City of Chesterfield Bikeable Walkable Community Plan:

Executive Summary

Existing Conditions and Analysis: Socio Economic Factors

Overview. This chapter examines conditions that relate to existing bicycle-pedestrian activity or the potential for such activity in the City of Chesterfield, as a prelude to the Plan chapter that follows.

Chesterfield is a fast-growing community in West St. Louis County. At the time of the Year 2000 U.S. Census when the most comprehensive demographic data was last available, its population was 46,802 – the largest among six neighboring cities that were also examined for comparison purposes (Ballwin, Clarkson Valley, Creve Coeur, Maryland Heights, Town & Country, and Wildwood). The City's largest decade of residential growth was in the 1970's when 6,796 housing units were built – a rate of nearly 700 units per month. Robust growth continued thereafter through 2000. The City's population has remained relatively stable since 2000.

Slightly more than 3 percent of the City's households (553) did not own a motor vehicle in 2000, suggesting that this group either does or would rely on walking, bicycling, transit or other means for a significant portion of their trips. An additional 4,765 households had only one automobile, suggesting a larger population of individuals who either do or would avail themselves of other modes of travel.

Chesterfield's residential base, with its proximity to a robust office and retail environment, creates strong prospects for a well-used bicycle-pedestrian system for both transportation and recreational use.

Age Groups. Slightly more than 25 percent of Chesterfield's population was in the "25-44" age group in 2000 – a cohort in which bicycle usage has been shown to be relatively high elsewhere. Eighteen percent of the City's population was in the "45-54" age group - also a higher bicycle use group. It is believed that individuals in these age groupings would be most likely to commute to work with a bicycle, with the presence of adequate infrastructure and other conditions for cycling. Chesterfield's residential base is close to many office and commercial uses – job centers that can provide opportunities for people to commute to work.

Income and Education. The City had a median income of $83,802, which is among the highest in the County. It is known that individuals will consider walking and bicycling for economic reasons; however, research also shows that those in moderate and upper income categories will also consider such modes of travel if certain environmental and physical conditions are present. There is also a relationship between high levels of educational attainment and interest in walking and bicycling. Chesterfield has the second-highest percentage of adults with a bachelor's degree among all of its neighboring cities, and a very high proportion of residents with graduate degrees as well.

Journey to Work Data. Approximately 83 percent of Chesterfield's 23,610 commuters drove alone to work in 2000. This represents the second-lowest rate of single-occupant vehicle (s.o.v.) commuting among the comparison cities. While the reasons for this are not known, it may reflect relatively higher percentages in other journey-to-work categories including the use of alternative modes of travel to work and working at home. Chesterfield, at 0.1 percent, ranks lower than many of its neighbors in using transit as a journey to work mode. This may be a reflection of a real or perceived lack of transit options in the City. In the walk-to-work mode, the City is at the midpoint of the range of the comparison cities for the number of workers who use this mode (0.7 percent). Significantly, the City has the second-highest percentage of commuters (1 percent), who used "Other Means" to get to work (which includes the bicycle mode option). Because this mode split is relatively high, the prospects are relatively strong that an improved system of bicycle facilities would result in a higher level of bicycle usage.

Commute-to-Work Times. The average driving time to work for Chesterfield residents is 23 minutes, which is toward the low end of the commute time range among all of its neighboring cities. This relatively low average travel time to work means that work destinations are relatively close for many residents, and this proximity represents another indication of the strong potential for bicycling to play a more important role in the commute to work.

The number of people that use a bicycle for their journey to work in the United States has been shown to increase with the provision of adequate infrastructure and programs to encourage usage. More recently, the national bicycle mode share has further increased given fuel price volatility, greater awareness of environmental and climate issues, and heightened sensitivity to the role of petroleum in geopolitics. This trend is apparent in Chesterfield as well, where both field observation and discussions with personnel at three bicycle shops indicate that bicycle commuting has been on the rise. Obviously

the automobile will continue to play a prominent role in the commute to work, but the potential for bicycling and walking as alternative transportation modes is increasingly being demonstrated in communities across the country.

