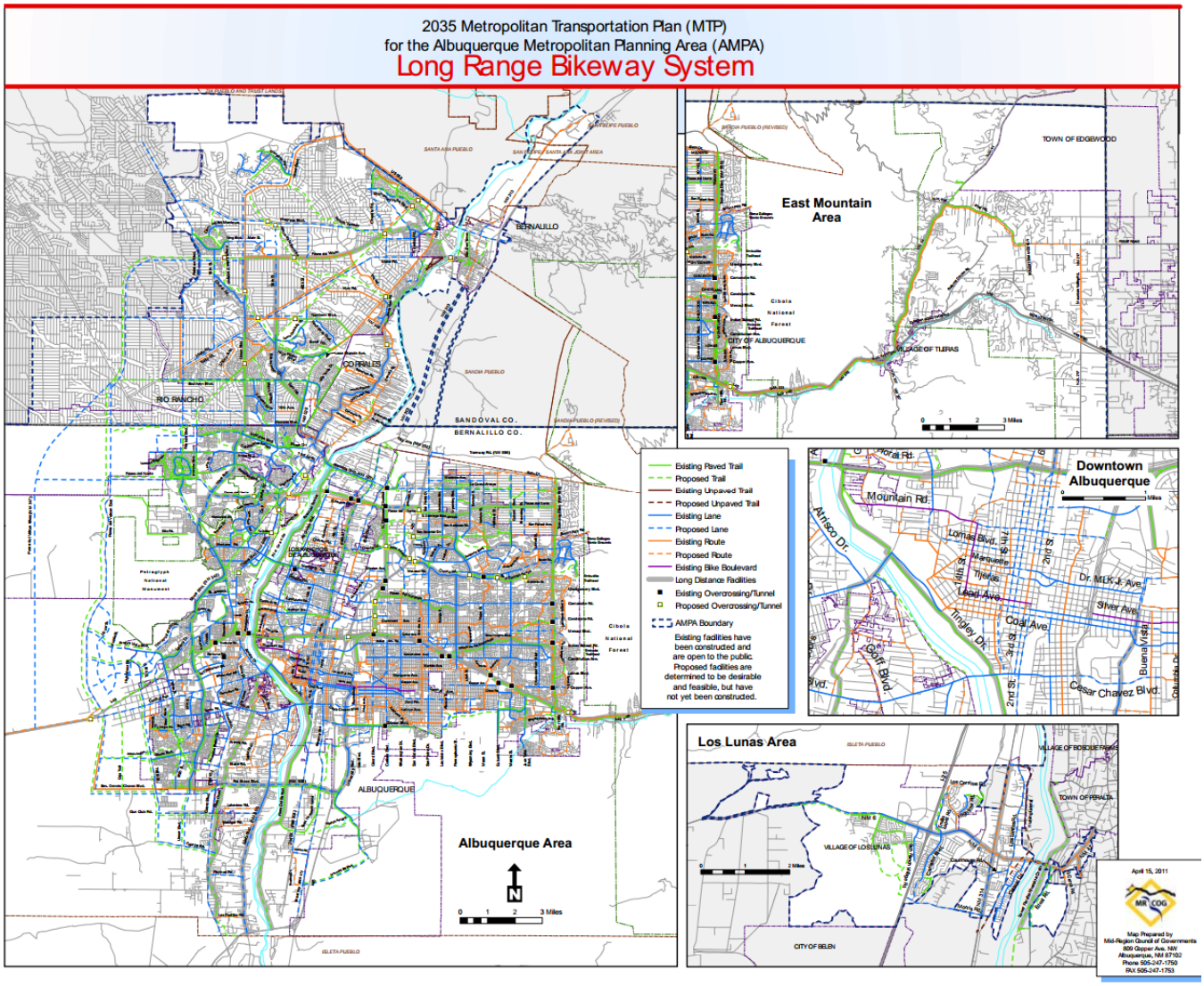
Regional Plans summarizes regional plans relevant to the Bikeway and Trails Facility Plan.

Existing Bicycle and Trail Plans

Long Range Bikeway System Plan (2007)

The Long Range Bikeway System Plan (LRBSP) maps existing and proposed bike facilities within the Albuquerque Metropolitan Planning Area (AMPA). The LRBSP is the guiding document with respect to planned bikeway location and character. This map combines the on-street and off-street multi-use trails and is included in the annual AMPA Transportation Program. The map is updated periodically updated; **Figure 1** shows the April 2011 map.

FIGURE 1: MRCOG 2035 LONG RANGE BIKEWAY SYSTEM MAP



Comprehensive On-Street Bicycle Plan (2000)

The 2000 Albuquerque Comprehensive On-Street Bicycle Plan developed recommendations to establish a comprehensive on-street network in order to make cycling a viable transportation option. A comprehensive set of goals, objectives and action items was developed to be met by 2020.

Facilities. The objective of the on-street networks was to provide an interconnected bikeway network with half-mile spacing connecting major employment/shopping sites, schools, parks, and off-street trails. The proposed network consists of 507 miles of bike routes, lanes and short segments of sidewalk trails.

Seventy-two percent of the recommended bikeways are located on arterial and collector roadways. This high ratio reflects the intent of the on-street bicycle plan to provide direct commuter routes and responds to the discontinuous features of the local roadway network. The plan does not prioritize proposed bikeways. It does however, provide planning level cost estimates for bikeway corridor projects and recommends a flexible improvement program to implement the proposed network.

Programs and Policies. Encouragement, education, and enforcement programs were recommended in the plan. These included; updating and distributing the city bicycle maps, bicycling awareness programs, grade school safety curriculum, media campaigns, and employer incentives for alternative travel. In addition, the plan recommended updating the Albuquerque Zoning Code to include bicycle end-of trip facilities. In 2003, the City attempted to accomplish this goal by updating ordinance §14-16-3-1(B) to increase the amount of required bicycle parking and establish guidelines for end-of-trip facilities (O-02-59). However, the Mayor vetoed the legislation because of its impact to small businesses and suggested a higher threshold for the building size that would require end-of-trip facilities (EC-520).

Trails & Bikeways Facility Plan (1993)

The City of Albuquerque and the County of Bernalillo adopted the Bikeways and trails Facility Plan in 1993. This plan established long-range policies for off-street, multi-use trails and bicycle facilities. The plan identified funding sources (later implemented), and recommended two new positions: a bicycle/pedestrian/trail coordinator in Public Works (now DMD) and a trail coordinator position (Parks).

Facilities. The Trails and Bikeway Facility Plan developed a hierarchy of trail types as well as design standards. Primary trails serve the regional transportation network and also provide secondary recreational benefits. Primary trails were hard surfaced trails and separation between recreational trail users and commuter cyclists was encouraged (though rarely accomplished due to right-of-way and budget constraints). Secondary trails provided access to the primary trails and could be either hard or soft surfaced trails. Finally, the Trail Study Corridors identified areas with desirable trail connections without a defined proposed alignment. The TBFP incorporated alignments proposed in the Facility Plan for Arroyos and Rank III Arroyo Corridor Plans. It also identified the need for an on-street bicycle facility plan (later completed) and a plan for the preserving and utilizing the acequia system in the valley for a trail network (not accomplished).

Facility Plan for Arroyos and Arroyo Corridor Plans

In 1986, the City and Bernalillo County adopted The Facility Plan for Arroyos with the goal to establish guidelines "to create a multi-purpose network of recreational trails and open space along arroyos." The plan was also endorsed by the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), an agency which is generally supportive of multiple use of its facilities where compatible with the drainage function. Trail usage of AMAFCA property is subservient to its drainage function and is controlled by revocable licenses approved by the Board of Directors to a public agency competent to assume liability and responsibility.

Facilities. The plan grouped Arroyos in the Metropolitan area into one of three categories; Major Open Space Arroyos, Major Open Space Links, and Urban Recreational Arroyos and ranked their priority for development. Trail development is specifically identified for the Arroyos identified as Major Open Space Links and Urban Recreational Arroyos while Major Open Space Arroyos are intended to remain natural or semi-natural condition with limited development of trails.

From a trails standpoint, Albuquerque's arroyos offer unique opportunities in that they are linear corridors which cross large areas of the city and are generally located away from major roadways with relatively few street crossings. The *FPA* recognizes this opportunity and sets forth policies for providing joint use of the arroyo rights-of-way, combining recreational uses with their primary drainage function. The system envisioned in the *FPA* is intended to address the needs of all types of trail users, including pedestrians, runners, equestrians, disabled individuals, and cyclists.

City Plans & Policies

The City of Albuquerque uses a system of ranked plans, starting with the Rank 1 Albuquerque/Bernalillo County Comprehensive Plan, which sets the vision, goals, and overall policies from a City-wide perspective. There are also lower-ranked plans that must comply with the intent, policies, and goals of higher-ranked plans. Rank 2 Plans, such as the WSSP or the Arroyos Facility Plan, are exclusively policy documents that provide more detail and give more direction about large but distinct areas or facilities within Albuquerque. Rank 3 plans provide the most detailed guidance for an area, and often include zoning customized to meet the goals of specific areas.

Comprehensive Plan (2012)

The Comprehensive Plan sets forth goals and policies to guide future land use and development in the city/county. Based on the vision of the community, the plan establishes a long-range plan for growth in a coordinated and coherent urban form to best promote the needs of the city. The plan incorporates goals and policies that support bicycle and trail facilities in all three areas; Land Use, Environmental Protection and Heritage Conservation, and Community Resource Management. These Comprehensive Plan policies were reviewed by the project team, and reflected as appropriate through this Plan. This Plan is consistent with the policy direction set in the Comprehensive Plan.

