

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. Cyclist & Pedestrian Needs

The 2035 Metropolitan Transportation Plan & Centers and Corridors element of Albuquerque’s Comprehensive Plan anticipates that Albuquerque’s future will include an increasing mix of uses and higher densities concentrated in mixed-use centers. The document anticipates that the City will accommodate a greater share of regional population and employment than it has to date. The predicted Albuquerque Metropolitan Planning Area population in 2025 is 1,093,490, which is an increase of 53.4 percent or 380,752 from the 2000 Census.

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 2: ALBUQUERQUE AND ALBUQUERQUE METROPOLITAN AREA POPULATION

Albuquerque Population		Metro Area Population (includes Bernalillo, Sandoval and Valencia counties)	
Year	Population Estimate	Year	Population Estimate
2012	555,419	2012	902,794
2010	535,239	2009	857,903
2006	507,789	2005	766,016
2000	448,607	2000	712,738

1. Types

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 pedestrians and bicyclists, the needs of equestrian vary with experience and relative levels of urbanization and trail development. In areas of higher use, equestrians 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.

2. User Needs – Current Issues

Balancing the Needs of the Various Users/Conflict of Use

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, for example adding wide shoulders or a parallel soft-surface path, 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. Current problem areas on multi-use trails have signage and graphics indicating who is supposed to yield to whom in addition to signage.

Future studies or evaluations of the trail system could focus on identifying known conflict of use areas, and make recommendations about ways to encourage separation of use. High-use areas or conflict points include Tingley Park and the Gail Ryba Bridge. Increasing awareness of trail etiquette and communication would be handled as an education program, which is a currently ongoing program.

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)**

1. 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.

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 X-ing” 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

Short-term bicycle parking facilities consist of bicycle racks. These facilities are intended to accommodate bicycles of visitors, customers, messengers, and others for short periods of time. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly visible areas.

Long-term bicycle parking facilities include lockers and other secure storage facilities that contain the entire bicycle. This type of parking is intended to accommodate bicycles of employees, students, residents, transit riders, and others expected to park more than two hours. This parking is provided in a secure, weather-protected manner and location.

Table 3 compares the typical characteristics of short- and long-term bicycle parking.

TABLE 3: 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

End-of-Trip Facilities

Bicycle support facilities include end-of-trip facilities that would encourage bicyclists to commute to work or other activities that require one to “clean up” after a ride. Typically, these amenities include showers and clothing locker facilities and can be located at places of employment. Such facilities are most often provided by building owners or tenants for use by those that work in the 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 over 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 paved and unpaved 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 B.

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.

2. Existing Facility Enhancements – Current Issues

Intersection and Crossing Improvements

Intersections are challenging and dangerous spots for all travelers, particularly the more vulnerable bicyclist and pedestrians. Mid-block crossings where trails intersect major arterial streets are often difficult to navigate across. On-street facilities in the developed portions of the city commonly “disappear” at the intersection, which typically adds turning lanes to increase the vehicular flow of traffic. This design requires the cyclist to merge with vehicular traffic, which can be safer and avoid a right-hook collision with turning vehicles. However, many cyclists and drivers do not know what to expect or do in these situations. Newer intersections with more right-of-way can accommodate a continuous bicycle lane or wide shoulder that is adjacent to the through lane; the right turn lane would cross the bicycle lane with this design. This plan discusses a variety of intersection treatments in the Design Manual, Chapter 7.D. Over time, the City should assess the existing intersections that include bicycle and pedestrian facilities and develop an approach to retrofit those intersections that are not consistent with the recommended designs.

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 geo-tagged 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.

Recommended Locations for Additional Bicycle Parking Facilities

The online survey, which had over 1,200 responses, contained two questions related to the location of additional bicycle parking facilities. The top responses to the question of which types of places should have more bike racks or lockers were grocery stores, shopping centers, work sites, restaurants and parks. Respondents provided specific locations for additional bicycle parking, including throughout the downtown and Nob Hill areas as well as along Central Avenue. Grocery stores and transit stops were other common responses. The University of New Mexico Hospital was the single most common suggestion. The most effective way for the City to increase parking at these and other locations would be through a Bicycle Rack Program. The City could kick off such a program by conducting outreach to businesses in the areas of town and to the types of businesses identified above.

C. Bikeway & Trail System Analysis

The City's consultant completed an analysis of the existing bikeways and trail system, and used this foundation to make recommendations for proposed projects to extend and complete the network. This section analyzes the strengths and opportunities in the existing system, as well as the challenges and constraints that have often resulted in the gaps in the system that we have now. This system analysis forms the foundation for the recommended facilities that are presented in Part II of this *Facility Plan*, Chapter 4, Recommended Network.

1. 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, and Valencia & Sandoval Counties
- 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

ABQ Ride, the transit provider for the Albuquerque area, provides bike racks on all buses. When racks are full, bikes are allowed inside the bus. Transit centers in Albuquerque include: Alvarado Transit Center (1st St. & Central Ave.), Northwest Transit Center (Coors Bypass & Ellison Rd.), Central & Unser Transit Center, and the Uptown Transit Center (Uptown Blvd. & Americas Parkway).