Non Work-Related Local Travel Patterns (Store, Post Office, Library, School, etc.). The presence of a substantial amount of high-activity retail and office land uses in the City indicates significant potential for walking and cycling to such facilities, and can be estimated based on the number of housing units in the City: at 18,860 households with an average household size of 2.59 individuals and using the conservative assumption that four trips per day are generated per household for non-work (or school) related purposes, it is probable that more than 75,000 short-distance trips are occurring per day. At least a portion of these trips could be undertaken by walking or bicycling, with the existence of a walkable-bikeable transportation system.

Area Opportunities and Interest in Recreational Cycling and Walking. Strong bicycling and pedestrian activity was also observed by the consultant team during the study. Chesterfield is at or near the center of a substantial community of active bicycle riders, and the City has been both a destination and a corridor for cycling activity for decades. The City's three bicycle shops either sponsor organized rides or serve as venues for informal rides. Business volume appears to be holding its own at these shops during the current economic climate – an indication of both the popularity of cycling in the area as well as the relative stability of the cycling market. One shop is planning a store expansion to meet anticipated demand resulting from development of the Monarch Chesterfield Trail.

Existing Physical Features and Land Uses

This section examines existing physical features and land uses, and their potential relationship to the ultimate development of a unified walkable-bikeable transportation system.

Streets, Roads and Highways. Chesterfield has a well-developed network of highways, arterials, collectors and residential streets maintained by the City itself, the St. Louis County Department of Highways, and the Missouri Department of Transportation (MoDOT). The City has adopted the following Roadway Functional Classification System that is in use throughout the St. Louis Metropolitan Region: Principal arterials and minor arterials. The City also maintains an extensive system of collectors and residential streets.

As has historically been the case in many communities in the St. Louis Region, conditions for bicycling along arterials and collectors are generally less than adequate. Nevertheless, cyclists are frequently seen on these roads and can be classified into two groups: those using bicycles for practical transportation (often during weekdays), and recreational or fitness riders who primarily use the system on weekends or at other times when traffic is lighter. Pedestrians can also frequently be seen not only on the sidewalk system but also on road shoulders when sidewalks are not present.

The City's residential streets and the related sidewalk system provide for some level of non-motorized movement. Users generally encounter bike-friendly streets that are easy to use for localized bicycle and pedestrian travel. However, through-movement to destinations of neighborhoods is hampered by a significant number of cul-de-sacs, collector roads and arterials. While cul-de-sacs form physical barriers, collectors and arterials that presently do not have bicycle and pedestrian-friendly features present both physical and psychological obstacles.

During weekday traffic periods, Chesterfield's arterials and collectors tend to be used by a narrower range of cyclists - more experienced commuting and fitness riders who are comfortable with, or at least tolerant of, conditions on these roads. During weekends, a wider range of riders is seen on this system. But when this cohort considers riding a bike, the desire is often accompanied by a decision to drive to a nearby park or trail rather than bicycling or walking to that destination. Similarly, arterials and many collectors are no more appealing for a practical bicycle trip to a store or for commuting to work.

In communities where there is a network of on-street bicycle and pedestrian facilities coupled with programs that promote and encourage usage, non-motorized travel is more appealing and bicycle and pedestrian activity is higher. Such a system would prove beneficial in Chesterfield.

The street, road and highway analysis included a nominal assessment of current traffic conditions on streets within the City, using a nominal Level of Service (LOS) approach based on a visual observation of street conditions. The A-B range is characterized by free flowing vehicular traffic that varies from no restrictions, to stable flows with the beginning of some restrictions, though negligible. The C-D level represents a range from some restrictions in speed and maneuvering options to unstable flows with sudden speed variations. The E-F level indicates a range of less-stable flows and more frequent/intensive speed variations – to complete stops of traffic at times.

Sidewalks. Chesterfield has a well-developed sidewalk system. In residential areas, sidewalk widths are typically three-to-five feet, whereas in commercial areas there are some wider sidewalks. The City requires sidewalks on both sides of all streets except for certain cul-de-sacs, certain R-1 Districts, large lot subdivisions, and Non-Urban District subdivisions that use the density development procedure. A prominent element of the pedestrian system is the Pathway on the Parkway, a 3.4-mile long pedestrian facility adjacent to the Chesterfield Parkway, 2.5 miles of which is already complete and frequently utilized by pedestrians and cyclists. The City's last full Comprehensive Plan recommends requiring sidewalks in all new developments and encourages them along existing roads.