Area and Sector Development Plans

Area and many Sector Development Plans also propose various trails, sometimes in a general way, and at other times very specifically. These proposals have all been included in the Proposed Trails Map.

Code of Ordinances (ROA 1994)

Albuquerque has city ordinances related to bicycling and horseback riding which regulate both user behaviors as well as provide provisions for facility types. Ordinances related to bikeways and trails are largely addressed in Chapter 8 Traffic Code. Articles 2 (Traffic Regulations) and 3 (Motorcyclists, bicycles and toy vehicles) contain laws pertaining to the ownership of a bicycle, proper riding skills, and bicycle equipment. Article 2 also contains laws related to pedestrian movement, including requirements to cross at right angles to the road, prohibiting crossing at locations other than signed crosswalks, and requiring use of sidewalks, tunnels, and overpasses where provided. Ordinances addressing proper horseback riding are identified in Chapter 8, Article 4: Animals.

Development Process Manual (2008)

The purpose of the Development Process Manual (DPM) is to clarify the development process for City staff, property owners, developers and their agents, especially planners, architects and engineers. The DPM contains the City's design standards and is intended to successfully carry out the goals and policies of the Albuquerque/Bernalillo County Comprehensive Plan.

All new roads in Albuquerque must be designed to accommodate bicycles. **The DPM establishes pavement width standards for roadways and minimum widths for bicycle facilities.** Arterials require a six-foot minimum bike lane or five-foot paved shoulder bikeway for posted speeds of 35 mph or less;

seven-foot bike lane or six-foot paved shoulder bikeway for posted speeds of 40 mph or greater. Collector streets require a minimum six-foot bike lane or four-foot paved shoulder bikeway. All major local roads must have a signed bicycle route without striped lines at minimum or a six–foot wide paved path within a minimum twelve-foot wide Pedestrian Access Route between lots or from stub streets or cul-de-sacs.

Bikeway Location and Design Guidelines are presented in Section 3. American Association of State Highway and Transportation Officials (AASHTO) *1999 Guide for the Development of Bicycle Facilities* (or current revision) serves as the principal resource for the location and design of on-street and multi-use trail facilities. These standards have not been updated since adoption of the *2012 Fourth Edition* of the AASHTO "Bike Guide." The DPM provides specific design guidelines for on-street facilities including; bicycle lanes, paved shoulder bikeways, bicycle routes, wide curb lanes, and bicycle boulevards. It also outlines special provisions for bike lanes including, design recommendations for dual right-turn lanes, free right turn lanes, crossing conflicts, and bikeway grades.

City of Albuquerque Decade Plan: Capital Improvement Program (2009)

The City of Albuquerque Decade Plan documents the capital improvement projects for the City over a ten year period. Funding for the Capital Improvement Program comes from the General Obligation Bond Program which is approved by the voters and is updated every two years. Bicycle and trail projects are funded through a number of City departments including Parks and Recreation, Department of Municipal Development, and Planning. **The Decade Plan is the primary instrument for setting priorities for the next Capital Improvement Program cycle.** As such, efforts to rank and prioritize projects within this Plan would not be able to take into account the changing fiscal, political, and maintenance-driven factors that determine what is programmed by the City.

Regional Plans & Policies

2035 Metropolitan Transportation Plan for the Albuquerque Metropolitan Planning Area

Every four years the Mid-Region Metropolitan Planning Organization (MPO) updates the Metropolitan Transportation Plan (MTP). The purpose of the MTP is to guide the development of the transportation system for the Albuquerque Metropolitan Planning Area (AMPA). The 2035 MTP sets goals that will lead to the development of an integrated transportation system and includes recommendations aimed at relieving congestion, maintaining air quality, and improving quality of life. The MTP establishes bicycle facilities and trails as important elements in their transportation demand management strategy.

A summary of key policies related to bicycle and trail development follows:

- Provide sufficient funding to develop and maintain efficient, high-quality pedestrian and bicycle circulation systems for safe, affordable, convenient, and comfortable travel between activity centers, activity corridors, residential neighborhoods and public transit.
- Support opportunities to redevelop existing roadways as multi-modal facilities (complete streets).
- Promote the development of street patterns and designs that strongly support pedestrian and bicycle comfort, convenience, and safety and give high priority to development projects that closely integrate transportation and land use planning and design
- Build safe facilities. Plan, design, and build bicycle and pedestrian facilities in accordance with the best practices described in the latest edition of the AASHTO Guide for the

Development of Bicycle Facilities, and the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities.

- Develop educational programs that encourage walking and bicycling; teach smart walking and bicycling skills; and teach motorists how to interact safely with pedestrians and bicyclists.
- Maintain strong and effective travel demand management and education programs to encourage, support, and enable shifts of person trips away from single-occupant vehicles and toward walking, bicycling, public transportation, ride-sharing, and work-at-home.
- Collect data and develop analytical methods to monitor and consistently evaluate the effectiveness of all projects and programs.

Statewide and National Plans & Policies

New Mexico Bicycle / Pedestrian / Equestrian Advisory Plan (2009)

The New Mexico Bicycle/Pedestrian/Equestrian (BPE) Advisory Plan, developed for the New Mexico Department of Transportation (NMDOT) provides goals, guidance and recommended design standards intended to improve the facilitation of non-motorized facilities in New Mexico. **State law requires provisions for pedestrians, bicycle and equestrian traffic be properly considered in all NMDOT projects.** The BPE Advisory Plan provides recommendations specific to various functions within NMDOT. However, recommendations for planning and programs, funding, engineering and design, and education, enforcement and encouragement have a wider statewide scope.

Statewide Transportation Improvement Program (STIP)

The New Mexico Department of Transportation (NMDOT) is responsible for developing the Statewide Transportation Improvement Program (STIP), the state's capital improvement program for multi-modal transportation improvement projects. The STIP prioritizes projects through a transportation planning process with local governments and develops a funding budget for a four-year period. In Fiscal Years 2010-2013, NMDOT allocated $8.5 Million for bicycle and trail related projects in the City of Albuquerque. However, with recent changes to federal transportation programs and funding, the City is likely to see much less federal funding for bikeway and trail projects in the future.

Federal Policies and Programs

In 2012, Congress passed the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 requires that planning organizations incorporate bicycle and pedestrian facilities into all annual and long-range Transportation Improvement Programs. The Transportation Alternatives Program provides funding for a variety of alternative transportation projects, including on- and off-street facilities for pedestrians, bicyclists, and non-motorized transportation, recreational trails, and Safe Routes to School.

Since 2005, Federal transportation policy has been to increase non-motorized transportation to at least 15% of all trips and to reduce the number of injuries and fatalities to non-motorized users. This shift in policy has given tremendous flexibility to States and MPOs to fund bicycle and pedestrian improvements from a wide variety of programs. Virtually all the major transportation funding programs can be used for bicycle and pedestrian related projects.

In 2010, the U.S. Department of Transportation issued a "Policy Statement on Bicycle and Pedestrian Accommodation, which includes the following recommended actions for states and local jurisdictions:

- The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks.
- Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems exist, these non-motorized trips can easily be linked with transit to significantly increase trip distance. Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.
- Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices.
- Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, trails that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.
- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges: DOT encourages bicycle and pedestrian accommodation on bridge projects including facilities on limited-access bridges with connections to streets or paths.
- Collecting data on walking and biking trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of non-motorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.
- Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.
- Improving non-motorized facilities during maintenance projects: Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.

CHAPTER 3: EXISTING CONDITIONS & CURRENT ISSUES

This section presents an overview of the existing bikeway and trail system and the needs of bicyclists and path users in Albuquerque. Adequately identifying user needs enables path and bikeway system planners and policy-makers to develop cost-effective solutions for improving the region's bikeway and multi-use trail system. This section provides an overview of trail user and cyclist volumes and behaviors at many locations throughout the City, discusses public input gathered through an online user survey, and examines cyclist safety by analyzing reported bicycle crash data. This information was used in conjunction with field visits, input gathered at public meetings, stakeholder interviews, and analysis of the existing bikeways and multi-use trail system to develop the Plan recommendations, Part II of this document.

A. User Needs

As the population of Albuquerque continues to grow, the City needs to plan for a truly multi-modal transportation and recreation system that serves the needs of all residents. The city's rapid growth is occurring west of the Rio Grande both in the northwest and southwest quadrant. Roughly half the people in New Mexico live in the Albuquerque area.

TABLE 3: ALBUQUERQUE AND ALBUQUERQUE METROPOLITAN AREA POPULATION

Albuquerque Population	
Year	Population Estimate
2012	555,419
2010	535,239
2006	507,789
2000	448,607

Metro Area Population (includes Bernalillo, Sandoval and Valencia counties)	
Year	Population Estimate
2012	902,794
2009	857,903
2005	766,016
2000	712,738

Types of System Users

Pedestrians

This group includes all travel that is primarily foot-powered including walkers, joggers, runners, and skaters. Pedestrians are typically looking for facilities that provide connections to destinations for utilitarian trips, or for longer continuous facilities for exercise-related trips. Key facilities for pedestrians include travel-ways with a smooth travel surface and infrastructure to enhance safety at roadway crossings. The city also must provide adequate access and opportunities for individuals with disabilities to use the non-motorized bikeways and trails system facilities.

