

City of Union Bikeable Walkable Community Plan

Adopted July 9, 2012



Acknowledgements

The City of Union appreciates the efforts of the many Union residents who participated in the planning process. Their creativity, energy, and dedication to the future of Union were the driving force behind this planning effort.

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CHAPTER

1.

Introduction

This document examines existing bicycling and walking conditions in the City of Union, Missouri, and lays out a plan for these modes to function in a dual capacity: as an element in the city's transportation system; and as a substantial enhancement to the city's recreational infrastructure.

Creating a bikeable and walkable community can encourage and support healthy individuals, a healthier community, a more equitable transportation network that supports a variety of users, increased recreational opportunities for residents and visitors, and other important benefits. Public spaces and that are attractive for walking and cycling should be considered important community assets for their ability to stimulate or attract:

- A more active city
- Young and upwardly mobile workers
- Improved community health and wellness
- A more inviting public realm
- New businesses for whom quality of life issues are prominent in making location decisions

Why are such benefits important to Union? In a significantly more competitive economic environment, these community assets are an integral component of an overall strategy to attract commercial, industrial, and residential investment and activity in the City of Union. An enhanced public infrastructure where people are seen enjoying themselves can stimulate growth and development in the city. The change can have a truly transformative effect on the city.

Plan Background. The planning process was initiated in the Spring of 2010 when Union committed local funding to obtain federal funds to participate in Trailnet's Bikeable Walkable Communities Program. The program is underwritten with federal transportation funds awarded to Trailnet for the purpose of developing local bicycle and pedestrian master plans that outline a strategic approach to the development of



non-motorized transportation infrastructure and supporting programs. These funds are awarded by the East West Gateway Council of Governments and administered by the Missouri Department of Transportation (MoDOT).

Public Engagement. In order to ensure the plan reflects the needs and desires of the community, a thorough public engagement process was developed and implemented beginning in August of 2010 and continuing through August of 2011. Included in this process were an online survey, two public meetings, a presence at a number of local events, including the 2010 Union Business Expo, and a presentation before the Board of Alderman in August 2011 to solicit input and feedback from elected officials. These public engagement opportunities allowed for a dialogue to develop between the project team and the community, which served not only to inform the planning team of the current conditions and the community's desires as they relate to bicycle and pedestrian issues, but also to educate and inform the public of best practices and emerging trends for integrating bicycling and walking as key components of a community's character.

Plan Outline. Following the introduction, Chapter Two of this document presents a detailed description and analysis of existing conditions in and around Union that are related to the development of a non-motorized transportation system. Demographic patterns, land uses, transportation systems, and the potential for activity of future trails and greenways are analyzed in detail in order to develop a community profile and to inform the plan vision, goals, objectives, and recommendations. A specific plan to make the system a reality is then laid out in Chapter Three. Included in the plan section are an overall vision for the City of Union as it relates to bicycling and walking, goals and objectives to achieve that vision, specific infrastructure recommendations to create a walkable and bikeable community, and an implementation strategy to bring the plan to life. The appendices contain a variety of support documentation related to the study.



Image 1. The project team looks over area maps with residents and city staff at the First Public Workshop.



Image 2. The project team discusses proposed recommendations with a city resident at the Second Public Workshop (Source: www.emissourian.com)



CHAPTER 2.

Existing Conditions & Analysis

The second chapter of this report describes and analyzes existing conditions in the city, as a basis for the subsequent creation of a bicycle and pedestrian facilities plan later in the next chapter. It begins with a review and assessment of selected demographic and socioeconomic information within the city that is related to pedestrian and cycling activity. Also examined are the city's parks, open space, public right-of-way, and other public/quasi-public corridors. The chapter concludes with an exploration of concepts for potential incorporation into the plan that will be a centerpiece in the next phase of work.

A. Existing Socioeconomic Factors

This section analyzes population changes, age groups, median household income, educational attainment and journey to work in the City of Union and compares and contrasts the data with other Franklin County cities including Pacific, St. Clair, Sullivan, and Washington. These are the largest cities in the County. Insights are provided here into the potential for a system of bicycle and pedestrian routes within the city that can be used for transportation, utilitarian and recreational purposes.

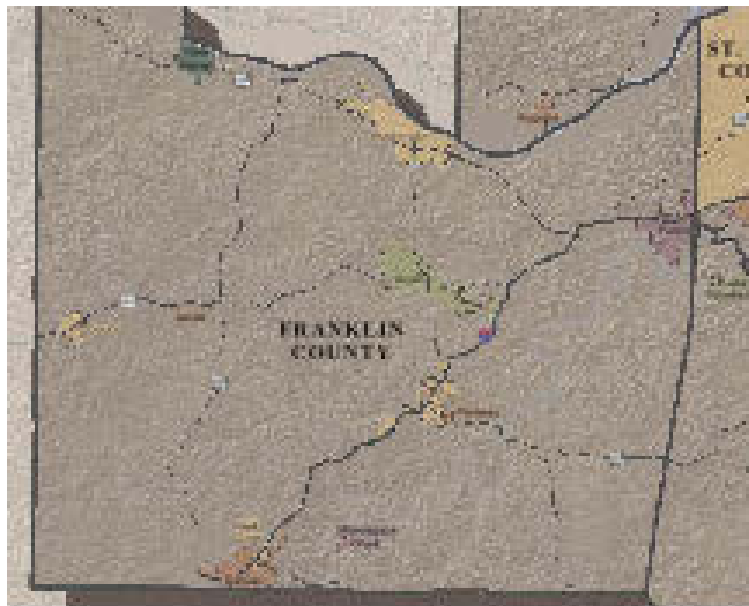


Image 3: Union in context with surrounding communities.



1. Population Growth

The estimation of Union's future population is important in the preparation of a Bikeable Walkable Plan for the City. For this study, relevant data compiled and analyzed during the City's comprehensive planning process, which was conducted under a separate effort, will be used as source material, updated with annualized estimates for the period 2005-2009 from the Census Bureau's latest American Community Survey.

Table 1. Population Growth, 1980-2009

	1980	1990	2000	2009 Est.
Union	5,506	5,909	7,757	9,369
Pacific	4,410	4,350	5,482	6,873
St. Clair	3,485	3,917	4,390	4,417
Sullivan	5,461	5,551	6,351	7,177
Washington	9,251	10,704	13,243	14,179
Franklin County	71,233	80,603	93,807	99,866

Source: City of Union, Missouri 2020 Comprehensive Plan Update. Chapter 1: 8; 2005 - Updated with annualized 2005-2009 information from the 2009 American Community Survey, U.S. Census Bureau.

Union has enjoyed robust population growth since 1990. From 1990 to 2000, it had the highest rate of growth (over 31%) among all of its neighboring cities, and between 2000 and 2009 Union had the second highest growth rate (more than 20%) among its municipal neighbors. In both of these comparison periods, Union's rate of growth exceeded by far that of Franklin County as a whole.

The City's growth can be attributed to a number of factors, including its proximity to the I-44 development corridor and its prominence as the County Seat. Using historical growth as a basis for estimation, it is possible that when the new 2010 Census data is released, Union's population will have grown to almost 10,000 individuals.

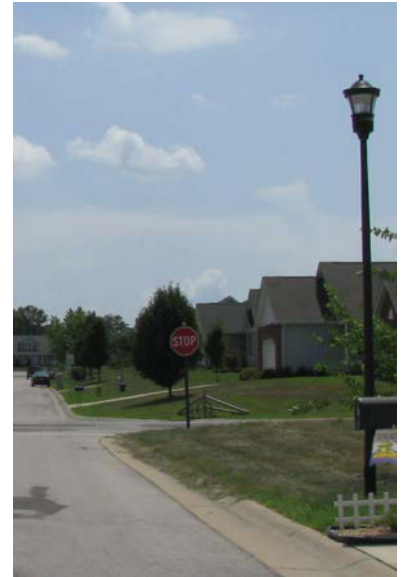


Image 4. Much of the population growth in Union has occurred in the 3rd Ward, where significant residential construction has occurred.



2. Age Groups and the Potential for Bicycle Usage

An analysis of age groups for Union, compared with county and statewide data, is shown below in Table 2, based on the 2005-2009 U.S. Census American Community Survey. These data are an estimate, but are the most recent available until the 2010 Census data is released at this level.

Table 2. Age Characteristics, 2009 Estimates

	City of Union	Franklin County	State of Missouri
Under 5	899 (9.6%)	6,645 (6.7%)	395,391 (6.7%)
5 to 9	951 (10.2%)	7,083 (7.1%)	380,719 (6.4%)
10 to 14	535 (5.7%)	7,015 (7.0%)	400,488 (6.8%)
15 to 19	492 (5.3%)	7,042 (7.1%)	422,957 (7.2%)
20 to 24	560 (6.0%)	6,105 (6.1%)	420,920 (7.1%)
25 to 34	1,621 (17.3%)	11,730 (11.7%)	757,502 (12.8%)
35 to 44	1,196 (12.8%)	14,396 (14.4%)	801,084 (13.6%)
45 to 54	1,220 (13.0%)	21,562 (21.6%)	871,891 (14.8%)
55 to 59	325 (3.5%)	5,748 (5.8%)	360,564 (6.1%)
60 to 64	430 (4.6%)	5,248 (5.3%)	296,288 (5.0%)
65 to 74	502 (5.4%)	7,202 (7.2%)	410,308 (6.9%)
75 to 84	457 (4.9%)	4,025 (4.0%)	275,535 (4.7%)
85 and over	181 (1.9%)	1,813 (1.8%)	110,835 (1.9%)
Median Age	33.4	38	37.3
18 and over	6,625 (70.7%)	74,427 (74.5%)	4,473,226 (75.8%)
65 and over	1,140 (12.2%)	13,040 (13.1%)	796,678 (13.5%)
Male	4,542 (48.5%)	49,607 (49.7%)	2,879,878 (48.8%)
Female	4,827 (51.5%)	50,259 (50.3%)	3,024,504 (51.2%)

Source: U.S. Census Bureau, American Community Survey 2005-2009

Proportionately “Younger” Age Groups. Looking at several age groupings, Union’s population in 2009 was proportionately “younger” than corresponding groupings for Franklin County and the State of Missouri as a whole. This was true for the “Under 5” and “5–9” age groupings, which represented 19.8% of the City’s population at the time. Similarly, the



proportion of Union residents in the “25-34” age grouping was also higher than Franklin County and the State of Missouri as a whole. Here, 17.3% of the City’s population was in this age group - more than four percentage points higher than that of both Franklin County and the State of Missouri. Through the subsequent decade and barring substantial out migration, these cohorts will become a ready and generally available demographic for the use of a carefully planned and interconnected system of bikeways and walking paths.