In most communities, sidewalks have been designed for pedestrian-related activity only, although children are almost universally encouraged by parents to ride their bicycles on sidewalks. Basic sidewalk design typically includes concrete construction with numerous expansion joints, narrower widths (often ranging from 30-60-inches), and squared or sharply angled turns – elements that do not lend themselves well to bicycle usage.

Accident Data. Accident frequencies reported by the City can generally be correlated to road classification, road length, average daily traffic, and specific road alignment/intersection issues, and do not appear to be unusual for a city of Chesterfield's size.

Rail Lines and Utility Corridors. An 8-mile long Ameren UE railroad alignment is located in Chesterfield below the bluff line. It is a lightly used low-speed facility. A portion is to be incorporated into the 17-mile long Chesterfield-Monarch Levee Trail loop. Beyond the Levee Trail, portions to the east and west are being examined by The Great Rivers Greenway District (GRG) for incorporation into its planned Missouri River Greenway, and would link Chesterfield to Wildwood, Maryland Heights, and the Katy Trail.

Within Chesterfield, the Ameren utility corridor extends from Clarkson Road near the city's southwest corner and exits the city near Olive Blvd east of North Woods Mill Road. The corridor is very wide and shows strong potential as a location for a multipurpose trail.

Public Facilities and Institutions. The City's open space alone comprises more than 380 acres of parkland, beautification areas, public lands and other areas maintained in partnership with the Parkway School District. Other public facilities and institutions include the new City Hall located on the Chesterfield Parkway; a new parks and maintenance facility east of the Athletic Complex; first-responder facilities including fire and police stations; a hospital; a St. Louis County library branch; thirteen elementary, middle and high schools, churches; cultural facilities; and a hospital.

Natural Features. Chesterfield's natural setting includes rolling-to-hilly uplands and a large flood plain protected by a mostly-completed 500-year levee system. The two areas are separated by a prominent bluff line extending northeast to southwest. The Missouri River with its Johnson and Howell Islands define the City's northern edge and are key features in this setting.

Existing Land Uses. Chesterfield's existing land use categories include residential (single family and multifamily), commercial, office, industrial/warehousing, research, institutional, common ground, park/recreation, and vacant/agricultural. A majority of the vacant/agricultural land is located within Chesterfield Valley to the north of a line roughly formed by improved 500-levee, Bonhomme Creek and the Ameren railroad line, and west of Chesterfield Airport. The commercial land use element consists of approximately 2,000 businesses generating 30,000 jobs, where many could benefit from an improved bicycle-pedestrian system.

Previous or Pending Plans. Chesterfield's last full comprehensive plan was completed ten years ago, and a number of amendments were adopted by the Planning Commission in July of 2009. It contains numerous recommendations relating to bicycle and pedestrian movement, many of which have been implemented or are being implemented, including: an emphasis on multi-modal transportation design; encouragement of sidewalks; multimodal transportation choices; alternative transportation; using Transportation Enhancement funding resources to develop alternative forms of transportation; a trail system; and neighborhood transportation.

The planned Chesterfield Riparian Trail is an outgrowth of the parks element of the Comprehensive Plan. The trail will link Central Park to the Chesterfield Monarch Levee Trail System.

The current bikeable-walkable study represents a concerted effort to develop a specific master plan to implement many of the recommendations in the Comprehensive Plan.

Existing Bicycle Facilities in the Area and Elsewhere

Bikeway Types. The following terms will be used in this study:

> *Warning Accomodation. A minimal treatment using "Share the Road with Bicycles" signage – a warning sign. May be appropriate for higher traffic situations where there is either already – or likely to be - some bicycle traffic and where there are*

limitations that do not allow for other improvements. This treatment warns both motorists and cyclists of a shared road condition on a busy road. The Missouri Department of Transportation (MoDOT) uses this treatment.

Bicycle Facility. A generic term describing any marked or unmarked street route, bicycle lane or path.

Bikeway. Another generic term for any road or path which in some manner is specifically designed as being open to bicycle travel, regardless of whether the facility is designated for the exclusive use of bicycles or is to be shared with other transportation modes.

Key Bicycle Street. A shared roadway which, though not designated by directional and informational markers, striping, signing, or pavement markings for the preferential or exclusive use of bicycle transportation, is - or can still be - used by bicyclists.