Cyclists

The needs and preferences of cyclists vary depending on skill level, equipment, and/or trip purpose. For example, bicyclists who ride for recreational purposes may prefer scenic, winding, trails, while cyclists who ride to work or for errands may prefer more direct routes and on-street bicycle facilities. However, this traditional and stereotyped perspective of each facility type is increasingly becoming blurred. Commuters in Albuquerque often feel more comfortable and relaxed on trails, while the City has also seen dramatic increases of the number of people who will use streets to access recreational opportunities, including craft breweries, parks, and open space, or use the streets *as* recreational opportunities, such as bicycle poker games and group rides.

Advanced Users

Cyclists who use their bicycle for utilitarian trips (ones other than recreation) may find that on-street facilities are the most functional facilities for bicycle transportation. This could be attributed to the more direct connections that streets can provide, as well as fewer conflicts between user types. Advanced cyclists have stated their preference for marked on-street bicycle lanes in numerous national surveys.

Traffic Intolerant Adults, Beginning Cyclists & Children

Child cyclists, seniors, and beginning adults are generally thought to prefer trails, because there is no vehicular traffic. Individuals who cannot afford to drive a car or who choose to live without a car may have preferences that are not as easily classified. Despite each individual user's comfort level, there is generally a portion of the trip that requires using the street system. As a city, we should strive to make each trip as safe and comfortable as possible by providing a range of options across the city.

Many bicyclists – particularly less experienced riders – are far more comfortable riding on a busy street if it has a striped and signed bike lane. Part of the intent of this Plan is to encourage new riders and providing future marked facilities such as bike lanes may be one way of accomplishing that. It is also important to note that many advanced cyclists use Albuquerque's trail system due to its extensive length, mild curve radii overall, gentle slopes, and ease in reaching many parts of the City.

Other Wheeled Trail Users

In addition to the primary user groups identified above, there are other types of trail users who have slightly different needs. This user group includes the following: skaters, including in-line and roller-skates, long skateboards, skateboards, and kick scooter users. Others include people with baby strollers and individuals in wheelchairs. These users tend to prefer a surface that is smooth without major cracks. They may be moving at a slower pace than other wheeled trail users, and therefore share some similarities with the needs of pedestrians.

Equestrians

As with pedestrian and bicycle users, the needs of equestrian users vary with experience and relative levels of urbanization and trail development. In areas of higher use, equestrian users prefer facilities that provide adequate separation from other user types that may spook horses (e.g., cyclists or in-line skaters) and an unpaved trail tread.

User Needs – Current Issues

Balancing the Needs of the Various Users

Each of these different user groups has slightly different needs and ways of using the same facilities. On trails there are conflicts between faster moving cyclists and pedestrians or equestrians, particularly with trails that are built to the *minimum* standard width. The Paseo del Bosque Trail often has the problem of being a victim of its own success on the weekends and summer evenings. On streets there are conflicts between cyclists and motor vehicle drivers, again, particularly on facilities that are narrow with little separation between users.

The City aims to address these user conflicts in a threefold manner: 1) developing new facilities to meet the minimum design standards and guidelines to improve the safety of the trail or bikeway, 2) inventory, evaluate, and then retrofit design enhancements for facilities that do not meet the minimum standards or have high volumes of users, and 3) to educate and promote awareness of trail etiquette and

the types of accommodations that are required when there are high volumes of users, such as slower speeds and more communication between users.

Equestrian Issues

In the on-line survey approximately 10% of equestrian respondents reported riding Albuquerque's trails. The majority of equestrian owners live in the Rio Grande Valley area although there are a few areas on the west side of Albuquerque where horses are still kept. The City and County have provided a few areas in the Valley with horse or equestrian parking available. A few notable examples include City Shining River Open Space Trailhead, Los Poblanos Fields Open Space, and the County's Bachechi Open Space. To encourage more equestrians and the culture New Mexico and the Southwest has regarding horses, it is recommended that the City and County add equestrian facilities where appropriate in the future.

B. Existing Facilities

Albuquerque's formalized bikeway and trail system consists of on-street facilities (bike routes, bicycle boulevards, bike lanes, wide lanes/paved shoulders) and off-street facilities (multi-use trails). A significant portion of the City's bicycle facilities are trails, making up nearly one-third, or 177 miles, of the existing bicycle facilities in the area. Annually, the City prepares a map of the bikeways and trails in the metropolitan area for bicyclists and trail users. Figure 2 shows the 2013 City of Albuquerque Bicycle Map.

FIGURE 2: 2013 BICYCLE MAP
(INSERT BIKE MAP IMAGE HERE)

Types of Existing Facilities

Bicycle Lanes

Designated exclusively for bicycle travel, bicycle lanes are separated from vehicle travel lanes with striping and include pavement stencils and signage. Bicycle lanes are most appropriate on arterial and collector streets in urban and rural areas where higher traffic volumes and speeds warrant greater separation. There are approximately 203 miles of existing bike lanes within the city, most of which are located on collector and minor arterial streets. Most utilitarian bicyclists would argue that on-street facilities are the most functional facilities for bicycle transportation. Bicyclists have stated their preference for marked on-street bicycle lanes in numerous national surveys. The fact is that many bicyclists – particularly less experienced riders – are far more comfortable riding on a busy street if it has a striped and signed bike lane. Part of the intent of this Plan is to encourage new riders, and providing marked facilities such as bike lanes is one way of helping to persuade residents to give cycling a try.

This Plan takes the approach that if properly designed, bike lanes can increase safety and promote proper riding. For this reason, bike lanes are highly desirable for bicycle commutes and other utilitarian routes along major roadways. Bike lanes help to define the road space for bicyclists and motorists, reduce the chance that motorists will stray into the cyclists' path, discourage bicyclists from riding on the sidewalk, and remind motorists that cyclists have a right to the road. One key consideration in designing bike lanes in an urban setting is to ensure that bike lanes and adjacent parking lanes have sufficient width (usually a minimum of five feet for bicycle lanes, see the Design Guidelines for additional information) so that cyclists have enough room to avoid a suddenly opened vehicle door.

Bicycle Boulevards

Bicycle Boulevards are low-volume and low-speed streets where motorists and bicyclists share the same lane. A motorist will usually have to cross over into the adjacent travel lane to pass a bicyclist unless a wide outside lane or shoulder is provided. Bicycle Boulevards are indicated with signage and pavement markings with an image of a large bicyclist. This is done to create a more unique identity for the Bicycle Boulevard. Bicycle Boulevards also typically have more intense design interventions, such as bulb-outs, chicanes, etc., that help slow vehicular traffic.

Traffic calming and other treatments along the corridor may reduce vehicle speeds so that motorists and bicyclists generally travel at the same speed. This creates a safer and more comfortable environment for all users. Bicycle Boulevards also incorporate treatments to facilitate safe and convenient crossings where bicyclists must traverse major streets. Bicycle Boulevards work best in well-connected street grids where riders can follow reasonably direct and logical routes with few "twists and turns." Boulevards also work best when higher-order parallel streets exist to serve thru vehicle traffic. There are approximately 6 miles of existing Bicycle Boulevards in Albuquerque.

Why Bicycle Boulevards are Important

Bicycle Boulevards serve a variety of purposes:

- **Parallel major streets lacking dedicated bicycle facilities:** Higher-order streets such as arterials and major collectors typically include major bicyclist destinations (e.g., commercial and employment areas, and other activity centers). However, these corridors often lack bike lanes or other dedicated facilities thereby creating an uncomfortable, unattractive and potentially unsafe riding environment. Bicycle Boulevards serve as alternate parallel facilities allowing cyclists to avoid major streets for longer trip segments.
- **Parallel major streets with bicycle facilities that are uncomfortable for some users:** Some cyclists may not feel comfortable riding in bike lanes on major streets for various reasons, including high traffic volumes and vehicle speeds, conflicts with motorists entering and leaving driveways, and/or conflicts with buses occupying the bike lane while loading and unloading passengers. Children and less-experienced riders might find these environments especially challenging. Utilizing lower-order streets, Bicycle Boulevards provide alternate route choices for bicyclists uncomfortable using the major street network. It should be noted however that bike lanes on major streets provide important access to key land uses, and the major street network often provides the most direct routes between major destinations. For these reasons, Bicycle Boulevards should complement a bike lane network and not serve as a substitute.
- **Ease of implementation on most local streets:** Bicycle Boulevards incorporate cost-effective and less physically-intrusive treatments than bike lanes and cycle tracks. Most streets could be provided relatively inexpensive treatments like new signage, pavement markings, striping and signal improvements to facilitate bicyclists' mobility and safety. Other potential treatments include curb extensions, medians, and other features that can be implemented at reasonable cost and are compatible with emergency vehicle accessibility.
- **Benefits beyond an improved bicycling environment:** Residents living on Bicycle Boulevards benefit from reduced vehicle speeds and thru traffic, creating a safer and more-attractive environment. Pedestrians and other users can also benefit from boulevard treatments (e.g., by improving the crossing environment where boulevards meet major streets).

Bicycle Routes & "Sharrows"

The most common bikeways are shared roadways, which accommodate vehicles and bicycles in the same travel lane. They include link routes on local streets to get cyclists to designated facilities, as well as routes specifically designated as a Bike Route. The most suitable roadways for shared vehicle/bicycle use are those with low posted speeds of 25-mph or less and low traffic volumes of 3,000 average daily traffic or less, many of which are in residential areas. These facilities may include traffic-calming devices to reduce vehicle speeds while limiting conflicts between motorists and bicyclists. A common practice is to designate a system of shared roadways which are signed with bicycle route signs, directional arrows and other way finding information. Bicycle routes may be marked with "sharrows," which are pavement markings used to indicate a shared travel lane with both bicycle and motor vehicles.