Proportionately Similar Age Groupings. The size of other age groupings in the City was proportionately similar to both Franklin County and the State as a whole. These groups included “10-14,” “15-19,” “20-24,” and the “85 and over” categories. More than 1,580 residents were in the first three of these groupings, representing 16.9% of the City’s population. Notwithstanding their proportional similarity across the County and the State, these groups can also be seen as a generally available potential market for the use of a bicycle-pedestrian transportation system.

Proportionately “Older” Age Groups. The proportionately higher numbers of younger people living in Union contrasted with fewer residents in the City who were in older age groupings at the time of the 2005-2009 Census American Community Survey. For example, Union had lower proportions of residents in the following age groupings when compared with Franklin County and the State of Missouri as whole” “55-59,” “60-64,” and “65-74.”

Age and the Potential for More Bicycle-Pedestrian Usage. The median age of Union residents reported in the 2009 American Community Survey was lower at 33.4 years than both Franklin County (38) and statewide (37.3). Nationally, it is recognized that, as a whole, “younger” populations gravitate toward more active lifestyles which can include the practical usage of bicycles for transportation. Taken as a class, therefore, the relative youthfulness of Union’s population at the time of the

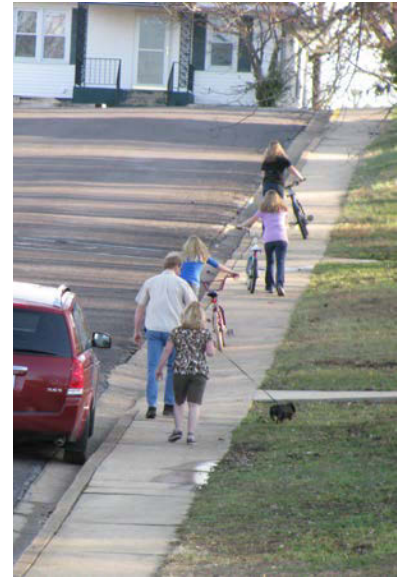


Image 5. Families often bike and walk on city sidewalks for exercise and recreation.



2005-2009 American Community Survey is an encouraging indicator of the potential usefulness of a system of destination-oriented bicycle and pedestrian facilities. Additionally, the nationwide data indicates that all of the age cohorts described above are “typical” user groups for recreational components of such systems.

Table 3. Comparison of Age Groups as a Percentage of Total Population, 2009 Estimates

	Union	New Haven	Pacific	St. Clair	Sullivan
Total:	9,369	2,269	6,873	4,417	7,177
Under 5 years	9.60%	5.30%	5%	11%	8%
5 to 24	27.10%	28%	29%	29%	30%
25 to 44	30.10%	23.40%	34%	26%	26%
45 to 54	13%	13.50%	13%	13%	11%
55 and over	20.20%	29.70%	19%	21%	25%

Source: U.S. Census Bureau, American Community Survey 2005-2009

As of 2009, Union had the second-highest ratio of residents in the “Under 5” age group. It ranked the lowest of the “5-24” age grouping, and was 2nd among its neighbors in the percentage of residents who in the “25-44” age group. It also had the second-highest proportion of resident’s aged 45-54. And in the oldest age grouping, Union had the fourth-lowest ratio. It is believed that the age groups most likely to be - or to become - interested in the practical usage of bicycles are in the “5-24” age grouping, the “25 to 44” group and to some extent the “45 to 54” age groupings. Moreover, individuals from all of these age groupings are also likely to be interested in facilities for recreational bicycling and walking.



3. Household Income

In 2009, Union's median household income was \$42,392 – considerably lower than Franklin County and the statewide median. Similar differences also existed for family income and, to a lesser extent, per capita income. (Refer to Table 4 below.) In other cities and urbanized areas with higher concentrations of lower income people, transportation-oriented bicycle-pedestrian facilities have greatly improved the ability of these populations to travel more efficiently and independently.

Table 4. Income Characteristics (2005-2009)

	City of Union	Franklin County	State of Missouri
Per capita income	\$21,555	\$23,469	\$24,423
Median family income	\$49,592	\$59,060	\$57,008
Median household income	\$42,392	\$49,860	\$46,005
Median earnings, female full-time, year-round workers	\$26,265	\$28,384	\$31,657
Median earnings, male full-time, year-round workers	\$42,168	\$43,397	\$42,464
Median retirement income	\$11,672	\$17,040	\$18,049
Families in poverty status	92 (4.0%)	2,035 (7.4%)	150,670 (9.8%)

Source: U.S. Census Bureau, American Community Survey 2005-2009

4. Educational Attainment

In Union a higher percentage of residents age 25 and over had some college in comparison with County- and statewide data from the 2009 American Community Survey. The City had lower high school graduation rates, however. (Table 5 on the following page.) It is possible that, when the 2010 Census data is released, educational attainment figures may show an increase due to local development patterns or other factors. However and for the present, the conclusions drawn in the Household income section above regarding the relationship



between lower income populations and the potential value of a non-motorized transportation system are also germane here because of the inherent relationship between income and educational attainment.

Table 5. Educational Attainment: 25 Years and Over (2005-2009)

	City of Union	Franklin County	State of Missouri
High School Graduate	31.80%	34.90%	33.00%
Some College	32.80%	31.90%	28.00%
Bachelor's Degree	12.50%	10.70%	15.60%
High School Graduate or Higher	82.80%	83.50%	85.60%
Bachelor's Degree or Higher	18.20%	16.60%	24.60%

Source: U.S. Census Bureau, American Community Survey 2005-2009

5. Journey to Work

The number of people who use a bicycle for their journey to work in the United States has been steadily increasing, especially as destination-oriented bicycle-pedestrian systems are established. The data on journey to work for the five compared cities is shown in Table 6 below.

Table 6. Journey to Work, 2009 Estimate

	Union		Washington		Pacific		St. Clair		Sullivan	
Drove alone	3,475	79%	5,886	85%	2624	82%	1417	77%	2190	72%
Car pooled	691	16%	674	10%	480	15%	334	18%	667	22%
Public trans	0	0%	0	0%	0	0%	0	0%	0	0%
Motorcycle	0	0%	16	0%	0	0%	0	0%	0	0%
Bicycle	0	0%	0	0%	0	0%	0	0%	0	0%
Walked	83	2%	142	2%	40	1%	44	2%	89	3%
Worked at home - other	162	4%	208	3%	63	2%	57	3%	85	3%
Total	4,411		6,926		3,207		1,852		3,031	

Source: U.S. Census Bureau, American Community Survey 2005-2009



In Union, 3,475 people drove alone to work and 691 carpooled. No residents reported using a bicycle to get to work, while 83 residents said that they walked to work. However, these results are very similar to those of Union's urban neighbors including Washington, Pacific, St. Clair and Sullivan.

In this discussion, the important question is to what degree would Union residents use a bicycle to travel to work if a practical destination-oriented bicycle pedestrian system existed? In order to examine this, resident proximity to job destinations must be studied and an assessment made of the potential to use a bike for shorter commutes. The 2005-2009 American Community Survey provides travel-time-to-work data as identified in Table 7 below.

Table 7. Comparison of Travel Time to Work, 2009 Estimates					
	Union	New Haven	Pacific	St. Clair	Sullivan
Less than 10 minutes	951	335	556	356	1,010
10 to 14 minutes	415	51	383	147	419
15 to 19 minutes	466	66	237	198	229
20 to 24 minutes	484	125	252	231	103
25 to 29 minutes	638	201	857	352	309
30 to 34 minutes	349	85	321	179	195
35 to 44 minutes	315	70	234	109	82
45 to 59 minutes	558	47	406	208	237
60 to 89 minutes	474	100	109	176	363
90 minutes or more	117	45	41	70	111

Source: U.S. Census Bureau, American Community Survey 2005-2009



In Union, 1,832 residents traveled less than 20 minutes by car to jobs in or close to the City. Many of these short distance auto users are individuals who would consider biking at least as an occasional transportation mode if an adequate bikeway system were to be established providing access to places of employment. An additional 1,471 Union residents traveled by car to job destinations located between 20 and 34 minutes of where they resided in 2009. This represents another group from which there could be interest in commuting by bicycle.

6. The Employment Base in Union.

The City of Union has a strong job base. As of the 2005-2009 American Community Survey, 4,549 jobs were located within the city limits, representing a diversity of occupational categories, including sales and office occupations (25.2% of all jobs) management, professional and related occupations (24.8%), construction, extraction and maintenance occupations (17.1%), service occupations (16.8%), and production, transportation and material moving occupations (16.8%). Using the information described in the Journey to Work section, it is highly probable that a large majority of the 3,303 people reporting commute-to-work times of less than 34 minutes go to jobs either located within or very close to the City. Thus, a bicycle-pedestrian network connecting residential areas with job destinations could pay a strong dividend in getting people out of their cars for some commute trips, reducing traffic related impacts to the street system and improving public health in the process. Actual projections will be made in Section D of this report.



B. Physical Features and Land Uses

In this section, a review will be provided of physical features and land uses in Union and its immediate surroundings. Land uses that are in the planning and development stage will also be included. Potential concepts relating to the use of physical features and land uses within an integrated bicycle-pedestrian transportation system will also be initially discussed, for further exploration in the plan chapter.

1. Streets, Roads and Highways

Union and its surrounding area are served by an efficient system of highways, arterials, collectors and residential streets maintained by the City, the Franklin County Highway Department, and the Missouri Department of Transportation (MoDOT). This section will provide a basic analysis of major roads, with additional analysis to be conducted in Chapter 3 during the planning phase of work.

The principal roads directly serving the city are State Highways 50 and 47. Highway 50 travels east-west and Highway 47 north-south. Interstate 44 is located less than two miles of the City Limit, and links the city to the nation's interstate transportation network.