Bicycle Route. A segment of a system of bikeways designated by the jurisdiction having authority, with appropriate directional and informational markers, but without striping, signing, and pavement markings for the preferencial or exclusive use of bicyclists. (Class III bikeway.)

Bicycle Lane. A portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. Usually couplets, each one in a different direction and adjacent to the outside through travel lane. (Class II bikeway.)

Shared Use Path. A path that is physically separated from motor vehicle traffic by open space or a barrier and either within the road right-of-way or within an independent right-of-way. While designed primarily with bicyclists' and pedestrians' safety in mind, shared-use paths often attract other users, including runners, dog walkers, families pushing strollers, in-line skaters, and persons in wheelchairs. Shared-use paths are often referred to as multi-purpose trails.s (Class I bikeway.)

Shared Roadway. A street or highway without bikeway designations. Most bicycle travel now occurs on such roadways.

Signed Shared Roadway. Roadways designated with bike route signs and which serve either to provide continuity to other bike facilities or designate preferred routes though high-demand corridors.

Existing Trail Facilities in the Area. This section examines longer bikeways within or close to the City of Chesterfield to which new facilities to be ultimately recommended in this study could be connected. The bikeways include:

The Chesterfield-Monarch Levee Trail - A 17-mile long loop trail, a four-mile portion of which has already been completed with another phase soon to be complete. Additional phases are underway.

The Pathway on the Parkway – A circumferential pathway that is an outgrowth of the City's existing Comprehensive Plan. It's wide concrete walks coupled with intensive design elements including benches, landscaping, sculpture and lighting is essentially a pedestrian prominade. Two and a half miles of the 3.4-mile facility have been completed to date.

Additional Trail facilities, Missouri Portion - Within the Missouri portion of the St. Louis Region, there are a growing number of major bicycle facilities including: A three-mile loop trail system in Creve Coeur Park with a 3.8-mile connector bridge to the Katy Trail; the Katy Trail itself in St. Charles County (230 miles); the Riverfront Trail (11 miles); the Old Chain of Rocks Bridge (1 mile); Grant's Trail (8 miles) and its recently-opened extension to Kirkwood (2 miles). Excluding portions of the Katy Trail not in St. Charles County, St. Louis's major existing trail facilities total approximately 55 miles.

New GRG Trails and Improvements to Existing Trail facilities – Many new/improved facilities are being funded through The Great Rivers Greenway District on the Missouri side of the region and by the Metro East Park and Recreation District (MEPRD) in the Metro East Area. GRG's River Ring concept alone, when fully developed, will result in a substantial addition of trail mileage on the St. Louis side.

Metro East Bicycle Facilities - Within Madison County, Madison County Transit (MCT) has developed eight major bicycle paths that collectively exceed 70 miles. The trails of Madison County have evolved into an extremely popular feature within the county, and are becoming a factor in the local economy. For example, local officials believe that homebuyer location decisions are actually being influenced by the proximity to this trail system, and that developers are considering the trails as they make decisions regarding development locations.[1]

Additional trails have also been developed by other entities in Madison County as well as in St.Clair County.

Selected Facilities in Other Parts of the Country. In order to gain further insight into the scope and impact of trails on local communities, selected bicycle facilities in other parts of the country are reviewed here, with a focus on known economic impacts:

The State of Ohio's Buckeye Trail system - Over 1,400 miles in length. It is actually a series of individual trails and bicycle route connectors throughout the state which are blanketed by the Buckeye Trail brand and marketed as a single trail asset by the state's tourism office. One element is the Loveland-to-Morrow segment of the Little Miami Scenic Trail, which joins towns of the same name. This trail is heavily used by both residents and tourists, and is now an important regional and local economic asset. A portion is located on Loveland's old downtown commercial district and contains a number of prospering businesses that cater to trail users.

The Monon Trail in Indianapolis - A study of this 10-mile long trail examined the "premium" that people are willing to pay for location along a greenway corridor. (Trails on separate rights of way are typically located within greenways.) All other factors being equal, it found that the typical house along a greenway sold for an average of $3,731 more than its non-greenway counterpart.[2]

The Monon Creek Bike Trail - A 1992 study by Pennsylvania State University revealed that average visitor spending was $25.85 per day.