Approximately 134 miles of bike routes currently exist throughout the city, providing convenient links to other parts of the bikeways system and to destinations throughout the city, including residential areas, transit stops, and schools.

Wide Lanes/Paved Shoulders

A wide outside lane provides accommodation for bicyclists on streets with insufficient width for bike lanes. Typically found in rural areas and on state highways, these facilities are on paved roadways with shoulders that are wide enough for bicycle travel (4'+). Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway.

Bikeway Supporting Facilities

The City has implemented a number of bikeway supporting facilities, including signage, bicycle detectors, bicycle parking and end-of-trip facilities. The Design Guidelines provide the information about planning the location, design, and installation of these types of facilities.

Bikeway Signage

Bikeway signage includes signs to identify a bike route, lane or multi-use trail to cyclists and drivers (e.g., "Bike Lane" signs posted along a roadway with a bike lane), signs that provide regulations or warnings to cyclists or drivers (e.g., "Bike Xing" warning signs or bicycle-sized "Stop" signs) and signs that provide wayfinding to cyclists (e.g., trailhead signage or bike route numbering). Examples of some signs being used in Albuquerque are shown in Figure 3, below.

In Albuquerque, most on-street facilities have standard bikeway signage and some multi-use trail facilities have entrance monuments. There is currently little directional signage provided along bikeways in Albuquerque. Most local street connections, continuous bikeway routes and destinations are not identified. Wayfinding is difficult on trails that do not parallel roads, since cross streets and familiar landmarks are sometimes difficult to use as reference points. An important area of concern is the inability to readily identify a location on the multi-use trails for emergency response purposes.

FIGURE 3: SIGNAGE EXAMPLES
(INSERT IMAGES HERE)

Bicycle Detectors: Loops, Video Cameras and Pushbuttons

Loop detectors are in-pavement wire sensors or video camera detection systems that activate traffic signals when a vehicle is positioned within or over the loop. The in-pavement wire sensor loops work by sensing the metal in the vehicle and the video cameras detect changes in the background image. The in-

pavement loop detectors and video camera detector can be adjusted to be sensitive enough to detect when a bicycle has stopped over the loop, allowing a cyclist to activate a traffic signal. At some intersections that do not have dedicated right turn lanes, the City has installed pushbuttons, located at the stop bar next to the curb, allowing the cyclist to activate the pedestrian call.

Bicycle Parking & End-of-Trip Facilities

Bicycle parking includes both long-term (often referred to as Class A or Class I) and short-term (often referred to as Class B or Class II) parking. These cater to different cycling groups depending largely on their trip duration and desired level of protection from weather and/or theft. Table 4 compares the typical characteristics of short- and long-term bicycle parking.

TABLE 4: CHARACTERISTICS OF SHORT- AND LONG-TERM BICYCLE PARKING

Criteria	Short Term (class B)	Long-Term (Class A)
Parking Duration	Less than two hours	More than two hours
Typical Feature Types	Bike racks	Lockers or racks provided in a secure area
Weather Protection	Unsheltered	Sheltered or enclosed
Security	High reliance on personal locking devices and passive surveillance (i.e., eyes on the street)	Restricted access and/or active surveillance/ supervision. Examples: "Individual-secure" bike lockers; "Shared-secure" bike room or cage; Supervised valet bike parking, CCTV
Typical Land Uses	Commercial, retail, medical/ healthcare, parks and recreation areas, community centers	Residential, workplace, transit, schools

Other end-of-trip facilities enable cyclists to freshen up following a trip and can include showers, wash-rooms and clothing lockers, but may also include other services such as a laundry or dry-cleaning and bike-related services.

End-of-trip facilities for bicycles are currently found throughout Albuquerque. Short-term parking is provided using bicycle racks in many public places as well as outside private buildings, while long-term parking and other end-of-trip facilities are provided at some publicly accessible sites but mostly on private property (e.g., as part of an office building).

Trails, also known as "Shared-use Paths" and "Multi-Use Trails"

Trails provide off-street connectivity to community resources such as parks, open spaces, schools, libraries, community centers, employment centers, shopping centers, bus stops and the soft surface trails within open spaces. Shared Use Paths also provide commuting/transportation access to those who do not have the necessary skill levels or comfort levels for on street riding or just prefer to ride off street.

Today, the City of Albuquerque has approximately 177 miles of paved, off-street, multi-use trails. These "trails" or "paths" provide recreational and commuter access throughout the City for pedestrians, equestrians, bicyclists, skaters, and other types of users. There has been a long history of planning and creating these trails with the commuter in mind. There are also 100 miles of unpaved trails. A recent trend or goal today is to plan trails with the commuter in mind but also to provide trail connections to more recreational facilities such as parks, Major Public Open Space, and the Petroglyph National Monument.

The Bosque Trail, the Unser Boulevard Trail, the North Diversion Channel Trail and the Tramway Trail are examples of some of the major north/south multi-use trails. These major north/south trails provide connections to the Paseo del Norte, I-40 Trail, Paseo del Nordeste Recreational Trail and Paseo de las Montañas Trail that run predominantly in the east/west direction. Developers are starting to include multi-use trails as part of new subdivisions to accommodate bicycles for transportation and other forms of recreational activity. The I-40 Trail connects the east and west sides of the city, crossing the Rio Grande River on a multi-use bicycle/pedestrian bridge. Albuquerque's west side has fewer multi-use trails and is less well connected than the more mature multi-use trail system of Albuquerque's east side.

The City has other multi-use trails that are not paved but also are intended for many various users. Unless these trails are located in Open Space or a City park, they are typically informal and not maintained as trails. An example of a formal unpaved trail which may provide a good example for how to separate users in high use areas is the recent project on the north side of the Hahn Arroyo, between Comanche and California. An example of an informal unpaved network is the extensive network of drains and ditches (also known as acequias) within the Middle Rio Grande Conservancy District (MRGCD) which owns and/or maintains this irrigation system. Other non-paved multi-use trails can be found in City Major Public Open Space, County Open Space, the United States Forest Service, and the National Park Service among other public and private lands. Many of these trails tend to be what is known as "single track" and are about one and a half to two feet wide and attract many hikers, runners, dog walkers, and mountain bicyclists. All of these "primary" and "secondary" trails are considered to be part of Albuquerque's multi-use trail system, despite the City's varying degrees of oversight and maintenance on many of these informal trails.

Regional / Long Distance Trails & Routes

The MRCOG Long Range Bikeway System Map designates regional trails as "Long Distance Facilities." These bikeways and trails connect across the City or to other jurisdictions, such as Bernalillo County, Rio Rancho, Los Ranchos, and Corrales. The currently identified regional trails within Albuquerque include:

East/West:

- Paseo del Norte
- Osuna Rd. / Bear Canyon Arroyo
- Paseo del Nordeste
- Paseo de las Montanas
- I-40 Trail
- Rio Bravo Blvd.

North/South:

- Unser Blvd.
- Paseo del Bosque (River Trail) / Alameda west of the Rio Grande
- 2nd Street
- University Blvd.
- North Diversion Channel Trail

Much of the regional long distance trail and bikeway system has been constructed already; however, there are still significant gaps along these corridors. The City should focus on completing these gaps as one of our main priorities. These links would be particularly suited for going after Federal or State transportation project funds because they connect across the Albuquerque Metropolitan Region.

The 50 Mile Activity Loop is another long distance route that is being developed by the City. It consists of segments of trail, bikeways, and urban trail (wide sidewalks). For more information about this project, see Appendix X.

Multi-Use Trail Crossings

The City's extensive multi-use trail system intersects streets, highways, arroyos, drainages channels and the Rio Grande. Where these intersections occur, various crossing treatments are used to provide safe and convenient crossing opportunities for the trail user. These crossings can be divided into two basic groups: grade-separated and at-grade. Underpasses and overpasses are two subsets of grade-separated crossings. There are currently 31 grade-separated crossings; this Plan proposes 15 new grade-separated crossings, along with 87 at-grade intersections that are recommended for enhancements or redesign strategies.

Grade-Separated Crossings

These are crossings where the pedestrian or bicyclist is completely separated from vehicle traffic when crossing a street intersection, trail, arroyo, drainage, or other obstructions. Grade-separated crossings can be further divided into two categories; overpasses and underpasses.

Overpasses provide locations where the trails pass above the obstruction. The trail may require a dedicated structure to provide this separated crossing. The trail may be aligned with an existing roadway bridge where the path is provided a space on the bridge. Shared roadway/multi-use trail bridges can be found at some of the freeway, drainage channel and river crossings. There are areas throughout greater Albuquerque where it is crucial to put an overpass. A couple examples include Paseo del Norte and Coors and the east I-40 Trail at Rio Grande Blvd. Overpasses can range from a simple pre-fabricated truss bridge, typically used to cross the shorter spans of arroyos and drainage channels like those along North Diversion Channel and Paseo del las Montañas to the more complex bridge structure spanning multi-lane arterials and the Interstates similar to the structures crossing Tramway, the newly constructed Bear Canyon Arroyo Bridge over Interstate 25 and several that cross Interstate 40.

An underpass serves a similar purpose as an overpass but differs in that the multi-use trail passes below the barrier. In locations where the multi-use trail is aligned with an existing roadway underpass the multi-use trail can be provided space adjacent to the roadway for the crossing. At locations of independent trail alignment a modified culvert large enough to provide safe access for the trail user and maintenance equipment can be effective. The City has successfully used a technique termed "notches" where roadway bridges intersect multi-use trails following major drainage channel alignments. A notch in the channel's sloping side provides space for multi-use trail to pass below the bridge.