Many of Union's residential streets are presently adequate for bicycle movement because of their lower traffic levels and relatively low truck and bus traffic. The presence of a traditional street grid system facilitates this movement. Some collector streets are also bicycle-friendly (Image 6). In newer subdivisions of the city, cul-de-sacs and curving streets hamper efficient bicycle movement. (Many communities use small pathways to interconnect cul-de-sacs, facilitating bicycle and pedestrian movement.) Aside from the barriers formed by cul-de-sacs, other deficiencies in Union include visual barriers at some intersections, physical barriers on some sidewalks (Image 7), and the lack of a signed routing system that could facilitate



Image 6. Shared bicycle facility on Church Street north of East State Street.



Image 7. Traffic signal obstructing the pedestrian zone on Highway 50 at Oak Street.

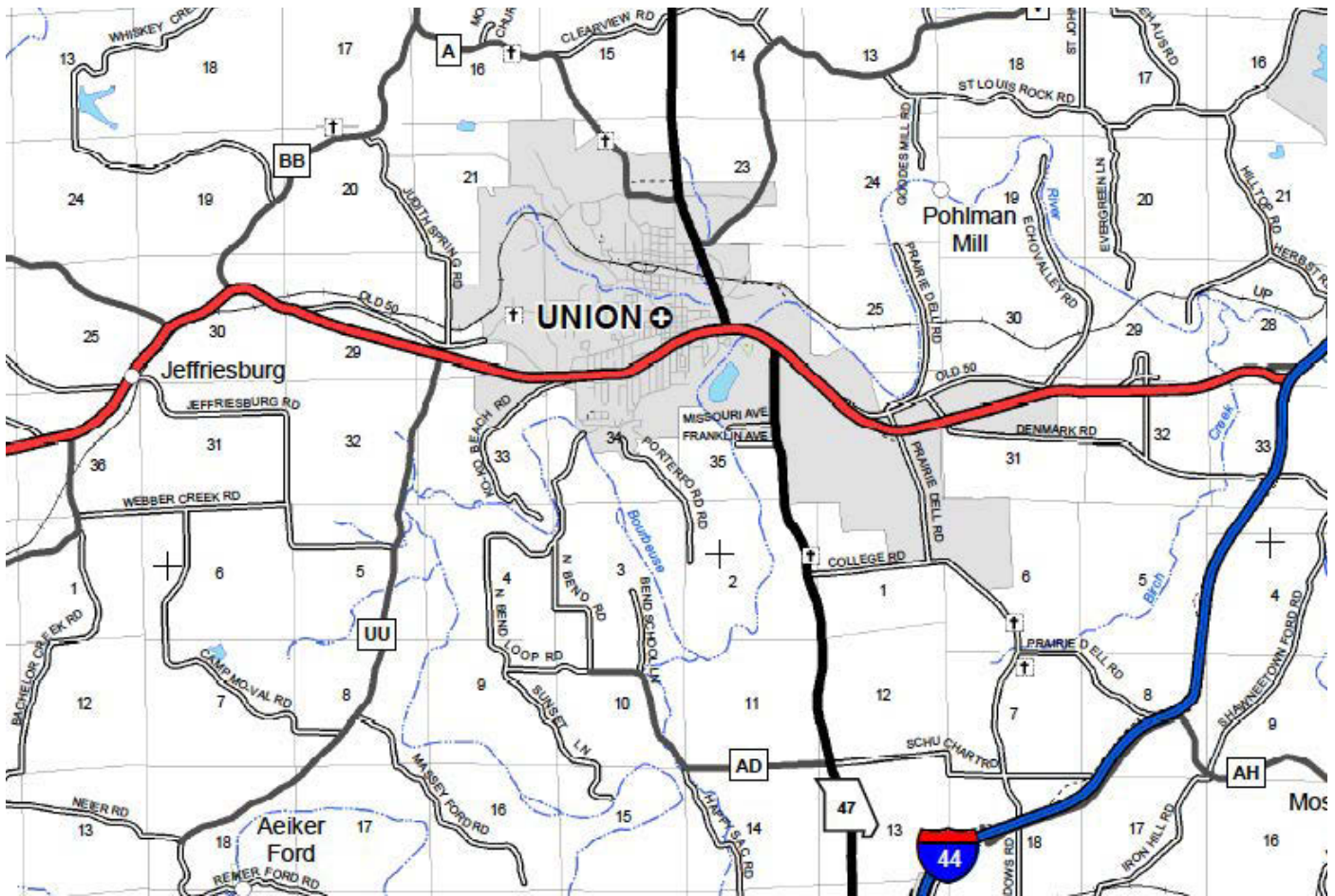


Image 8. Union, Missouri and surroundings (Source: MoDOT).

bicycle access to desired commercial, retail, and institutional destinations.

Because arterials and many collectors in the City carry higher levels of traffic which could include trucks and buses, they may only be viewed as adequate by a narrow range of cyclists - generally more experienced commuting and fitness riders who are comfortable sharing streets with busier traffic. These streets, especially during higher traffic periods, are not considered to be bicycle-friendly by a broader group of recreational cyclists who ride less frequently and do not feel as comfortable on busier roads. Nevertheless,



these busier facilities are presently used by some cyclists, and they are useful for practical transportation purposes. They will be more closely examined in the plan chapter for potential improvements to enable them to more adequately accommodate cyclists.

Table 8 on the following page provides a listing of principal street segments within the City, along with a nominal assessment of current traffic conditions on each. In this planning study, nominal Levels of Service (LOS) were assessed based on visual observation (rather than on traffic engineering parameters which are typically conducted as part of a detailed traffic engineering study or as a prelude to the design/engineering of specific roadway improvements.) The present study is intended to form a preliminary baseline in order to make subsequent recommendations in Chapter 3 regarding the street components of a bikeway system for the county.

The LOS methodology is made up of a series of service-based benchmarks used to evaluate traffic flow. A LOS in 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. LOS levels of C-D represent a range of traffic volumes and densities that restrict drivers in their speed and maneuvering options – to unstable flow with sudden speed variations. LOS levels in the range of E-F signify less stable flows and more frequent/intensive speed variations – to complete stops of traffic at times.

**Table 8: Nominal Level of Service**

Name	Type	Suffix	Road Status	Surface	Road Own	LOS
BEND	RD		ACTIVE	HARD	CITY	A-B
CHERRY	ST		ACTIVE	HARD	CITY	A-B
CHURCH	ST		ACTIVE	HARD	CITY	C-D
CLARK	AVE		ACTIVE	HARD	CITY	A-B
DELMAR	AVE		ACTIVE	HARD	CITY	A-B
DELMAR	BLVD		ACTIVE	HARD	CITY	A-B
DENMARK	RD		ACTIVE	HARD	CITY	C-D
WEST END	AVE		ACTIVE	HARD	CITY	A-B
FRANK	ST		ACTIVE	HARD	CITY	A-B
FRANKLIN	AVE		ACTIVE	HARD	CITY	A-B
GRANT	ST		ACTIVE	HARD	CITY	A-B
HAMBRO	AVE		ACTIVE	HARD	CITY	C-D
HIGHWAY 47			ACTIVE	HARD	STATE	C-D
HIGHWAY 50			ACTIVE	HARD	STATE	C-D
HIGHWAY A			ACTIVE	HARD	STATE	C-D
HIGHWAY V			ACTIVE	HARD	STATE	C-D
HOOVER	AVE		ACTIVE	HARD	CITY	A-B
INDEPENDENCE	DR		ACTIVE	HARD	CITY	C-D
JEFFERSON	AVE		ACTIVE	HARD	CITY	C-D
KOKO BEACH	RD		ACTIVE	HARD	CITY	C-D
LOCUST	ST		ACTIVE	HARD	CITY	A-B
MAIN	ST		ACTIVE	HARD	CITY	C-D
MEMORIAL	PKWY		ACTIVE	HARD	CITY	A-B
MULBERRY	AVE		ACTIVE	HARD	CITY	A-B
OLD HIGHWAY 50		E	ACTIVE	HARD	CITY	A-B
PARK	AVE		ACTIVE	HARD	CITY	C-D
PORTERFORD	RD		ACTIVE	HARD	CITY	A-B
PRAIRIE DELL	RD		ACTIVE	HARD	CITY	C-D
PROGRESS	PKWY		ACTIVE	HARD	CITY	C-D
ROOSEVELT	AVE		ACTIVE	HARD	CITY	A-B
SPRINGFIELD	AVE		ACTIVE	HARD	CITY	C-D
ST ANDREWS	DR		ACTIVE	HARD	CITY	A-B
STATE	ST		ACTIVE	HARD	CITY	A-B
UNION	AVE		ACTIVE	HARD	CITY	A-B
VONDERA	AVE		ACTIVE	HARD	CITY	C-D
WASHINGTON	AVE		ACTIVE	HARD	CITY	C-D
WILDCAT	DR		ACTIVE	HARD	CITY	C-D



For a bicycle and pedestrian system to be effective, it should be transportation oriented: It should facilitate movement between trip origins and destinations. But such a system would also provide significant recreational opportunities, and because of this dual benefit it becomes possible to amortize the cost of such improvements across a wider user base, multiple operating departments, and a broader funding spectrum.

Generally, The City's road system should be seen from a multi-modal standpoint. Significant portions of the system could eventually and with incremental improvements accommodate more bicycle and pedestrian traffic. For the future, it would be appropriate to consider incorporation of improved bicycle- and pedestrian-friendly features into roadway design standards. If enacted prior to development and the corresponding acquisition of right-of-way for roads, these standards could more easily be incorporated into the transportation system when it is ultimately built. In addition, their cost could be financed through available external funding sources.

In general, the following concepts should be considered when planning and developing new roads in the transportation system:

- Wider rights-of-way along roads classified as arterials and collectors to enable the provision of at least some level of bicycle accommodation;
- Where wider collectors and arterials are not possible, consider multipurpose paths designed to bike path standards, within wider road right-of-way or on separate right-of-way such as inactive rail corridors and utility easements.

These concepts will be further explored in the Plan chapter.