[1] "Trail now connects to popular park;" by Terry Hillig. St. Louis Post Dispatch, May 18, 2006.
[2] Public Choices and Property Values: Evidence from Greenways in Indianapolis; School of Public and Environmental Affairs, Indiana University. December 2003. Page 9.

Tallahassee St. Marks Trail - As of 1992, approximately 170,000 individuals visited this trail in Florida every year, with daily expenditures averaging $11.00.

Heritage Trail in Iowa - 135,000 people visit the Heritage Trail in Iowa annually, and spend an average of $9.21 per visit.

From the preceding and given Chesterfield's substantial progress to date in the development of the Pathway on the Parkway and the Chesterfield-Monarch Levee Trail projects, it is clear that the City would greatly benefit from an expanded and interconnected bicycle and pedestrian system with both trail and on-street components. Such a system would not only link existing institutional, commercial and retail infrastructure within the City, but it would also connect its neighborhoods and facilitate non-motorized access to many destinations.

Existing Bicycle Usage and Projected Bicycle Facility Needs

An Estimate of Existing Bicycle Usage. Activity observed in both the City of Chesterfield and in other communities has shown that when inteconnected bicycle and pedestrian facilities are developed and linked to commercial and insitutional destinations, they are well used for both recreational and practical purposes. In an effort to document this, the following section provides an estimate of present bicycling and related activity in Chesterfield:

Participation in Activities Likely to be Undertaken on a Trail - The Metro East Park and Recreation District (MEPRD) completed its Long Range Development Plan in 2003. Through a survey, it measured rates of regular participation by households in St. Clair and Madison Counties in a wide range of activities. Included in this survey were activities that are very likely to be undertaken on a trail or a greenway. The results indicated that 65 percent of the households walked or jogged regularly; 47 percent regularly visited nature areas; 27 percent regularly engaged in bicycling and/or BMX activities; 20 percent hiked regularly; and 16 percent regularly ran.[3]

From its multi-county household survey data and using the given percentages, estimates of probable participation levels by Chesterfield's

[3] Long Range Development Plan, April 2003. Metro East Park & Recreation District (MEPRD), p 50.

46,802 households (2006 data) in activities likely to be undertaken on a trail/greenway can be made. The results are as follows: Walking/jogging (11,739 household participation events); Visiting nature areas (8,488 household participation events); Bicycling/BMX (4,876 household participation events); Hiking (3,612 household participation events);and Running (2,890 household participation events. The figures represent probable household participation events. In order to apply a more conservative approach, i.e. the one most likely to conservatively estimate potential usage in Chesterfield, the study team used only the first three trail-compatible activities – those identified by residents in the MEPRD study as being participated in "most often." To arrive at an estimate of actual individuals who might be participating, the assumption is then made that an individual might realistically engage in the event at least six times per year; therefore, it is probable that participation by individuals in the most frequent trail-related events is as follows: Walking/jogging (1,952 individuals); Visting nature areas (1,415 individuals); and Bicycling/BMX (813 individuals). In total, then, at least 4,180 Chesterfield residents are estimated to participate in activities likely to be undertaken on trails. It is not unreasonable to assume that this approach identifies an initial "market" of users who would become patrons of an expanded bikeway system in Chesterfield. This figure therefore represents a potential beginning point from which to define a user base for the bicycle and pedestrian system. Additional factors in the estimation of the probable user base are discussed below.

Elementary and Secondary School Children Likely to Use Bicycles on Streets and Sidewalks for Transportation and/or Recreational Activity. Field reconnaissance during the course of this study has revealed some existing bicycle usage. An estimate of this usage can be made based on the existing population of elementary and secondary school-age children in the city and by estimating how many children are likely to ride bicycles regularly either to school or for other practical purposes. Elementary and secondary school children between the ages of 10 and 14 are believed to be the group using bicycles most intensively. They are most likely to consider the bicycle as a practical transportation option for school or other local trips. The 2000 Census reported 3,536 children in the 10-14 year old age category who reside

within the city. For purposes of this study, it will be conservatively assumed that 20% of the cohort – 707 children – either occasionally ride bicycles to school or use them for other local transportation trip.