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)
- Military Base
- Expo New Mexico
- West Mesa Escarpment

- Private (Gated) Neighborhoods
- Drainage and Irrigation Alignments
- Open Space
- I-40 and I-25
- Airports
- 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 gentle 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.

Other Constraints

Bicycle / Vehicle Crash Locations

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern or even a distraction. For those who don't ride, it is one of the most compelling reasons not to ride. In discussing bicycle safety, it is important to separate out perceived dangers versus actual safety hazards.

Bicycle riding on-street is commonly perceived as unsafe because of the exposure of a lightweight, two-wheeled vehicle to heavier and faster moving automobiles, trucks and buses. Actual collision statistics, however, show that bicyclists face only a marginally higher degree of sustaining an injury than a motorist based on numbers of users and miles traveled. Death rates are essentially the same with bicyclists as with motorists. Bicycle-vehicle collisions are much less likely to happen than bicycle-bicycle, bicycle-pedestrian, or collisions caused by physical conditions.

Lack of Wayfinding Tools

Albuquerque's bikeway and trail system could benefit from signage and other wayfinding tools to orient users and direct them to and through major destinations like downtown, North Diversion Channel, the Paseo del Bosque Trail, as well as surrounding schools, parks, and commercial areas.

Discontinuous Shared Use Path System

Although the City of Albuquerque has made significant progress toward completing a comprehensive shared use path system, several major gaps remain. One notably discontinuous area includes access to the trails in the northwest and southwest parts of the city. Through these areas, non-motorized users must negotiate major roadways with high vehicle speeds and volumes. In some places, crossings are not

provided, and in others marked crosswalks require path users to wait for long periods until cross-traffic has stopped to allow them to pass.

2. 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 C 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 4, 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).

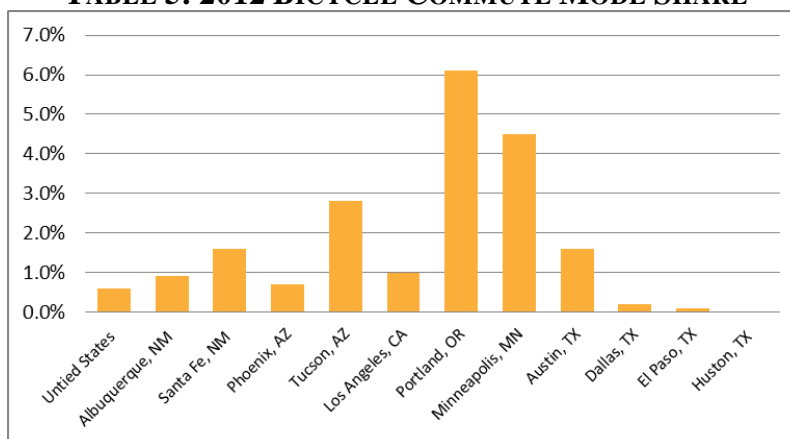
Table 5 shows the Albuquerque’s bicycle to work mode-share in comparison to the national average and several other cities in the western U.S. Approximately 0.9% of Albuquerque’s population commutes by bicycle. This is consistent with several other cities in the general vicinity including Phoenix, AZ and Los Angeles, CA.

TABLE 4: 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 5: 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.

3. 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:

- **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.
- 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.
- 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 C.

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 Montaña 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.

4. 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 Facts)*. The consultant prepared a 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.

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.

With the increased use by cyclists the design team felt that it was prudent to follow the guidance of the *MUTCD* and *Bike Facts* 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 Facts*). 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).

FIGURE 5: BICYCLE ROUTE SIGNAGE



The draft study recommendation is to add a significant number of new postings to the City’s database. Approximately 2,500 new sign locations were identified, which would receive close to 4,600 new signs (some sign posts would have multiple signs). The study provided a cost estimate of over half a million dollars for the new signage, which will be addressed as future implementation projects as budget allows. Installation of the recommended signage will officially designate many of the bike routes that are identified as proposed in this Plan.

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.

The City’s consultant will review the existing 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 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 geographic database of proposed new way-finding sign locations.

5. 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. Another challenge is that staffing advisory groups has been estimated in other communities as taking approximately 35% of the bicycle/pedestrian staff's time. With two advisory groups, more staff time and resources are devoted to staffing the advisory groups, which leaves fewer resources to other project work. 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 page 44, Bicycle Corridor and Wayfinding Sign Project, as well as through a future program to name and sign trail locations.

Discontinuous Network (Gaps)

A number of national and local surveys cite that safe, well-maintained bicycle facilities act as incentives to increase daily bicycle trips. Similar research exists for people who choose walking or other forms of pedestrianism. To support this assertion, the survey conducted as part of the planning effort found that the two most important factors to make bicycling more attractive are: 1) providing additional bicycle and trail facilities, and 2) improved maintenance.

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 A. 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

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.