At-Grade Crossings

At-grade multi-use trail crossings of roadways may occur at controlled or uncontrolled intersections and mid-block locations. Where the multi-use trail is in close proximity to a signalized intersection the trail alignment may be diverted to the intersection, as shown in the photo of the crossing at Matthew Ave. where the multi-use trail user crosses at the crosswalk. Another example is the La Presa Dam crossing at Interstate 40 and Unser Blvd. Two-lane to six-lane streets with multi-use trail mid-block crossings are located throughout the City's bikeways network. Mid-block crossings are the most frequent at-grade multi-use trail crossings and a concern to planners, engineers, and users. The implementation of specific design interventions must be considered on a location by location basis. The FHWA has endorsed and encourages a number of "Proven Safety Countermeasures" that include tools for mid-block crossings.

Existing Facilities – Current Issues

Retrofitting Trails to be Universally Accessible

The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, public accommodations, commercial facilities, and transportation. It also mandates the establishment of TDD/telephone relay services. The current text of the ADA includes changes made by the ADA Amendments Act of 2008 (P.L. 110-325), which became effective on January 1, 2009 and is now accompanied by the 2010 ADA Standards for Accessible Design. Together they provide national accessibility regulations for buildings and related urban environments. However, when designing outdoor recreational facilities or shared-use paths (locally referred to as trails or multi-use trails), the application of strict ADA standards often proves impractical. As of early 2014, there are no enforceable Federal ADA standards or a proposed ruling for shared-use paths. The Federal Access Board anticipates adopting final standards in July 2014.

One ruling that is the closest guidelines for paths and one that the Federal Access Board has adopted is the Public Rights-of-Way Accessibility Guidelines (PROWAG). According to the City of Albuquerque's ADA consultants, PROWAG does not directly affect trails but when a ruling comes out in the future for paths it is very likely that these guidelines will be similar to what is adopted for trails. Therefore, the City will attempt to use these guidelines where feasible when constructing new paths until the ruling on trails is adopted by the Federal Access Board.

Bollard Placement Evaluation

Bollard Placement and Spacing Evaluation on Multi-use Trails

The purpose of this report is to identify relevant design criteria for bollards on multi-use trail facilities, review the installation of bollards on multi-use trails at selected locations, and then develop best practices for consideration of installed conditions and for future installations.

Bollards are a commonly used method of controlling vehicular access to multi-use trails. However, per the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012 (Fourth Edition):

> "The routine use of bollards and other similar barriers to restrict motor vehicle traffic is not recommended. Bollards should not be used unless there is a documented history of unauthorized intrusion by motor vehicles. Barriers such as bollards, fences, or other similar devices create permanent obstacles to path users."

If a need for the implementation of bollards for a multi-use trail is identified, AASHTO has set forth several guidelines for the design of vertical barriers to make them as compatible as possible with the needs of path users and bicyclists. It should be noted that parameters contained within the evaluation are recommended practices and not design standards.

The goal of bollards should be to balance the need to discourage unauthorized motorized vehicle access on a trail with the need to provide the trail users a facility without unnecessary obstructions. Therefore, developing a series of best practices for the installation of bollards on the City of Albuquerque trail system is critical for the purpose of not only providing consistency within the trail system, but also establishing a level of expectancy with the trail users that will result in less confusion and improvements in accessibility for all types of users.

Multi-Use Trail Bollard Inventory

The purpose of this project is to develop an inventory of the existing bollard installations on the 160-miles of multi-use trails identified on the Albuquerque Bicycle Map. Each bollard will be photographed as a part of the inventory and the photos will be geotagged by a camera so that the data can be a part of the City's Geographic Information Systems (GIS) database. The multi-use trail inventory will include virtually all of the City's facilities. The inventory data collected will then be compared to the recommendations provided by the above-referenced Bollard Placement and Spacing Evaluation in order to develop a City-wide placement and spacing policy on bollards, with modifications to those which do not meet the adopted criteria.

End-of-Trip Facilities & Programs

End-of-trip facilities, including bicycle parking and other facilities such as showers and clothing lockers, can be a determining factor in whether someone decides to make a bicycle trip. They enhance the bicycling experience by providing cyclists with somewhere to park and somewhere to refresh themselves following their trip. Numerous studies have shown the value of these facilities in attracting cyclists to employment and activity centers and in supporting multi-modal trips. In fact, in the online survey conducted earlier in this planning process, nearly 70% of the people who responded indicated that more bicycle parking would likely influence them to bike and/or use the multi-use trail system more often.

The City has no zoning requirement for end-of-trip facilities other than the bicycle parking requirements. Some businesses provide end-of-trip facilities such as bike lockers, showers and changing rooms for employees who commute to work.

The City does not currently have a bike rack installation program, which would be an excellent way to encourage utilitarian bicycle trips to retail and other destinations.

Valet Parking Program

Recently the City has experimented with Valet Bicycle Parking during special events that attract people traveling to the event by bicycle. For example, at the 2009 Albuquerque International Balloon Fiesta approximately 200 secure bicycle parking spaces were available. The valet parking area was conveniently located next to a multi-use trail that connects the North Diversion Trail to the nearby balloon launching fields. At peak use times the parking area was at full capacity. The City should continue this popular service at public events.

Long-Term Parking Program

The Bicycle Locker Program is intended to provide convenient locations for securely storing bicycles used for commuting to employment destinations, so that alternative modes of transportation can be locally supported and effectively promoted. Lockers are presently located in close proximity to various downtown government centers and adjacent to approximately thirty or more other public facilities and related private businesses scattered around the metropolitan Albuquerque area.

This federally-funded program has existed for many years; much like federal funding that has been allocated for existing and new on-street bicycle lanes and trails. Administration of the program is performed by the City's Bicycle Coordinator within the Department of Municipal Development (768-2680 and on the City's website), which is also a federally-funded position. The Bicycle Coordinator receives new and manages existing written agreements submitted by individual bicycle commuters, who in exchange receive a locker key and agree to store only a bicycle within the locker at a prearranged

location for a specific term. Review of lockers and their active files are performed by the Bicycle Coordinator on a periodic basis in order to minimize the potential for misuse.

The City currently manages around 300 bicycle lockers. The locations for theses lockers come from request by individuals and employers. Major employers that have taken advantage of the bike locker program include Intel, Honeywell and the University of New Mexico. The purpose of this program is to provide secure bicycle parking to encourage bicycle commuting.

C. Bikeway & Trail System Analysis

Bikeway & Trail System - Assets & Challenges

Land Use and Destinations ("Demand" or Trip Generation)

The concept of "demand" for bicycle facilities can be difficult to comprehend. Unlike automobile use, where historical trip generation studies and traffic counts for different types of land uses permits an estimate of future "demand" for travel, bicycle trip generation methods are less advanced and standardized in the United States. Transportation planners use the concept of demand to analyze if existing facilities are sufficient and determine locations for new facilities. They also use the concept of "trip generation" to understand how much traffic a use may create, or the "trips generated."

Land use patterns can help predict demand and are important to bikeway planning because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. The bikeways system will connect the neighborhoods where people live to the places they work, shop, recreate, or go to school. An emphasis will be placed on regional bikeway connections that serve the Major, Community, and Neighborhood Activity Centers in Albuquerque, which contain:

- Major employment centers
- Civic buildings such as libraries
- Transit stations
- Major retail and commercial centers
- Schools
- Parks and regional recreation areas

By looking at the existing bicycle facility system map, one can see the extent of facilities across the city. The current development policy is to provide a bikeway every half mile, putting a bicyclist a maximum of a quarter-mile from a bicycle facility. This intent is generally achieved across the city; major exceptions include the south valley and mesa, the north valley, and the northwest mesa. In those listed areas, facilities are provided at closer to one mile intervals. Albuquerque is well-served in the northeast quadrant. The further west one travels, additional gaps in both the connectivity and accessibility of the bikeway system appear.

It is particularly important for the bikeway and multi-use trail system to provide access to destinations popular among pedestrians and bicyclists. Within Albuquerque, popular destinations include:

- Educational facilities including University of New Mexico, Central New Mexico Community College, and elementary, junior high, and high schools
- Employment centers including KAFB/Sandia Labs, Intel, Journal Center, and Mesa del Sol

- Commercial areas including those along Route 66/Nob Hill, Coronado and Cottonwood malls, ABQ Uptown, and neighborhood shopping centers and grocery stores
- Public facilities such as the Bio Park, Albuquerque Public Libraries, and museums
- Old Town, Downtown, and Uptown Albuquerque
- Rural roadways on the community's outskirts for recreational cyclists
- Nearby communities in the East Mountains and South Valley, Valencia County, and Sandoval County
- Natural areas within and outside Albuquerque, including Albuquerque Open Space, Sandia Mountain foothills, National Monuments, and Rio Grande Valley State Park.

Albuquerque has adopted a "Centers and Corridors" framework to guide development in the city. The goal is to expand and strengthen concentrations of moderate and high-density mixed land use and social/economic activities which reduce urban sprawl, auto travel needs, and service costs, and which enhance the identity of Albuquerque and its communities. The Comprehensive Plan designates Neighborhood, Community, Major, and Special Activity Centers. The Centers are connected by roads that are designated as Major and Enhanced Transit Corridors, which provide enhanced non-vehicular access to the Centers; while Express Corridors emphasize vehicular access throughout the city. Similarly, there should be enhanced bicycle facility connections to and within the Activity Centers.