15-16 year-old children are also seen riding bicycles in the component cities. However, it is probable that their riding activity begins to decline as they become older and approach driving age. There were approximately 1,389 15-16 year-olds residing in the citiy in 2000. Among this cohort it will be assumed that 10 percent, or about 139 individuals, occasionally ride bicycles either to school or for other practical transportation purposes.

Likely Adult Bicycle Usage on City Streets. Although no residents reported using a bicycle as part of the journey to work in the Year 2000 Census, anecdotal information including observations during field reconnaissance indicate that there is some bicycle usage related to commuting. The U.S. Census transportiaton to work data indicates that in 2001, 0.7 percent of the American work force regularly rode a bicycle or a motorcycle to work.[4] In another study of eight cities known to have high bicycle usage), from 0.3 percent to 1.4 percent of the population rode bicycles to work in the year 2000.

When considering adult bicycling beyond the commute to work, and to gain a more comprehensive insight on the level of adult bicycle usage on streets, a brief review of national travel mode and trip purpose data is useful. In 1997, the percentage of Americans who regularly rode a bicycle as a travel mode was 1 percent.[5] "Travel" refers to any trip purpose including shopping, errands, recreation, and getting to work. (The national average is substantially exceeded in university communities and in areas where longer trails exist.

Based on all of these considerations, the usage range from other studies will be standardized to 1.2 percent in order to develop an estimate of total adult on-street bicycle usage in Chesterfield for any trip purpose. Accordingly, it will

[4] "Table 1-35: Principal Means of Transportation to Work." U.S. Department of Housing and Urban Development, American Housing Survey: various years.
[5] "Percent of Trips by Travel Mode, as of 1997 (all trip purposes)" Table by John Pucher, Transportation Quarterly, 98-1

be assumed that 1.4 percent of the City's Year 2000 adult population of 46,802, or 562 adults, ride bikes regularly on streets within the City of Chesterfield.

Summary of Existing Bicycle Usage. Current estimated existing bicycle usage is summarized in the table below:

Summary of Existing Usage

Activity	*Events*	*Number*
Activities on Trails and Greenways	*25,103*	*4,184*
Children Ages 10-14 Regularly Riding Bicycles on Streets/Sidewalks	*n.a.*	*707*
Children Ages 15-16 Regularly Riding Bicycles on Streets/Sidewalks	*n.a.*	*139*
Adults Regularly Riding Bicycles on Streets	*n.a.*	*562*
Total Estimated Existing Participation	*25,103*	*5,592*

Although these estimates may seem modest compared to the number of individuals who drive cars, they are nevertheless significant because they identify a probable "starter group" that would benefit from a more comprehensively developed municipal bikeway system. Moreover, these estimates are based on Year 2000 Census data. Present figures, though unknown, are apt to be higher because of heightened interest in the development of polically and environmentally sound methods of alternative local travel. In addition, it is highly likely that the new long-distance Missouri River Greenway and its connection to the regional trail system being developed by GRG will attract more usage both by residents and by visitors who will be attracted to the City as a result. Such increases in usage have been reported elsewhere after the completion of longer-distance trails and connecting on-street networks.

Projected Bicycle and Pedestrian Facilities Needs.

Multipurpose Trail Needs. 51 miles, based on a projected 2015 population of 51,482 (using National Recreation and Park Association – NRPA - standards.)

Specialized Nature Trails and Mountain Bike Trails. 18.5 (using NRPA standards)

Mountain, or Off-Road Bike Trails. Mountain, or off-road, bicycling is another segment of the cycling market not addressed above, nor in the NRPA standards. Mountain bikes (MTBs) have become a major part of the bicycling

market. There is a general shortage of specially-designated trails for MTBs, and the deficiency is reflected within Chesterfield as well. Therefore, it is probable that off-road riding would increase if more specialized facilities existed. For this study, 0.1 mile of MTB trail per 1000 population is assumed to be adequate. Therefore, a total of 5 miles of MTB trails for Chesterfield by the year 2015 is appropriate.

<u>On-Street (Shared Roadway) Bicycle Facility Needs.</u> Many streets – primarily residential streets and larger streets with wider lanes, are currently sufficient for bicycle usage. But in order to establish a functional, efficient, and usable on-street bikeway system with access to most/all destinations, selected collectors and arterials should receive some level of bikeway treatment in order to create a functional network.