Targeting Bicycle- and Pedestrian-Friendly Improvements.
Local decision makers and regional planners continue to



believe that the I-44 corridor is the next logical location for industrial, retail and residential development.¹ It is probable that such development will occur when the current economic climate changes. Similar growth can also be expected in Union not only within existing industrial parks but also along major roads such as Highways 47 and 50.

Bicycle and pedestrian improvements along Highways 47 and 50 would help to provide more attractive conditions for short-distance bicycle trips, particularly where there are mixed-use developments that cater to newer, community-oriented lifestyles.

Strong continued growth is probable in the eastern half of Franklin County and including the City of Union. Although the present population density in the eastern portion of the county is far from that of St. Charles County where explosive growth is now in its third decade, it is clear that recent historical growth in the eastern portion of the county is moving in this direction. Moreover, this growth may be more dispersed than it was in St. Charles County because of fewer topographical constraints, and could more quickly radiate from the east.

Regardless of when the next wave of growth will occur, it can be expected to have a positive impact on Union. The demographic composition of its future citizenry may well include a higher proportion of upwardly-mobile young professionals and retired individuals who will desire amenities including more trails, bikeable walkable streets, and systems combining both to provide connections between residential areas and commercial-institutional destinations.

¹ Jones, Gregg "Hillhouse: Interstate 44 Is Next Regional Growth Area." E Missourian, December 26, 2008. Accessed September 25, 2010. http://www.emissourian.com/news/top_stories/article_c4546f08-d4af-5ad2-96d9-d6275d7c4591.html



2. Pedestrian Facilities

Sidewalks and Pedestrian Paths. Union has a fairly complete existing sidewalk system within the older portion of the community. The grid nature of the streets on which the sidewalk system is developed generally lends itself well to pedestrian movement. However, the system is aging, and many newer subdivisions and commercial developments lack sidewalks, crosswalks, and other pedestrian features. A city ordinance requires sidewalks in all new subdivisions, but a moratorium has been in effect since 2002 prior to the development of the second phase of St. Andrew's Place.²

Pedestrian facilities can consist either of traditional concrete sidewalks of a specified width, or 'pedestrian pathways' constructed of asphalt. Pathways are often wider and have several advantages: they can more easily accommodate a variety of walking behaviors including people walking two-abreast, parents pushing strollers, pets on leashes, and other activities. Jurisdictions also sometimes facilitate the development of non-motorized passages between cul-de-sacs to connect to adjacent neighborhoods and, ultimately, to shopping centers, employment centers, institutions and other destinations.

In urbanizing jurisdictions throughout the country, goal-oriented approaches to pedestrian movement are sometimes added as a complement to basic regulations. For example, where there is mixed-use development or where there are transects between key residential and commercial/industrial areas, some cities have developed policies to help establish an infrastructure of pedestrian and related facilities to encourage healthful, cost-efficient, and environmentally-friendly transportation options.

² Waltz, Christopher. "Resident Expresses Concerns Toward Proposed Rezoning," E Missourian, May 8, 2002, accessed August 4, 2011. http://www.emissourian.com/news/union_news/article_ef6b341f-ce65-56d6-8b04-dcac86725d2c.html



Image 9. A new sidewalk along the entire length of Independence Road has improved access to Union High School and has increased recreational opportunities for area residents.



Image 10. A lack of pedestrian facilities along Highways 47 and 50 forces pedestrians into vehicular travel lanes, creating increase risk of conflict at major intersections.



Image 11. This marked crosswalk in front of Union Middle School provides additional safety in an area with high pedestrian volumes.



Image 12. The City of Union has incorporated ADA accessible curb ramps into many new capital projects, including this recent addition on Memorial Parkway.

Pedestrian Crossings. Marked crosswalks are an important element of the pedestrian network, as they help to demarcate the pedestrian zone as it traverses the roadway, creating visual reminders to both motorists and pedestrians of the appropriate place for pedestrians to cross the road. While every intersection is a legal crosswalk, heavy traffic volumes along collector and arterial roadways and significant pedestrian volumes near schools, commercial centers, and other trip destinations may require the use of signage and crosswalk striping to improve pedestrian safety.

Striped or color-enhanced crossings provide traffic-calming benefits and greatly facilitate pedestrian crossings at busier locations. In a number of places in the downtown core, these marked crosswalks are combined with curb bulb-outs, which extend the sidewalk further into the street at intersections and create shorter crossing distances for pedestrians. They are visible signs of the City's continued commitment to creating an atmosphere in downtown Union that welcomes and encourages pedestrian activity. When combined with human scale street lighting, street furniture like public benches, and attractive public spaces like Courthouse Square, downtown has remained a significant destination for civic functions, commercial activity, and restaurants.

ADA Accessibility. Many existing sidewalks and street crossings lack design features that accommodate persons with disabilities and physical limitations. Inadequate sidewalk width, sidewalk obstructions, a lack of curb ramps, and large street crossing distances can impede pedestrian mobility. As new pedestrian facilities are developed, they should be designed and constructed in accordance with the guidelines set forth in the *ADA Accessibility Guidelines for Buildings and Facilities*. The guidelines ensure that people of all ages and abilities are well served by new sidewalks and have full access to public and private destinations throughout the community.



3. Rail Lines

The Missouri Central Railroad, currently owned by Ameren UE, extends through the middle of the City as it traverses Franklin County a distance of 46 miles. The corridor, formerly operated by the Rock Island Railroad Company and later by Union Pacific, extends for 246 miles from St. Louis to Pleasant Hill, roughly 35 miles southeast of Kansas City. The corridor enters northeastern Franklin County near St. Albans and exits to Gasconade County near Gerald. The 23-mile segment east of Union to the St. Louis County line is currently active, while the western portion between Union and the Gasconade County line is inactive. Efforts had been underway to reestablish an active rail line to provide rail service to this area, but apparently have not succeeded. Approximately 3.5 miles of this corridor lies within the City's existing municipal boundary where there is a very large concentration of municipal parks and other open space, and at least 3 additional miles are roughly parallel to the City Limit extending towards I-44. The entire 46-mile long corridor represents a potentially strong rail-to-trail opportunity. Because of its overall length and the fact that Union would be an "anchor" community, a trail here could stimulate considerable tourism-oriented economic development (see Figure 18.)

Across the United States, many railroad corridors are utilized as recreational trails either through reclamation following deactivation ("rail-banking"), or where an active corridor has sufficient width to safely allow for a joint rail-with-trail operation. The Missouri Department of Natural Resources (MoDNR) is one of only a few state-level jurisdictions in the country to have acquired and developed a long-distance rail corridor through rail banking. Its Katy Trail has been a heavily used amenity that is annually visited by a wide variety of users including tourists from other countries. The federal rail banking process enables de-activated rail corridors to be converted to recreational trail use. At least a portion of – if not the entire - corridor in Union would be a good candidate for such a project.



Image 13. The Missouri Central Railroad looking west from North Washington Avenue.



Image 14. A view of the Missouri Central Railroad crossing the Bourbeuse River before entering the City of Union.



Image 15. Union City Park offers a variety of recreational opportunities for area residents.



Image 16. A couple walking their dog on the popular East Central College Fitness Trail.

4. Public Facilities and Institutions

As one of the principal cities of Franklin County as well as its official Seat, Union provides a wide range public facilities and institutions to support citizens and visitors. Among these assets are the old downtown area containing City Hall, the municipal auditorium, the Franklin County Government Building, the Franklin County Court House, the Franklin County Judicial Center, and a variety of other public and quasi public buildings. Significantly, the city's public infrastructure is also complemented by a considerable amount of public open space including parks, recreational trails, playing fields, a swimming pool, and a lake.

Education facilities include the Union R-XI Public School District, which is composed of three elementary schools, one middle school, and one high school. Enrollment from grades K-12 in the Union R-XI School District is approximately 3,000. In addition to the public school system, there is one private K-8 school, Immaculate Conception School, which has an enrollment of approximately 325 students. East Central Community College, a two-year college located within the City of Union, serves roughly 3,500 students each semester. The recently constructed 1.2-mile Fitness Trail at East Central College has become a major recreational asset for the City, and particularly for residents in Ward 4.

Union also has many churches serving a diverse population. The existence of these facilities and institutions reveal a concentration of destinations suggesting that the prospects to encourage higher levels of bicycling and walking could be strong.



5. Natural Features

Union has an excellent inventory of natural features within a very scenic setting, that includes rolling to hilly terrain, the Bourbeuse River, a major lake, and numerous parks. The city and its surroundings are also enhanced by a significant vegetative buffer. This inventory provides an appealing setting for an emergent bicycle and pedestrian system. (Figure 21.)

While steeper hills and bodies of water may create some challenges for bicycle and pedestrian mobility, particularly for those with physical limitations, they also provide many advantages upon which the City may capitalize during the development of bicycle and pedestrian improvements. Scenic vistas, riparian corridors and greenways, and the beauty of the City's natural features can add value to new facilities and create a more pleasing user experience for pedestrians and cyclists.

Many of the existing bodies of water in the City of Union have already been incorporated into the parks system. The Bourbeuse River, City Lake and Flat Creek all provide added value to the surrounding parks and recreation areas. These bodies of water, particularly the Bourbeuse River and Flat Creek, provide attractive corridors for the development of multi-purpose trails that serve both recreation and transportation needs. An added benefit of the development of such trails along rivers and creeks is the relative lack of slope, which imparts the opportunity for flat trails that offer walking and cycling opportunities for people of all abilities.



Image 17. Union's rolling hills provide unique challenges and opportunities for the bicycle and pedestrian network.



Image 18. A view of the Bourbeuse River looking eastward toward the Highway 50 Bridge from the MDC's Union Access area.



Image 19. Retail, office, and other commercial uses dominate the auto-oriented land uses along Highway 50.



Image 20. Office, retail and restaurant storefronts abut local and county governmental land uses in Union's downtown core.

6. Existing Land Use

The City has a wide variety of land uses controlled within the framework of a zoning ordinance that has been in effect for many years. The older portion of the city developed around the town square which continues to have a variety of retail, professional services, and other commercial uses, and the railroad corridor. The central city is surrounded by residential neighborhoods. The residential neighborhoods to the south are located close to the Highway 50 corridor which provides a wider variety of retail-commercial establishments.