Connections to Parks, Open Space, and Soft Surface Trails

Trails provide off-street connectivity to community resources such as parks, open spaces, schools, libraries, community centers, employment centers, shopping centers, bus stops and the soft surface trails within open spaces. Trails also provide commuting/transportation access to those bicyclists who do not have the necessary skill levels or comfort levels for on street riding or just prefer to ride off street.

The Parks, Open Space, and Trails (POST) concept is to provide connections that link neighborhoods to the trail system so the public can access parks, open spaces and use trails to get around without reliance on automobiles. Ideally, each resident should have access to a trail within a 15-minutes' walk or bicycle ride. The trail system may include Federal, State, City and Private trails. Trails may be used for recreation and/or commuting. Trails with heavy commuter use shall be evaluated for expansion to separate non-commuters and commuters.

Multi-Modal Connections

Multi-modal refers to the use of two or more modes of transportation in a single trip, (i.e., bicycling and riding the bus or train). This section describes bicycle-transit connections. Linking bicycles with Albuquerque's mass transit effectively increases the distance cyclists can travel, provides options in the event of a bicycle breakdown or collision and gives cyclists alternatives to riding at night or in hot or inclement weather.

Making an effective multi-modal connection consists of several key elements:

- Providing bicycle parking facilities at transit stops and bike racks or storage on trains and buses
- Improving bikeways that link with transit facilities and stops
- Encouraging the use of bicycles on transit through education and encouragement programs.

Bike & Ride the Bus

Bicycle racks are mounted on the front of all ABQ Ride buses that can carry most types of non-motorized bicycles. The City's 300 and 400 series buses have a rack that can hold two bikes at a time, while the 700, 900, and Rapid Ride buses can accommodate three bikes. If the bike rack is full the bike policy is as follows:

- Only when the bicycle rack is full, and the bus is not to full capacity with passengers (i.e., there is sufficient space to hold a bike without impeding other passengers), the passenger will be allowed to take the bike on the bus.
- The bicycle will only be allowed in the front portion of the bus in the wheelchair area and only if the space is free.
- The passenger will be required to stand with their bicycle to secure it.

New Mexico Rail Runner Express

Santa Fe is now connected to Belen by the Rail Runner Express commuter train. The Rail Runner currently has 14 stations, four of which are in Albuquerque. The Alvarado Transportation Center is its busiest station and is a multi-modal hub for rail and transit. Current bicycle use of the Rail Runner far exceeds the anticipated demand, creating some challenges in bicycle storage on the train and long term storage at the stations. The bicycle-on-train counts provided by MRCOG for the year 2009 indicate a higher demand during the warmer months and may also be attributed to an increase in weekend train service.

Physical Constraints

Identified below are major constraints that most bicyclists in and around Albuquerque encounter on their bicycle trips. Maps 2 through 5 in Appendix B provide a graphical display of these constraints. To provide a direct, safe and connected bikeway and multi-use trail network, the following constraints should be considered and resolved when possible:

- Rio Grande (River)
- Expo New Mexico
- Private (Gated) Neighborhoods
- Drainage and Irrigation Alignments
- Open Space
- I-40 and I-25
- Airports
- Military Base
- West Mesa Escarpment
- Railroad Tracks
- Golf Courses
- Indian Pueblos
- Major Arterials

Topography

Albuquerque is located within the Rio Grande Rift. The valley's alignment is north/south with a gently sloping side to the east meeting the Sandia Mountains with slightly steeper sloping topography on the west side where it encounters the west mesa escarpment. The elevations within the city range from approximately 4,950 feet along the Rio Grande to 6,100 feet in the Sandia foothills and 5,750 feet of the west mesa. Few rolling hills exist except for the crossing of the North Diversion Channel along the west mesa escarpment and in the Sandia foot hills. The broad central portion of the Rio Grande Rift, especially east of the river, has very little change in elevation and could be considered nearly level. The topography of Albuquerque is well suited for cycling with gentile terrain and the occasional hill.

Geography

According to the United States Census Bureau, Albuquerque has a total area of 181.3 square miles. 180.6 square miles of it is land and 0.6 square miles of it (0.35%) is water. The developed metro area is over 1,000 square miles. The city is bordered to the north by Sandia Pueblo and Rio Rancho, to the east by the Sandia Mountains and to the south by KAFB and Isleta Pueblo, restricting the majority growth to the westerly direction. The Rio Grande River flows in a southerly direction through the central portion of the city dividing the west and east sides of the city.

System Use

Bikeway & Trail User Counts

Non-motorized user counts were conducted on the Albuquerque area streets and trails to quantify utilization on both weekdays and weekends. These counts were collected at 37 weekday locations and 14 weekend locations between April 27, 2010 and May 22, 2010. Trail and bikeway user count data was collected at 45 weekday locations and 18 weekend sites; a number of locations counted both trails and on-street facilities. The weekday locations were collected for two hours during both the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak commute periods. The weekend data was gathered for three hours from 9:00 am to 12:00 pm, primarily along trails. There were 13 sites where both weekday and weekend data were gathered. See Appendix X for the full user count data.

The weekday counts were collected to quantify commuter cycling traffic within the Albuquerque area. That traffic uses both the on-street and trail systems, and a large number of count locations were selected to determine what areas of the city experience commuter cyclists. Bicycle counts included both volumes and a number of additional characteristics, including if the rider was on the sidewalk, wearing a helmet, or if any traffic laws were violated by the cyclist. The violations recorded were primarily traffic control violations.

The weekend counts were primarily collected to assess the number of recreational users of the trail system, thus the major non-motorized trail users were counted. Some on-street counts were gathered at strategic locations with on-street bike lanes or shoulders along common recreational routes, or at key locations with limited non-motorized facilities. The trail system counted each user that passed the specific location or intersection. The users were categorized as: bicyclists, runners/joggers, walkers, roller bladers/skateboarders, or equestrians.

Bikeway & Trail User Count Results

The highest weekend usage was along the Bosque Trail with an average of more than 200 users per hour per link at three locations. The Bosque Trail experiences the highest utilization in the Albuquerque area. Based upon observation, it is assumed that the majority of the Bosque Trail users were recreational users. Some cyclists during the weekday counts appeared to be commuters; however, the overwhelming majority appeared to be recreational. Cyclists were the most frequently counted trail users, who generally out-numbered the second most frequent, walking and jogging. The least common trail users were equestrian and they were observed more frequently on weekdays than weekends.

Overall, the UNM area has the greatest amount of cycling traffic in the Albuquerque area and the highest weekday cycling usage occurred at the University of New Mexico. The University area also experiences the highest percentage of cyclists not wearing helmets and cyclists utilizing the sidewalks, primarily along Central Ave. The Silver Ave-Buena Vista Dr. intersection experienced the highest number of traffic

violations. This intersection is the only count site located on the existing Bicycle Boulevard, and has all-way stop traffic control. The high violation rate, 29.3 percent of all entering vehicles, is a concern.

Because most of the on-street locations were signalized intersections, the violations at these intersections were running red lights. Few cyclists were seen running a red signal indication without first stopping at the approach. The second most common violation was riding on the wrong side of the street in a bike lane. In 2014, the City prepared an education campaign to address this issue by providing billboards on ABQ Ride buses that were targeted at bicyclists, Figure 4.

FIGURE 4: EDUCATIONAL CAMPAIGN EXAMPLE
(INSERT BUS ADVERT IMAGE HERE)

A second concern was for the high violation and low helmet usage at the Rainbow Blvd-Woodmont Ave intersection. The AM peak reflects middle school children traveling to school and it yielded a violation rate of 53.9 percent and helmet usage of 23.1 percent. It appears that an educational program should focus on this area and age group.

The traffic violation data collected as part of the bikeway and trail user counts were used to inform programmatic recommendations targeted at education and enforcement.

Volume Comparison: 1997 and 2010

The Bosque Trail locations show a moderate increase in weekday activity, and increases in helmet usage. The Wyoming gate at KAFB shows a significant decrease in volume, however, additional detail from the previous plan indicates that much of the cycling traffic has shifted to the Eubank gates. The UNM area had significantly lower volumes during the AM peak period at each site counted, though the PM peak is slightly higher. The counts also indicate that helmet usage has increased and violations are less frequent in the university area.

The Rio Grande Bosque trail locations show a moderate increase in weekday activity, and increases in helmet usage. The Wyoming gate at KAFB shows a significant decrease in volume, however, additional detail from the previous plan indicates that much of the cycling traffic has shifted to the Eubank gates. The UNM area had significantly lower volumes during the AM peak period at each site counted, though the PM peak is slightly higher. The counts also indicate that helmet usage has increased and violations are less frequent in the university area.

Bicycle Commuting

Data from the 1990 and 2000 US Census, shown in Table 5, indicates that bicycle use for commuting purposes has remained static for last 20 years. This stable trend is reflected in the percentage mode-share for all journey-to-work trips captured by the U.S. census data. This provides one measure of bicycle usage, but does not indicate bicycle use for other trips (e.g., social trips, exercise trips, and trips for other errands is not included in this data).