Improvements to establish an on-street bikeway system would require at least some level of treatment for a large portion of the City's existing streets. However in many locations it could involve improvements as basic as the placement of some signage, and at other locations it would require more intensive investment to establish bicycle routes and perhaps bicycle lanes. At other locations cut-throughs at key cul-de-sacs might be appropriate in order to provide route continuity or a significantly more direct route, and to help eliminate motor vehicle trips to local destinations.

When new streets are designed in accordance with their intended functional classification, they should include design provisions for bicycle movement, including either wide outside lanes or bicycle lanes, bike-safe drainage grates, and appropriate signage.

<u>Pedestrian Facility Needs.</u> Because all trips begin and end with walking, pedestrian facility needs should be defined by the degree of completeness of the sidewalk system rather than simply by the assessment of local walking activity and the presence of commercial activity. The City should continue its policy of filling gaps the system.

Conclusion. This chapter examined existing conditions in the City of Chesterfield as they relate to walkability and bikeability. It found that pedestrian facilities are essentially well developed with the need for some improvements and in particular for improved connections between cul-de-sacs and at transitions with commercial-retail areas.

The analysis also showed the need for substantial and coordinated bikeway improvements to meet an evolving and increasingly sophisticated set of needs related to transportation, recreation and wellness. For example, it is highly probable that residents will increasingly desire non-motorized transportation options for short-distance trips - a trend which is already occurring elsewhere. The need relates to on-street facilities, additional multipurpose trails, interconnections between neighborhoods, institutions, and commercial-retail areas, and for a variety of supportive improvements including signage, parking facilities, and others. The next chapter presents a specific plan to address these needs.

Bikeable-Walkable Community Plan: Goals and Objectives

Develop Bikeways as an Important Element in the City's Transportation and Recreation System.

Selectively modify existing City streets when financially feasible, to include bicycle accommodations that are appropriate to traffic conditions; and add sidewalks and non-motorized connectors between cul-de-sacs and other barriers as appropriate.

Strive to ensure that new local, collector, and arterial roads are not only adequate for motor vehicles but also include provisions for bicycle and pedestrian movement.

Utilize, to the extent feasible, active and inactive rail corridors, utility/drainage corridors, and public lands for the development of multipurpose trails to help interconnect the system.

Strive to ensure that the network of linear trails and on-street bikeways is sufficient to enable bicycle and pedestrian movement between most residential, institutional, and commercial/retail land uses.

Adhere to appropriate federal and state design guidelines and standards for the design of bicycle/pedestrian facilities.

Coordinate development activity to maximize the partnering benefits available through the Transportation Enhancements Program and other funding sources.

Establish Programs to Effectively and Safely Use the Bikeway System

Encourage City staff and an existing committee or board to oversee development of programs and materials that promote effective usage of the bicycle and pedestrian network.

Meet regularly to oversee the implementation of all programmatic aspects of the plan recommendations.

Support the Police Department in the enforcement of all applicable state laws regarding bicycle operation and road sharing, and in the development and enforcement of additional local ordinances as appropriate.

Educate cyclists on safe bicycle operation.

Educate both bicyclists and motorists on how roads can be safely shared.

Encourage bicycle usage for transportation, recreation, and fitness purposes.

Bicycle and Pedestrian Facility Components

Trail Recommendations. Despite the fact that the City is already well developed, several greenway and trail opportunities exist and should be developed as follows:

Ameren/UE Rail Corridor – Rail-with-Trail
Ameren Transmission Corridor Greenway and Trail
Chesterfield Village Trail
Etherton-Howell Island Connector
Faust Park-Ameren Greenway Connector
Lake Trail (Central Park)
Monarch-Chesterfield Trail – Future Elements
Spring Valley Connector
Straub Hill-High School Connector

On-Street Bikeways. The On-Street Bikeway System consists primarily of accommodations intended to facilitate travel connections for bicyclists. The primary intended users are experienced and casual adult cyclists, and teenage riders who could most appropriately use an on-street bikeway system. The arterials and collectors within this system are not intended for child riders. An extensive on-street system of bikeways should be developed to provide alternative transportation facilities in all areas of the City and interconnections between neighborhoods, activity generators and the trail system.