Additional growth and development has occurred in the Fourth Ward, east of the Bourbeuse River along Highway 50 towards Interstate 44. Residential subdivisions like St. Andrew's Place and commercial development along Denmark Road have distributed services and residences further across the City, creating longer distances between many trip origins and destinations.

The City benefits from two industrial park developments on the west side which comprise a significant part of the city's economic fabric. As referenced in the previous section, a considerable amount of land in the City also consists of open space.

Planning Union's bikeable walkable system should take into consideration the relationship between the places where people live and their daytime destinations - commercial areas, industrial areas, institutions and public facilities. The neighborhoods could easily be linked to these destinations through an on-street bicycle-pedestrian system complemented with some linear trails. In this regard, significant trail opportunities could exist with the Missouri Central Railroad and the Bourbeuse River corridors. These and related opportunities will be further examined in the plan chapter.



7. Previous or Pending Plans

While the City of Union has not previously developed a plan to specifically address bicycle and pedestrian needs, there are two plans that may have some bearing on the development of bicycle and pedestrian facilities and programs.

Franklin County Bikeable Walkable Communities Plan. In May of 2011, Franklin County completed a county-wide plan with a number of recommendations that would effect walking and cycling in the City of Union. Recommendations in the plan include the development of bicycle routes on Highway 47 and Highway 50, utilizing existing shoulders and expanding shoulders where feasible to create regional connections. These shoulders would also provide adequate space for pedestrian travel as well. The City of Union is in a position to plan a complementary effort that will have greater impact in the form of a larger system affording greater opportunities for non-motorized transportation.

City of Union Comprehensive Plan. In April 2011, the City adopted a new Comprehensive Plan, providing the framework for community-driven growth and development for the coming years. In this Comprehensive Plan are a number of goals and objectives that relate to cycling and walking for both transportation and recreation purposes. Walking and bicycling infrastructure, traffic calming, streetscape improvements, quality public spaces, and recreational programs are seen as strategic paths through which the City can realize health, recreation, transportation, economic development, and quality of life benefits. The following excerpts from the Comprehensive Plan expound on these themes:

Downtown Revitalization

- Create an ongoing partnership between the City, Chamber and other civic groups with an interest in the downtown to work towards a unified effort to enhance the Downtown experience. These groups should work

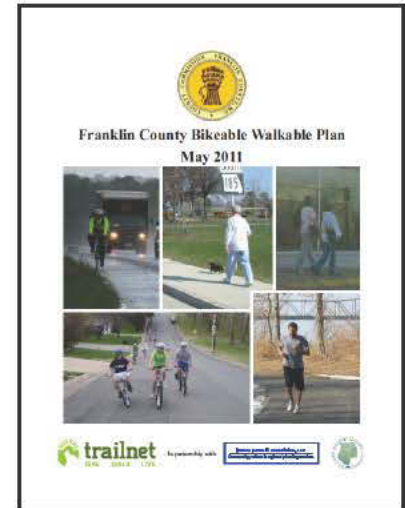


Image 21. Franklin County Bikeable Walkable Communities Plan, May 2011.

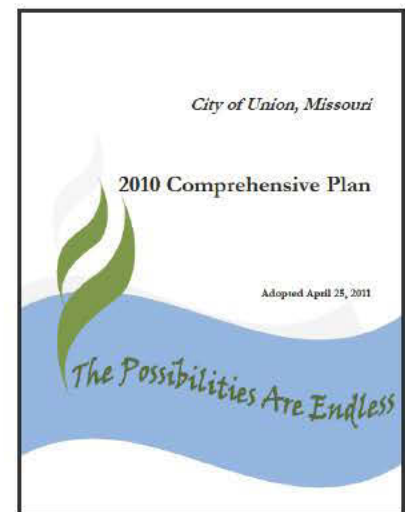


Image 22. Union 2010 Comprehensive Plan, April 2011.



together in promoting special events, sponsoring façade and streetscape improvements and acting as a catalyst in forming partnerships that fuse together cultural, professional and residential interests.

- Encourage the use of street furniture such as benches, waste containers, fountains, public art, information kiosks and seasonal banners to help create a unified visual theme.
- Reinvest in infrastructure improvement such as people gathering spaces, public restrooms and utility upgrades.

Quality of Life

- Preserve the areas open spaces and other resources that characterize Union's small town atmosphere, outdoor recreation opportunities and make Union a great place to live.
- Work towards making Union a "Healthy Community"
- Encourage the establishment of walking groups.
- Install sidewalks to the school and along all roads.
- Make sure kids can safely walk to school.
- Plan for a comprehensive trail system connecting parks, neighborhoods, shopping areas with connections (visual & physical) to the Bourbeuse River.
- Maintain and build upon Union's existing educational, social and recreational successes. Promote and encourage active lifestyles by providing the necessary services and facilities needed to enrich the lives of Union residents and maintain the city's quality of life and healthy lifestyles.
- Install new (or maintain/replace existing) sidewalks throughout town as needed.

Transportation

- Provide sidewalks and paths to connect the City's neighborhoods, schools, downtown and parks/recreational areas for pedestrians and cyclists.
- Incorporate state of the practice design features such as roundabouts, traffic calming and synchronized traffic signals into roadway projects.
- Partner with Federal, State, and County agencies, including



East West Gateway Council of Governments, to obtain maximum funding for identified projects.

- Continue to seek funding and create strategic public/private partnerships to facilitate the construction of new sidewalks or the rehabilitation of old sidewalks.
- Explore opportunities for off-street trail development.
- Provide sidewalks connecting East Central College to the CBD.

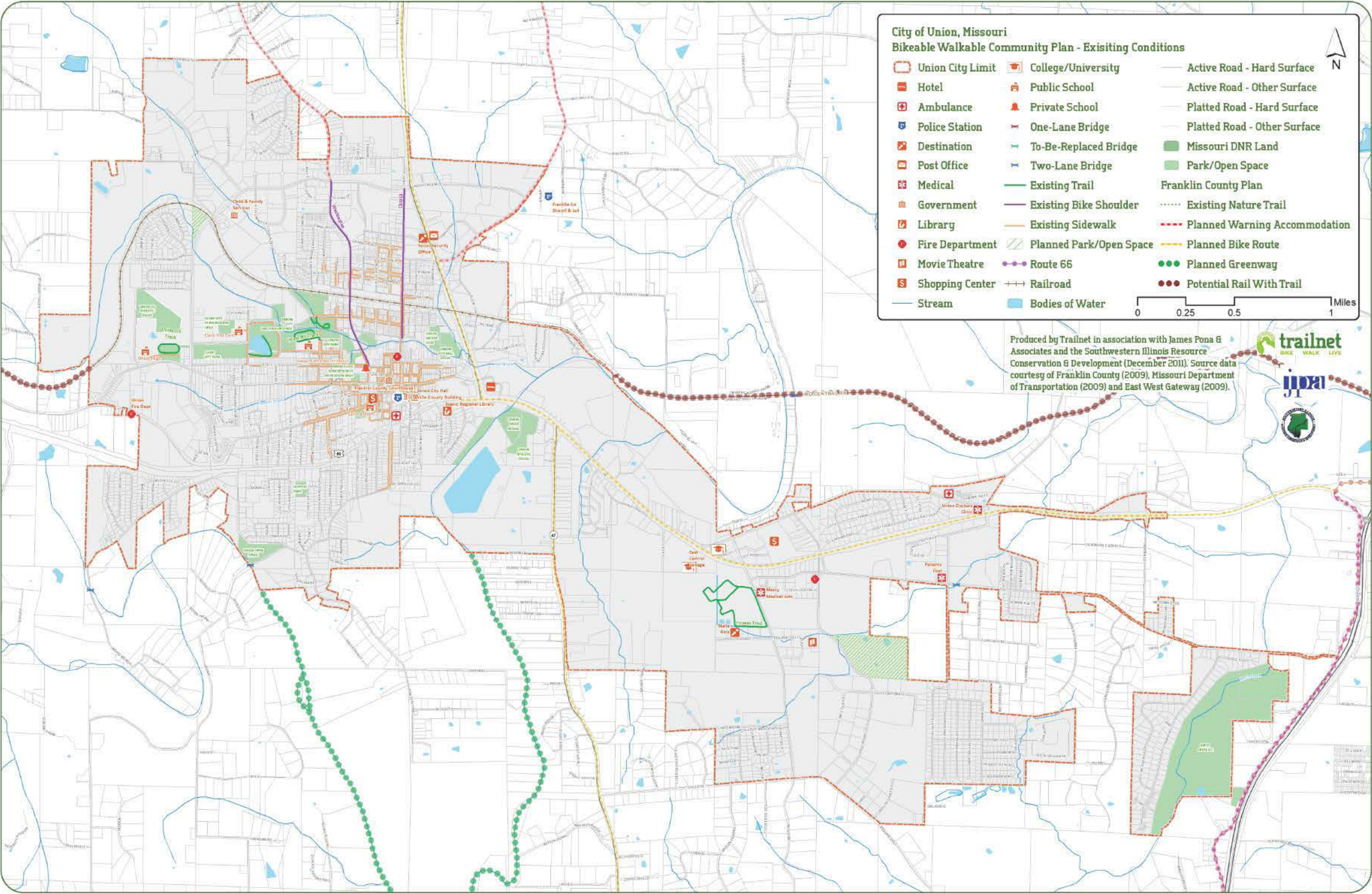
Parks and Public Facilities

- Continue to maintain, enhance and expand the City's parks and recreation system. This should include making improvements as needed to keep pace with the latest trends in park and recreation services, facility market demands, the acquisition of additional park land and the establishment of open spaces and trails as needed to serve the City's resident population.

The Union Bikeable Walkable Community Plan builds on these recommendations in a consistent manner so that, upon completion, it may be adopted and appended to the City of Union Comprehensive Plan.

8. Existing Conditions Map

The physical features and land uses examined in this section of the report have been compiled into an Existing Conditions Map, displayed on the following page. This map displays the street network, existing sidewalks, trails, on-street bicycle facilities, significant destinations, and other physical features that may impact bicycle and pedestrian mobility.