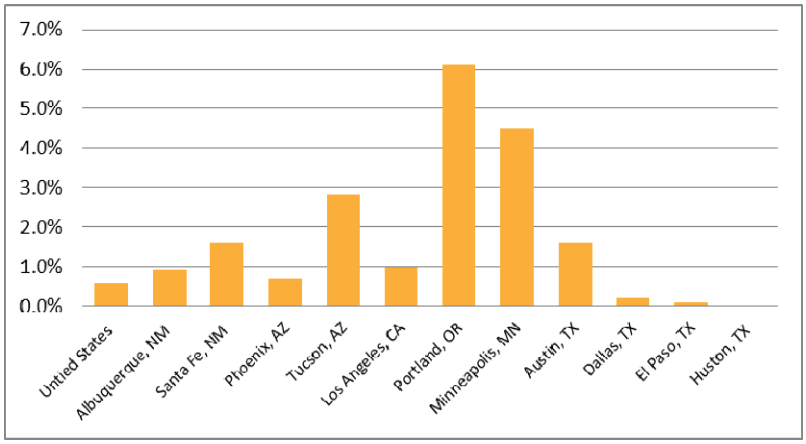
Table 6 shows the Albuquerque's bicycle to work mode-share in comparison to the national average and several other cities in the western U.S. Approximately 0.9% of Albuquerque's population commutes by bicycle. This is consistent with several other cities in the general vicinity including Phoenix, AZ and Los Angeles, CA.

TABLE 5: BICYCLE COMMUTE DATA FOR ALBUQUERQUE OVER TIME

Journey To Work Mode Splits	1990	2000	2010	2012
Drive Alone	78.0%	77.7%	81.1%	79.5%
Carpool	12.1%	12.5%	8.7%	10.5%
Transit	2.0%	1.7%	2.0%	2.0%
Bicycle	1.2%	1.1%	1.4%	0.9%
Walk	2.9%	2.7%	2.6%	2.1%
Other	1.1%	0.7%	0.2%	1.2%
Work at Home	2.7%	3.6%	4.0%	3.9%

Source: U.S. Census & U.S. 2012 American Community Survey

TABLE 6: 2012 BICYCLE COMMUTE MODE SHARE



Additional bicycle to work statistics of note obtained from the 2006 - 2008 American Community Survey include:

- About 65% of Albuquerque's bicycle commuters are male. This is consistent with the male/female ratio reported in the online survey.
- The average journey to work trip for individuals traveling by taxi, motorcycle, bicycle, or other means was about 23 minutes, with the most frequent travel time being 10 – 20 minutes. This is consistent with a travel distance of two to three miles. This is slightly longer than the average 16 minute travel time reported in the 2000 Census data. The aggregated mode type could account for some of the variation in reported average travel times.
- About 20% of people who reported traveling to work via motorcycle, bicycle, taxi, or other means did not have a car or truck available for their use.
- The educational services, health care, and social assistance sector reported the highest number of people commuting via motorcycle, bicycle, taxi, or other means, which accounted for 24% of tabulated response. A significant portion of this population is likely affiliated with UNM.

Current enrollment reported in 2013 at the University of New Mexico is about 27,000. Estimated bicycle mode-share was not available for the University, but it is estimated the rates are about 10%, or about 2,500 bicycle commuters, which is consistent with rates reported by other universities across the U.S.

On-Street Bicycle Facility Needs Assessment

The Needs Assessment presents an overview of the needs of bicyclists and trail users in the Albuquerque area. This analysis provides an overview of cycling volumes and behaviors at many locations throughout

the city; discusses public input gathered through an online user survey; and examines cyclist safety by analyzing reported bicycle crash data. Three geographic analytical tools were used to determine the quality and connectedness of the existing system. Seven primary methods were used to evaluate the existing bikeways and trails facilities:

- A **Bicycle User Survey** was conducted between April and mid-June 2010, with over 1,200 individual responses to questions about preferred facility types, current transportation and travel behavior, and concerns about traffic safety.
- **Bicycle Counts** were conducted at 38 locations throughout the City, which measured volumes of users as well as information regarding helmet use and traffic violations.
- The **Crash Analysis** provides a summary of crash data involving bicyclists in Albuquerque for the years from 1995 to 2005. Crash data can help identify difficult or dangerous areas for bicycles.
- The **Bikeway Quality Index** (BQI) method creates a snapshot of current conditions of biking infrastructure using quality and quantity measurements.
- The **Cycle Zone Analysis** (CZA) tool allows the City to better understand what areas of the City would produce the most 'bang for the buck' when it comes to investing in bicycling and trails infrastructure.
- A **Gap Closure Analysis** was used to identify and evaluate specific locations where there are gaps in the system of either on-street bicycle facilities or multi-use trails. For descriptions of the proposed engineering solutions, see Chapter 4, Recommended Network.
- **StreetPlan** is a model that analyzes a number of roadway characteristics to identify corridors with the greatest potential to retrofit bike lanes into the existing street-section.
- The **End-of-Trip Facilities Analysis** reviewed the existing facilities, programs, and policies in order to make recommendations to improve the quality and knowledge of end-of-trip facilities.

This information was used in conjunction with field visits, input gathered at public meetings, stakeholder interviews, and analysis of the existing bikeways and multi-use trail system to form future project recommendations. Adequately identifying user needs enables system planners and policy-makers to develop cost-effective solutions for improving the region's bikeway and trail system. The full description of these studies and their results is found in Appendix X.

Key Findings from the Analysis

- A disproportionate number of reported bicycle crashes, 83 percent, involve males who make up about 65 percent of Albuquerque's reported bicycle population. This is consistent with findings from other U.S. cities.
- The average bicycle commute trip is about 23 minutes. This is consistent with the idea of the 20-minute neighborhood and idea that the average bicycle trip in the U.S. is two to three miles.
- Albuquerque's reported bicycle commute to work mode share has been static for about 20 years.
- A comparison of 1997 counts to 2010 counts found the highest AM peak on-street volumes at the Central Avenue and Yale Boulevard intersection. In 2010, 115 cyclists were counted here during the AM peak. This is a drop from the 164 cyclists observed at the same intersection in 1997. These

drops in the AM counts are consistent with other count locations. This trend is not consistent with PM counts at the same locations where, in many cases, the numbers of cyclists increased slightly or remained the same. Potential reasons for these shifts could include a variation in the AM peak times or a shift in facility usage patterns.

- The highest on-street cyclist count volumes were found around the University of New Mexico and Kirtland Air Force Base (AFB). There was a significant shift of cycling traffic from the Wyoming gate to the new Eubank Gate. The greatest number of legal infractions (e.g., running a red light) were observed around UNM, while the greatest rates of compliance with roadway laws and helmet use were observed around Kirtland AFB.
- The highest weekday cycling usage occurred at the University of New Mexico. The highest weekend usage was along the Rio Grande Bosque Trail with an average of more than 200 users per hour per link at three locations. The lowest weekday cycling usage occurred along Unser Boulevard, the lowest weekend usage occurred along Coors Boulevard north of Montaño Road.
- Trail counts indicated that there is significant off-street cycling activity for recreation and utilitarian purposes that is not captured in the census commute mode share.
- Cyclists were the most commonly counted trail users; they were generally noted in ratios of 1:1 to 5:1 when compared to walkers and joggers, the second most prevalent trail users.
- Streets with the greatest number of reported crashes and highest reported crash rates per mile were 4-6 lane roads without bicycle facilities. The roadways with the greatest number of crashes per mile included East Central Avenue, Lomas Boulevard and San Mateo Boulevard.
- The seven intersections with the greatest number of reported crashes were all located along Central Avenue. Count data was available at one intersection, Yale Boulevard, and indicated significant bicycle traffic during AM and PM peak hours.
- Nearly 2/3 of cyclists feel that bicycle lanes and multi-use trails do not connect to all the places they want to go.
- There is evidence that bicycle trips are replacing car commute trips when gasoline prices increase.
- Women responding to the survey generally identified as intermediate riders who prefer to ride on low traffic streets, while both genders indicated that bicycle routes and boulevards would 'very likely' increase their cycling. A greater percentage of women indicated strong support for this statement.
- Both men and women agreed that grocery stores were the land use most in need of increased bicycle parking. Other high-priority land uses included the work place, civic destinations (e.g., parks), shopping malls and restaurants.

Bikeway Programs

From stakeholder interviews conducted by the project team and feedback collected from the open houses in May 2010, the following themes emerged relating to bicycle program needs and interests:

- To encourage bicycling on streets, roads should feel safer.
- The Albuquerque area has a great trail system that should continue to be promoted.
- Existing programs should be continued and expanded with the help of more staff and resources.

- There is interest in getting "interested but concerned" potential bicyclists riding.
- Strong support exists for driver and bicyclist education, Share the Road and Share the Trail campaigns and Summer Streets events. Open house participants also expressed support of Safe Routes to School programs, bicycling and trail counts and enforcement programs.

Chapter 5 describes existing education and outreach efforts around bicycling and trail use in Albuquerque and presents a menu of recommended new and expanded programs to continue to promote bicycle and trail use. **With limited local resources and funding, some of these programs may need to be developed and/or managed by private or non-profit groups.**

Additionally, the survey conducted by the project team resulted in the following considerations for development and prioritization of the bikeway and trail system:

- Focus high priority system improvements on closing small bikeway and trails gaps to high-activity destinations.
- Consider programs to increase bicycle parking at high priority locations across the city.
- Continue, and when possible, expand education, encouragement, and enforcement programs. Target these programs to key groups that are under-represented in the City's current cycling demographic, including women and groups that would benefit from education such as school age children.

Current Studies & Programs

Bicycle Boulevard Assessment

The City's consultant has been tasked to review current City of Albuquerque and National design guidelines and practices for bicycle boulevard corridors relative to the existing bicycle boulevard that runs on Mountain Road, 14th Street, and Silver Avenue.