In addition to these bikeway improvements on City-maintained streets, the City should promote and encourage bicycle accommodations on connecting state and county-maintained roads. Bikeway connections to transit stops are an important element in this interconnected system. Treatment types and applicability are described in the plan text.

Implementation Strategy

Pre-Engineering Opinion of Cost to Develop the Chesterfield Bikeway System. This section includes a preliminary opinion of cost to develop the bicycle and pedestrian system. This is essentially a rough-order-of-magnitude (ROM) estimate that has been developed based on experience with other bikeway projects in the St. Louis Metropolitan region.

Preliminary Opinion of Cost

Facility Type	*Facilities/Segments*	*Length (Mi.)*	*ROM Retrofit*	*ROM New*
Warning Accommodations	*16*	*33.3*	*$75,700*	
Bicycle Route	*38*	*29.2*	*$102,200*	
Bicycle Lane	*6*	*18.7*	*$328,400*	*$6,508,800*
Multi-use Trail	*11*	*18.7*		*$5,956,900*
Nature Trail	*1*	*1.5*		*$1,600,000*
Total Facilities	*72*	*101.4*	*$506,300*	*$12,465,700*

Bikeway Project Prioritization. Projects have been prioritized according to weighted criteria identified during the planning process. A project-specific prioritization matrix has been provided in the plan document. The prioritization criteria are summarized below:

Proximity to Activity Centers and Other Important Elements;

Adjacent Residential Population;

Connectivity;

Public Feedback;

Ease of Implementation.

Pedestrian Project Prioritization. The planning team has developed a typology to categorize improvements that address feedback received during the planning process. The categories include:

Additional trails to enhance community connectivity and recreational opportunities;
Projects improving pedestrian safety and comfort over and under Interstate 64;
Projects providing continuous facilities along major arterials, minor arterials and collector streets;
Projects connecting neighborhoods to new/existing commercial activity and other destinations;
Projects improving pedestrian safety, comfort, and accessibility at signalized intersections on major arterials.

Based on these categories, ten Pedestrian Improvement Zones were identified, in which the City of Chesterfield should focus its efforts to improve pedestrian conditions. Because these Pedestrian Improvement Zones do not encompass all recommended pedestrian improvements, it is important that the City undertake additional improvements outside these zones as opportunities arise.

Funding Sources, Uses and Project Phasing. The estimated costs to construct Chesterfield's proposed bikeway system are achievable with an appropriate funding and phasing strategy. A variety of potential funding sources to implement this plan are available, and include: Safe, Accountable, Flexible, Efficient Transportation and Equity Act – SAFETEA-LU (successor program to be enacted); Surface Transportation Program (STP); Land & Water Conservation Fund (LWCF); Recreational Trails Program; Parks/Stormwater Tax; Municipal Park Grants; Safe Routes to School; Local Funds; and developer contributions.

Plan Adoption and Regulatory Actions. Several action steps are recommended in order to implement Chesterfield's Bikeable-Walkable Community Plan. Among them are the following:

Local Adoption by the City Council
Park Land Dedication Program
Additional Land Use and Zoning Recommendations

Encouragement, Education and Enforcement. A variety of programs will help to institutionalize bicycling and walking as follows:

Encouragement Activities. This category includes delegating programmatic responsibilities to City staff and existing committees or boards to guide the process; a brochure, including a map of the bicycle system and park system; special events; and encouraging the installation of bike lockers or racks, and to install showers to promote commuting.

Education Activities. This category addresses the need to learn the how-to's of bicycling in order to provide cyclists with skills to use trails and streets. The Safe Routes to School program is another important education element.

Enforcement Activities. Enforcement Activities include establishing basic rules and regulations for trails under Chesterfield's jurisdiction; stocking supplies of bicycle safety material, maps, and rules of the road at kiosks or other stations within parks; and other techniques.

Monitoring and Evaluation. The implementation of the Bikeable-Walkable Community Plan should be monitored by representatives of the Planning & Public Works Department and the Parks & Recreation Department on an ongoing basis, working closely with other departments as necessary.

The utilization of local and external resources as well as the prioritization matrix of recommended projects should be central elements of this monitoring process. Monitoring of facilities usage should also occur, preferably on an annual basis. Regular progress reports to the City Council should be made, including recommendations as to whether program resources, scoping, or its timetable need to be modified.