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C. Existing Bicycle Facilities in the Area and Elsewhere

1. Bicycle Facility Types

The addition of bicycle facilities to a community's transportation network can be accomplished in a number of ways. For on-street facilities, there are three basic methods: adding signage and/or pavement markings; reconfiguring the existing roadway to incorporate bicycle facilities; and widening the roadway to create the space necessary for a wide outside lane or a bicycle lane. Shared use paths, on the other hand, may require the acquisition and assembly of land and/or easements and the construction of new facilities.

The following bicycle facility types correspond with the organization of facility types as delineated in the latest *AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities*, currently in draft form and under review for publication. This guide builds on the strengths of AASHTO's *Guide for the Development of Bicycle Facilities* (1999) and incorporates additional planning, design, and operational guidance based on national and regional best practices that have been developed, tested and approved by various agencies throughout the country. Additional design details and considerations can be found in the Federal Highway Administration's *Manual for Uniform Traffic Control Devices* (MUTCD), published in 2009.



Image 23. A typical shared lane on a neighborhood street, with no additional markings or signage. The majority of cycling in Union takes place on neighborhood streets just like this neighborhood street in nearby Washington, MO.

Shared Lanes. Most bicycling activity in Union occurs on shared lanes. Because cyclists are allowed to operate a bicycle on all roadways except where prohibited, such as Interstate Highways in Missouri, shared lanes exist virtually everywhere – neighborhood streets, collectors, arterials, and even suburban and rural highways. While there are no specific design conventions for a shared lane bicycle facility, there are a number of traffic and design features that can improve the bicycling experience, such as good pavement quality, bicycle-



compatible drainage grates and railroad crossings, lower traffic speeds, and lower traffic volumes.

On major roadways, shared lanes can be improved through the incorporation of wide outside or wide curb lanes. With a shared lane width of 13 feet or less, motorists must encroach in the adjacent lane in order to pass a cyclist with a safe and adequate clearing distance of at least three feet. In order to improve safety and reduce the need for motorist encroachment into the adjacent lane, wide outside or curb lanes should provide a width of 14 feet. Lane widths of 15 feet or greater may be used on roadway sections where on-street parking, drainage grates, or other impediments reduce the usable lane width, but a continuous width of 15 feet or greater may encourage two motor vehicles to operate side-by-side in the same lane and should thus be avoided.

Shared lane bicycle facilities are often accompanied by signage to improve motorist awareness of the potential for cyclists on the roadway. The most common signage used on a shared lane bicycle facility is the "Share the Road" sign assembly, as shown on the right. In 2009, the Federal Highway Administration approved the use of the "Bicycles May Use Full Lane" sign, which are particularly useful on shared lanes in which the lane width is too narrow for cyclists and motorists to operate side-by-side. In communities that experience a considerable amount of wrong-way bicycle riding (cyclists riding against traffic rather than with traffic), the combination of a "Wrong Way" sign with a "Ride With Traffic" sign can be mounted back-to-back to existing roadway signs to alert cyclists of their proper positioning within the roadway. It is important to note that the current draft of the *AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities* states that signage "is not a substitute for appropriate geometric design measures that are needed to accommodate bicyclists."



Image 24. Example of a wide outside lane that provides adequate space for cyclists and motor vehicle users to operate side-by-side. (Source: bicyclinginfo.org)



Image 25. Typical "Share The Road" signage assembly used to improve motorist awareness of cyclists. (Source: MUTCD)



Image 26. "Bikes May Use Full Lane" sign. (Source: MUTCD)

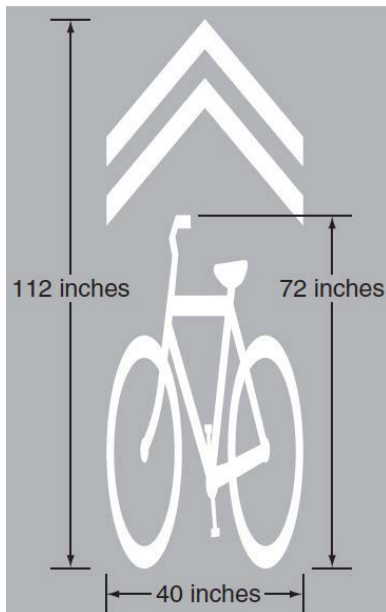


Image 27. Standard Shared Lane Marking. (Source: MUTCD)



Image 28. Cyclist riding on the paved shoulder on Highway 47 just south of Highway 50.

Marked Shared Lanes. For shared lane situations that may require a greater degree of guidance for motorists and/or cyclists, the addition of a pavement marking can be very beneficial. These shared lane markings are particularly for marking the lateral position of the cyclist within the roadway, for reducing wrong-way riding, for reducing instances of dooring crashes (crashes in which cyclists riding close to a parked motor vehicle collide with an opening/opened car door), and for increasing the visibility of the City's efforts to support and encourage cycling as a viable means of transportation. Scenarios in which marked shared lanes are most applicable can be found on page 60 of the current draft of the *Guide for the Planning, Design, and Operation of Bicycle Facilities*.

Paved Shoulders. Paved shoulders provide multiple transportation benefits: they provide for emergency parking and storage of disabled vehicles; they reduce edge deterioration and extend the service life of the roadway; they support pedestrian movement when no sidewalk is available; and they provide an adequate space for cyclists as well. Most often used as bicycle facilities in rural communities, paved shoulders can be particularly effective in connecting rural communities and providing safe operating space along rural highways with high vehicle speeds. A number of design consideration should be taken into account when designing or designated a paved shoulder as a bicycle facility, including intersection treatments, rumble strips, raised pavement markers, and bypass lanes.

Bicycle Lanes. Bicycle lanes are portions of the roadway designated for preferential use by bicyclists. Bicycle lanes are one-way facilities that typically carry cyclists in the same direction as motor vehicles and appear between the outside travel lane and the parking lane, the curb or the edge of the roadway. These facilities appear most often on roadways with heavier traffic volume and higher traffic speeds, therefore allowing cyclists to operate at their preferred speed while still operating in a safe, consistent and predictable manner. While bicycle lanes do provide additional separation between

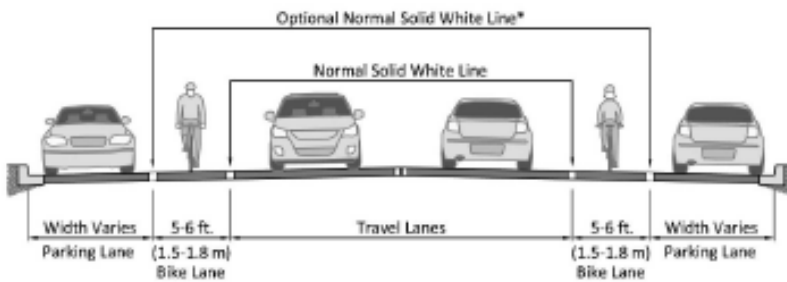


Image 29. Typical cross-section of a bike lane facility with on-street parking. (Source: AASHTO)

motor vehicles and cyclists, and may appeal to a more diverse population, they should not diminish the importance of proper on-road cyclist skills, training and practice necessary to operate a bicycle on a public roadway with motorized vehicles.

Bicycle lanes are characterized by a 6 inch solid white line between the bicycle lane and the travel lane, a 4 inch solid white line between the bicycle lane and the parking lane, if parking is present, bicycle lane pavement markings to indicate the preferential use by bicyclists, and supplementary (but not necessary) bicycle lane signage. Because there are a number of geometric and context-sensitive features to be evaluated in the design of a bicycle lane facility, it is important to reference both the *Guide for the Planning, Design, and Operation of Bicycle Facilities* and the MUTCD for standards and guidance.

Shared Use Path. A shared use path, sometimes referred to as a multi-purpose trail, is a paved path for non-motorized users (bicyclists, pedestrians, wheelchair users, in-line skaters, skateboards, recumbent bicyclists, joggers, etc.) that is separated from motor vehicle traffic either by open space or physical barrier. Shared use paths can be constructed either within the roadway right-of-way or within a separate right-of-way. Typical widths for a two-way shared use path range from 10 feet to 14 feet or greater, depending on expected usage.

Shared use paths can provide a variety of functions, and it is this versatility that makes them such an integral component of the bicycle transportation network and a valued community



Image 30. Cyclist operating in a bike lane in St. Louis County.



Image 31. Walkers and cyclists enjoying the Rotary Riverfront Trail, a three mile shared use path in Washington, MO.



Image 32. A family using the East Central College Fitness Trail, a popular shared use path in Union's 4th Ward.



D11-1



D1-1

Image 33. "D Series" bike route sign and destination plaque. (Source: MUTCD)

asset. Shared use paths can provide a shortcut within or to a residential neighborhood, can improve a commuting or utilitarian route by linking residential neighborhoods with commercial areas and job centers, can provide bicycle and pedestrian access to areas served only by limited access highways, and can provide recreational opportunities when located in a park, along a river or creek, next to a highway or freeway, along active or inactive rail corridors, within a utility corridor, and within college campuses.

Bicycle Wayfinding and Routing. A comprehensive system of wayfinding signage should be layered over the network of bicycle facilities in order to provide users with directional guidance to key community destinations. A wayfinding system should balance the need to access these important destinations with the need for good bicycling conditions. While options vary with regard to the type and design of wayfinding signage, the most commonly applied wayfinding signage is the "D Series", the standard green "Bike Route" signs, which are used in the nearby City of Washington to great effect. These signs can be coupled with destination plaques that provide additional information, including distances to particular destinations. Also available for use is the "M1-8 Series", which are smaller route signs based on a numbered route system. Because less information is provided on these signs, their use is generally accompanied by a map to provide additional details and information. Because of this particular limitation, the "M1-8 Series" is more commonly used for longer bicycle routes and regional or county-wide networks, rather than local urban or suburban networks. The "D Series" is the most appropriate wayfinding solution for the scale and context of the City of Union.



2. Linear Bicycle Facilities in Union

Union has already developed on-street bikeways on North Washington Street and Church Street, totaling roughly 1.76 miles. These facilities are a combination of paved shoulders and shared parking/bicycle lanes, the latter of which has not been approved by AASHTO or the Federal Highway Administration. No linear shared use paths on separate rights-of-way have been developed, aside from the short segment in Union City Park.