Bicycle boulevards are designed to be optimized corridors for bicycles that discourage motor-vehicle cut-through traffic but otherwise allow local vehicular traffic. Study data is collected on signing and striping installations specific to the bicycle boulevard, traffic control at all intersections along the boulevard, bicycle related traffic control at arterial crossings, traffic calming elements to determination of conflict points.

Consultant tasks include research of the City of Albuquerque Bike Plan and national literature to identify criteria pertaining to the implementation and design of bicycle boulevards. The research will include, but not be limited to, the design application, implementation criteria, motorized vehicle volumes, and corridor operations. A technical memorandum summarizing the findings of the bicycle boulevard research and the evaluation of the bicycle boulevards in Albuquerque will be developed by the consultant. The critical design elements of the existing boulevard findings will be summarized in tabular format and design features will be identified using available aerial photography. Based upon deficiencies identified in the existing bike boulevard installation and criteria collected from other national bicycle boulevards, recommendations are to be provided so that best practices can be applied during the design and implementation of future City of Albuquerque bike boulevard projects. Once we know what they are we will address them and use this on future projects.

Bicycle Route Signage Inventory and Assessment

This project is to provide information to the City so that signage for existing routes can be updated in accordance with the *2009 Manual on Uniform Traffic Control Devices* (*MUTCD*) and the *2012 Guide for the Development of Bicycle Facilities* (*Bike Facs*).

Bike routes represent the third tier of bikeway facilities serving bicyclists, below multi-use paths and bike lanes. For the purpose of this report a bike route is a street or roadway that has been identified by City personnel as a bike route. Unlike multi-use paths or bike lines, bike routes without proper signing may be indistinguishable from other roadways, which have not been identified as routes. As such a growing need to provide proper signage had been identified to City staff.

The primary deliverable for this project is an ArcView geographic information system (GIS) database, which registers the various signs identified by code and location. This information can then be used to budget phases and be provided to in-house staff or on-call contractors in order to install the various signs. One example of the consultant's findings is as follows:

> As the City has gone through the effort of planning – and the exercise of mapping these roadways as routes, there is a strong likelihood that the routes would experience heightened bicycle use. With the increased use by cyclists the design team felt that it was prudent to follow the guidance of the *MUTCD* and *Bike Facs* to also post the bicycle warning sign (W11-1) supplemented with the SHARE THE ROAD plaque (W16-1P). This combination of signs is intended to provide motorists with an indication that there may be bicyclists in the roadway, along their direction of travel and that "they should be mindful and respectful of bicyclists" (*Bike Facs*). Additional posting of the W11-1 (without the W16-1P) were placed on the approaches of roadways that intersected routes, but were uncontrolled (i.e. no traffic control device such as a stop sign or signal used).

The draft recommendation of the project is to add a significant number of new postings to the City's database. In order to better accommodate a zone grid budget implementation plan, a zonal quantity breakdown was created to estimate a cost for each zone within the City when sign installation is planned for by the City's on-call sign-installation contractors.

Bicycle Corridor & Way-finding Sign Development Project

The project scope consists of developing a Bicycle Route Way-Finding Signage and Corridor Development Plan within the City of Albuquerque and Bernalillo County (as shown on the 2013 COA Bicycle Map).

The City's consultant will be conducting a review of the existing City of Albuquerque's Bikeways and Trails Master Plan, the 50-Mile Bike Loop Master Plan, and MRCOG's 2035 Long Range Bikeway Systems Map in order to develop a baseline for the project. In coordination with City staff the consultant will review the city maps to identify bicycle destination sites (i.e., North Diversion Channel Trail, Bosque Trail, University of New Mexico, Central New Mexico Community College, Balloon Fiesta Park, Zoo and Bio Park, city hospitals, regional employment centers, etc.) and bicycle corridors used to assess community-wide destinations.

Once a prioritized list of destination sites and corridors has been developed, the consultant will develop way-finding signs for the destinations and corridor links. All way-finding signs will be developed in accordance with the 2009 Version of the MUTCD using GuideSign CADD software.

After obtaining final input on the destination sites, recommended bicycle corridors, way-finding sign development, and corridor placement from the staff and the public, the City's consultant will provide a summary report that outlines methodology, processes, and procedures used in the overall development of this project as well as associated costs to install these signs throughout the City. In addition to the summary report, the consultant will also submit to the City a shape file database of proposed new way-finding sign locations in ArcGIS 9.3 for DMD and Traffic Engineering staff use.

Bikeway & Trail System – Current Issues

Coordination between City Departments & Other Agencies

The City bikeway and trail system links to the Bernalillo County bikeway and trail system and utilizes AMAFCA and MRGCD facilities. Input from and coordination with these entities outside the City governmental structure is required for effective planning, operations, and maintenance of the system.

Within the City, the Department of Municipal Development develops and manages the on-street facilities and the Parks & Recreation Department designs and manages the trails. The Department of Municipal Development typically manages the construction phases of both facilities. There is coordination between the two departments primarily during the implementation phases. The development of a single system of bikeways and trails requires close coordination between all relevant City Departments throughout the planning, prioritization, design, and development stages of facility construction, as well as regarding programming and maintenance.

Advisory Groups

Albuquerque has two advisory committees related to bicycle and trails issues. Both are created by ordinance: the Greater Albuquerque Bicycling Advisory Committee (GABAC), see §14-13-3-6, and the Greater Albuquerque Recreational Trails Committee (GARTC), see §14-13-3-8. The two-committee structure allows multiple perspectives regarding the bikeways and trail system. It requires both Departments (P&R and DMD) which are critical to development/maintenance of the paved trail network to engage in the issues concerning them. The paved trails are used by both constituencies.

There are a number of challenges that result from Albuquerque's two-committee structure, such as many of the guest presentations must be duplicated for each group and the need to fill a large number of volunteer positions. These groups officially have non-voting members, such as NMDOT and Bernalillo County; however, those other agencies are not as involved in the ongoing operations as when the groups were first initiated. There are overlapping responsibilities between the groups, which each have different forms of representation.

The operations of the groups have not had the benefit of recent training and guidance about the purpose and role of the committees. Currently, the groups primarily react to projects as they are being developed, instead of serving a planning or policy-related function, as many other citizens advisory groups do. It is unclear at which stage the advisory groups could have the most impact on the implementation of the Bikeways & Trails Facility Plan.

Wayfinding & Orientation

Albuquerque's bikeway and multi-use trail network could benefit from signage and other wayfinding tools to orient users and direct them to and through major destinations. Wayfinding is difficult on trails that do not parallel roads, since cross streets and familiar landmarks are sometimes difficult to use as reference points. An important area of concern is the inability to readily identify a location on the multi-use trails for emergency response purposes. These issues are addressed through recommended facility improvements (see Design Guidelines) and through a program to name and sign trail locations.

Discontinuous Network (Gaps)

Although the City has made significant progress toward completing a comprehensive bikeways and multi-use trail network, several major gaps remain. One notably discontinuous area includes access to the trails in the northwest region of the city. Some examples are: the Paseo del Norte multi-use trail connection at Coors Boulevard and through or around the Paseo del Norte interchange should be improved with a grade-separated crossing, connecting to trails west of Coors Boulevard. Multi-use trails along Unser Boulevard and 98th Street, south of I-40, should be linked together by additional bikeways and trails in the east/west direction. The trails in Paradise Hills and Taylor Ranch also lack sufficient north/south connections. This plan proposes new bikeways and trails in these locations and others across the city where connectivity needs to be enhanced.

Trail Counts

Multi-use trails are popular with both commuters and people recreating. Basic trail counts have been done but nothing to date has been completed that can substantially tell transportation and trail planners who is doing what or going where. Gathering this type of data over a long period of time can be very beneficial for planners to predict and project where the trail network may need to grow or change.

Recently, the Mid Region Council of Governments (MRCOG), Bernalillo County, and the City of Albuquerque have begun to install or have installed permanent trail counters throughout the greater Albuquerque paved multi-use trail network. Bernalillo County funded seven permanent counters at specific key intersections or high use locations. These include cameras to count pedestrians and loop sensors to count cyclists. Once the data is analyzed over a period of time, it will help Planners project future trail needs. Two infrared sensors and loop sensors will be installed in 2014 or 2015 in collaboration between MRCOG, City Parks and Recreation, and the Rails to Trails Conservancy.

Even with counters, it is impossible to know exactly if someone is commuting or recreating unless interviewed but it can be assumed during certain times of the day and whether it is a weekday or weekend what people may be doing. The most important aspect is to get a big picture of areas that are in high demand and where new trail segments or gaps are needed most. It is also important to connect existing trails to new areas of growth to ensure that everyone has the option to use the trail system whether it be for commuting or exercise. Trail and bikeway count data is provided in Appendix X. Natural surface multi-use trails that are primarily in Major Public Open Space are mainly recreational users. The Open Space Division has car counters at two major parking lot and trailhead locations. One is at the Elena Gallegos Open Space in the foothills and the other is at Boca Negra Canyon within Petroglyph National Monument. This type of count data gives land managers an idea of how many people are using the Open Space for recreation and to know how much trail work a certain area may need during a certain time of the year.

Maintenance Concerns

Timely and consistent maintenance of the multi-use trail system is paramount to keep the trails system clean, from deteriorating quickly, safe, and fun. Maintenance can be difficult due to the multi-use trails being a linear and irregular long system similar to a road network. It is much different than that of a Park or Open Space as those are typically contained within parcels or discrete geographical areas. Issues related to funding and resource availability for this work further complicate the picture.