3. Other Bicycle Facilities on the Missouri Side of the St. Louis Region

Major bicycle facilities located relatively close to Union include the Katy Trail, Route 66 State Park, and the Chesterfield-Monarch Levee Trail, which will become an anchor for the Missouri River Greenway under development by The Great Rivers Greenway District. The Katy Trail (pictured) extends through St. Charles and other counties primarily along the north bank of the Missouri River. This 230-mile long facility has become one of DNR's more heavily-used parks as well as a major tourism asset for the State of Missouri.

Route 66 State Park was developed on the site of the former City of Times Beach, a remediated Superfund site. This unusual facility has a shared use path network consisting of a separate shared use path that is integrated with the city's old street system. There is also a connection to the City of Eureka south of I-44 by way of an underpass.

Other significant facilities in adjoining and nearby Missouri counties include the Riverfront Trail (11 miles); the Old Chain of Rocks Bridge (1 mile); Grant's Trail (8 miles); the Creve Coeur Lake Park Trail (3 miles); and the Page Connector bike facility (2 miles), linking the Katy Trail with a large recreational trail system in Creve Coeur Park. Excluding portions of the Katy Trail which are not located in St. Charles County, the area's major existing



Image 34. A view of the shared parking/bicycle lanes on N. Washington Street.



Image 35. Katy Trail State Park, the longest rail-to-trail project in the United States. (Source: flickr.com/mostateparks)



Image 36. Cyclists enjoying a leisurely ride at Route 66 State Park. (Source: flickr.com/mostateparks)

bicycle facilities total approximately 55 miles and include two important connections to an extensive trail system in Illinois.

Many Missouri and Illinois shared use paths have been underwritten over the past fifteen years by the federal Safe, Accountable, Flexible, Efficient Transportation Act - A Legacy for Users (SAFETEA-LU) and its predecessors. After multiple reauthorizations, new legislation is being drafted to replace this transportation funding act.

The trail boom in the St. Louis Region is the result of a combination of factors in addition to the readily available funding. Among these factors is their strong and growing popularity with local residents and tourists alike. Because of this popularity, positive economic impacts have resulted. The Katy Trail itself (formerly called the Missouri River State Trail) is a case in point. The American Hiking Society reported the results of a study which found that, "After just one season, 61 businesses located along the (Trail) reported that (it) was having a positive effect on their businesses. Eleven of the businesses reported that the Trail had strongly influenced their decision to establish the business, and 17 (28%) had increased the size of their investment since the Trail had opened."³

The Missouri Department of Natural Resources (MoDNR), which manages the trail, reported the following impacts in 2004:

- 300,000 annual users
- 300 trail-oriented businesses
- Visitation from 50 states and 20 foreign countries
- The "typical" repeat visitor is in the mid-40's with one or more college degrees and income of \$75,000 or greater
- Average expenditures: \$230.16
- Trail visitors also liked to visit nearby historic/interpretive sites, shopping destinations, wineries⁴

³ Barthlow, Kelly, Moore, Roger, *The Economic Impacts and Uses of Long-Distance Trails*, The National Park Service, 1998, p 49.

⁴ Information generated in 2004 by Wallace Keck, reported by Brent Hugh, Missouri Bicycle Federation.



4. Selected Facilities in Other Parts of the Country

In order to gain further insight into the scope and impact of trails on local communities, this section briefly examines selected bicycle facilities in other parts of the country, with a focus on longer facilities as well as on their economic impact.

The State of Ohio's Buckeye Trail system is 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 of the trail elements is the Loveland-to-Morrow segment of the Little Miami Scenic Trail, which joins towns of the same name. Approximately 11 miles in length, this trail is heavily used by both residents and tourists, and is now an important regional and local economic asset. The facility – built on an old rail corridor - was developed with state resources and extensive support from both communities. A portion of Loveland's old downtown commercial district is located on the trail, and contains a number of prospering businesses, including the ice cream shop that cater to trail users.

The Monon Trail in Indianapolis is one of many popular trails across the country. 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.⁵

Considerable additional information exists on the positive economic benefits of trails, as briefly summarized below:

⁵ Man, Joyce; Ottensmann, John; Lindsey, Greg; and Payton, Seth: *Public Choices and Property Values: Evidence from Greenways in Indianapolis*, Indiana University, Center for Urban Policy and the Environment, January 2003, p 9.



Image 37. The Buckeye Trail logo. (Source: buckeyetrail.org)



Image 38. Trail users stop at a trail-side cafe along the Monon Trail. (Source: traillink.com)



Image 39. A cyclist rides beneath the tree canopy on the Tallahassee-St. Marks Trail. (Source: bystevecarr.blogspot.com)

- A 1992 study of the Oil Creek Bike Trail by Pennsylvania State University revealed that average visitor spending was \$25.85 per day.⁶
- As of 1992, approximately 170,000 individuals visited the Tallahassee-St. Marks Trail in Florida every year, with daily expenditures averaging \$11.00.⁷
- 135,000 people visit the Heritage Trail in Iowa, and spend an average of \$9.21.⁸
- “Nationally, trail-related expenditures range from less than \$1 per day to more than \$75 per day, depending on mileage covered. Generally, it’s been found a [longer] trail can bring at least one million dollars annually to a community, depending on how well the town embraces the trail....”⁹

The relationship between trails, recreational tourism and economic development has been demonstrated in many examples. The data show that adventure and eco tourism-based “industries” are possible for communities that develop longer trail systems where there are also numerous attractions and a coordinated marketing strategy. The trails discussed above are strong examples of this trail-economics relationship.

This section has documented that communities elsewhere have benefitted substantially from longer trail facilities that connect to commercial-retail areas. A similar outcome is possible in Union, were a long distance trail to be developed along the Missouri Central Railroad alignment and given the fact the City is the dominant municipal jurisdiction along the corridor.

⁶ *The Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities*, Technical Brief, National Bicycle and Pedestrian Clearinghouse, No. 2, 1995.

⁷ *Ibid.*

⁸ *Ibid.*

⁹ Sjoquist, Gary. “The Economic and Social Benefits of Trails.” National Trails Training Partnership, February, 2003. Accessed April 1, 2011. <http://www.americantrails.org/resources/economics/MNecon.html>



D. Existing Bicycle and Pedestrian Activity and Projected Facility Needs

1. An Estimate of Existing Bicycle and Pedestrian Activity

The estimation of existing and projected bicycle and pedestrian activity is an important element in the formulation of a workable bicycle and pedestrian transportation system for Union. Historical statistical data on existing bicycle usage in Union is unavailable. However, experiences from numerous projects across the country have shown that, when bicycle and pedestrian facilities are developed to connect residential areas with desirable destinations and activity generators, they are well used. For example, the Rotary Riverfront Trail and its nine-mile long on-street bikeway system in the neighboring City of Washington, is a heavily-used facility. Similarly, the Katy trail receives heavy usage from both residents as well as visitors to the City.

Notwithstanding anecdotal information from other cities, an assessment of existing bicycle usage in the City of Union is warranted. Several methods exist to enable the development of a reasonable estimate of bicycle activity in different categories of usage, and this section examines the issue.

Participation in Activities Likely to be Undertaken on a Trail or Greenway. The Metro East (Illinois) Park and Recreation District (MEPRD) completed its Long Range Development Plan in 2003. (MEPRD is comparable in mission and purpose to The Great Rivers Greenway District which develops trail systems within the City of St. Louis, St. Louis County, and St. Charles County on the Missouri side.) Through a detailed and statistically valid survey, the MEPRD study 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. For example, the results indicated that 65% of the households walked or jogged regularly; 47% regularly visited



nature areas; 27% regularly engaged in bicycling and/or BMX activities; 20% hiked regularly; and 16% regularly ran.¹⁰

From MEPRD's multi-county household survey data and taking the percentages of usage obtained from that study, it is possible to generate reasonable estimates of probable regular participation by Union households in activities likely to be undertaken on a trail/greenway. These estimates are shown in the table below, using the City's Year 2009 American Community Survey population and household counts of 9,369 and 3,728 respectively, which results in an average household size of 2.51 individuals.

Table 9. Estimated Regular Participation by Union Residents in Activities Likely to be Undertaken on a Trail or Greenway

	MEPRD's Multi-County Percentage of Households who Regularly Participate	Probable Participation Events Compatible With Trail Facilities*
Walking/Jogging	65%	2,423
Visiting Nature Areas	47%	1,752
Bicycling/BMX	27%	1,007
Hiking	20%	746
Running	16%	596
Total Participation Events	n.a.	6,524

**Per household. Based on City population of 9,369 and household size of 2.51 persons in 2009. Total participation exceeds the City household total because of participation in multiple activities and on more than one occasion.*

¹⁰ Long Range Development Plan, April 2003. Metro East Park & Recreation District (MEPRD). Page 50.



The MEPRD survey also measured the leisure activities in which the respondent households participated most often. Of the activities that are very likely to be undertaken on a trail or a greenway, respondents participated most often in the following (in descending order):

- Walking/jogging
- Bicycling/BMX
- Visiting nature areas

If it were assumed that residents of Union participated most often in the same activities and that a city resident would participate in such events about six times per year, then this means that 864 Union residents regularly participate in events likely to be undertaken on a trail or greenway. (This value was obtained by summing the three trail-compatible participation events – 5,182 - and dividing by 6 frequencies to arrive at the estimate.) The estimate is believed to be conservative.

It is probable that many of these residents are undertaking trail-related leisure activities primarily on the Rotary Riverfront Trail or the Katy Trail, due to the proximity of these facilities. It is not unreasonable to assume that this represents a base “market” of trail users for a longer trail in Union. This figure therefore represents a potential beginning point from which to define a user base for the trail portion of a bicycle-pedestrian system.

Elementary and Secondary School Children Likely to Use Bicycles on Streets and Sidewalks for Transportation and/or Recreational Activity. Based on field observations at area schools, there is presently some school-related bicycle usage. An estimate of this usage can be made based on the existing population of elementary and secondary school-age children in Union and by making assumptions of 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. Children in this age grouping are most likely to consider the bicycle as a practical transportation option for trips to school or other local destinations. Children in this cohort are often considered by their parents to be old-enough to ride bicycles without supervision. The 10-14 grouping is readily measurable in the 2005-2009 American Community Survey.

The 2000 Census reported 587 children in the 10-14 year old age category who reside in Union. For purposes of this study, it will be assumed that in 2000, 20% of the age cohorts – approximately 117 children – either occasionally rode bicycles to school or used them for other local transportation trips such as going to a friend's house, shopping, or for other practical trips. This percentage is believed to be conservative. Because the census data is more than nine years old, Union's 2005-2009 American Community Survey can be used to update the estimate. This survey reported that the 10-14 year-old age cohort was 535 children. Therefore, is not unrealistic to estimate that 20% of these children, approximately 107 individuals, occasionally rode bicycles to school or used them for other local transportation trips such as going to a friend's house, shopping, or for other practical trips.

Older children are also a part of the bicycling picture in Union. However, while 15 and 16 year olds may ride bicycles, it is probable that their riding activity begins to wain as they approach the driving age. There were approximately 228 15-16 year olds residing in the city in 2000. Among this cohort and because the study team believes they ride bikes substantially less than their younger counterparts, it will be assumed that 10%, or about 39 individuals, occasionally ride bicycles either to school or for other practical transportation purposes. To update the population using the American Community Survey, this cohort is changed slightly to include children ages 15 to 17 and is comprised of 359 children in 2009, and that 10%,



or about 36 individuals rode bicycles for the above-stated purposes.

Among young persons in the 17-21 age range, it will be assumed that only 5% do – or would - ride bicycles because of the reasons discussed above. There were approximately 539 Union residents in this age grouping in the 2000 U.S. Census. Therefore it is estimated that approximately 27 individuals bicycled to school or other practical destinations at least occasionally at that time. Looking at the 2005-2009 American Community Survey data, the closest cohort can be arranged to form a 18-21 age range. This cohort has 322 individuals are in this age grouping, and that 5%, or 16 individuals, rode bicycles to school or to other practical destinations at least some of the time.

Likely Existing Adult Bicycle Usage on the Road System. There is no quantifiable local data on adult bicycle usage. While there may be some overlap between the MEPRD data that estimates adults who presently ride bicycles on existing area trails as well as on city streets, it is believed that these are not widely overlapping groups. This is because observations in the Metro East area and in the wider St. Louis region show that the majority of adults who ride bicycles on trails are doing so as part of a recreational, social, or exercise experience. Conversely, it is observed that those who ride bikes on the street system tend to do so as individuals either for exercise, practical transportation purposes, environmental reasons, or combinations of these. As more designated on-street bicycle facilities are developed and interconnected with trails and work destinations, it is probable that the “typical” trail bicyclist may include the commuter. But until such a system becomes a reality it is probable that the typical trail bicyclist will continue to be the individual who is there for recreational, social, or health-related purposes.

Absent hard and quantifiable data on adult on-street bicycle usage, this section will estimate likely levels of activity by



looking at the components of adult bicycle usage in general. Three major categories of bicycle usage will be examined: Commuting to work; other practical transportation trips; and recreation or health-related reasons.

The 2005-2009 American Community Survey reported no Union residents riding a bicycle to work, and new Census data on this subject will be unavailable until 2010 Census data is made available at the city level. The absence of bicycle usage is not unusual for cities such as Union because bicycle commuting is affected by a number of factors that are now only beginning to be addressed even in larger urbanized areas. These factors include: Ready availability of a practical infrastructure for commuting, the presence of a job market within reach of a non-motorized commute, local attitudes toward using bicycles for practical transportation, the development of programs to educate and encourage bicycle users; and others.

The absence of bicycle commuters in 2009 notwithstanding, the “Means of Transportation...” and “Travel Time to Work” tables from the 2005-2009 American Community Survey, coupled with information from the field of bicycle facility planning, can be used to gain an understanding of the likelihood that Union residents would use bicycles as a means of commuting to work, and assuming that the previously-identified factors were to be addressed. In the field of bicycle facility planning, bicycle commute times of up to 45 minutes is considered to be near the outer limit of a practical commute time, with a commute time of up to 30 minutes considered to be more common. In Union, the Year 2000 Census data for residents of the City whose auto-commute to work was less than 30 minutes was consulted. For this analysis, it will be conservatively assumed that the average speed of an auto commute to work is 35 miles per hour. Based on this assumption and using the 2005-2009 American Community Survey data at Table, 2,470 Union residents (roughly sixty percent of the City’s employed population) had a car-commute of less than 30 minutes. This represents a base population



within 18 miles of the employment destination – well within range of a 45-minute bicycle commute to work. Another approach is to apply the nationwide bicycle commuter percentage (for all people in the work force) of 0.7%¹¹ and conservatively adjusting it downward to 0.5%. Using this benchmark, it is possible that 12 people in Union’s post-2009 workforce could be using bicycles for at least some of their commutes to work. This estimate could still be low given economic conditions over the past three years and the proximity of a large concentration of jobs within easy bicycling range.

Commuting to work represents only a small portion of potential adult bicycle trips. As with the analysis of school-age children in the previous section, other kinds of practical adult trips must also be considered, such as to a local store, to a nearby institution such as a library or a public office, or to a park or other recreation facility. To gain a more comprehensive insight on the possible level of this type of usage on the road system of Union, a brief review of national travel mode and trip purpose data is useful.

Transportation planners measure travel activity in terms of five transportation modes, in order of prominence: car, public transit, walking, bicycle, and ‘other’. In 1997, the percentage of Americans who regularly rode a bicycle as a travel mode was 1%.¹² “Travel” refers to any trip purpose including shopping, errands, recreation, and getting to work.

In another study of eight cities known to have high bicycle usage rates (Chicago, Los Angeles, San Francisco, New York, Phoenix, Boston, Sacramento, & Seattle), from 0.3% to 1.4% of the population rode bicycles to work in the year 2000.¹³ Although the data spans several years, they are still believed to be useful in gaining an insight into probable on-street bicycle activity in and near Union.

¹¹ *US Census transportation-to-work data, 2001.*

¹² *John Pucher, Transportation Quarterly, 98-1.*

¹³ *PLACEHOLDER FOR NEW CITATION*



Accordingly, and given the fact that Union comprises a relatively small urbanized area compared to the cities above, the bicycle mode percentages reported above will be more conservatively standardized to 0.2% in order to develop a baseline from which to measure the total adult on-street bicycle usage that could presently exist for any trip purpose. Using the city's estimated Year 2009 adult population of 9,369 persons, then, it is possible that about 19 adults are presently riding bikes on the City's street network.

Summary of Existing Usage. Current estimated existing bicycle usage, as well as other activities undertaken on trails and greenways and on streets within the City, is summarized in Table 10 below.

Table 10: Summary of Estimated Existing Participation By Union Residents of Activities Likely to Be Undertaken on Trails, Greenways, and On-Street Bikeways

Activity	Events*	Number of Persons
People Engaging in Activities Likely to be Undertaken on Area Trails and Greenways (Walking/jogging, visiting natural areas, bicycling/bmx activities)	5,182	864
Elementary/Secondary School Children (10-14) Regularly Riding Bicycles on Streets/Sidewalks	n.a.	107
Older School Children (15-17) regularly Riding Bicycles on City Streets/Sidewalks	n.a.	36
Older adolescents and young residents (18-21)	n.a.	16
Adults Regularly Riding Bicycles on City Streets/Sidewalks	n.a.	19
Total Estimated Existing Participation	n.a.	1,042

** Probable number of times that Union residents engage in activities likely to be undertaken on trails and greenways, based on MEPRD's multi-county survey. This estimate reflects the assumptions a) that Union residents would engage in events likely to be undertaken on a trail/greenway at the same rate as the residents of MEPRD's service area; and b) that they would engage in such activities at least 6 times per year. (Refer to text for more information.)*



In summary, these estimates were developed based on Union's 2009 estimated population. While they may seem modest compared to the number of individuals who drive cars or use public transit, they nevertheless identify a probable user group for a shared use trail system. Additionally, it is significant to note that this user base has evolved with few infrastructure improvements that would encourage such usage, and with virtually no programming activity in the form of education, encouragement, or law enforcement. Thus the potential is great for the number of users to grow significantly with the addition of adequate infrastructure and programming.

Special Bicycle Enthusiast Activities. The development of an infrastructure of bikeways, coupled with the programming activities referred to above could result in the formation and growth of a local organized cycling community, and could also draw users from elsewhere as a cycling destination. The potential would be particularly great were a long segment of the Missouri Central Railroad rail corridor to be developed into a rail-to-trail or a rail-with-trail facility.

There is also a strong probability that new bikeway facilities will attract higher usage by more Union residents, who would be attracted to a significant bikeway infrastructure. Elsewhere, increased usage beyond original projections has been reported after trails have been developed. In one study conducted by the Humphrey Institute at the University of Minnesota for the Minnesota Department of Transportation, it was found that community bicycle usage increased when a practical bikeway transportation system was developed.¹⁴

Pedestrian Activity On-Near the Public Right-of-Way. This section examines existing pedestrian activity within Union's public right-of-way.

¹⁴ Barnes, Gary and Krizek, Kevin. *Tools for Predicting the Usage and Benefits of Urban Bicycle Network Improvements*. Minnesota Department of Transportation, 2005. Accessed April 1, 2011. <http://purl.umn.edu/1000>



Image 40. Pedestrian walking on the shoulder of N. Washington Street.



Image 41. Pedestrians walking along the shoulder of Highway 50 just east of Highway 47.

Union has a fairly well-developed sidewalk system in the downtown area and in the older neighborhoods radiating outward from this center. In new residential developments, the City's current subdivision code requires 4-foot concrete sidewalks along one side of the street. New commercial streets require 4-foot sidewalks on both sides of the street. Some collectors, however, perhaps grandfathered, do not presently accommodate pedestrians on both sides of the street.

Obstacles to pedestrian movement in the form of barriers and continuity also exist at some locations, and the City would benefit from an increased sidewalk maintenance and replacement program. In general, however, pedestrian movement along the City's portion of the system is basically unimpeded at present usage levels. Pedestrian movement along Highway 50 (a MoDOT facility) is hampered due to the lack of adequate facilities.

Surveys to identify and record actual pedestrian usage have not been undertaken, and such studies are relatively rare in the United States. However, an assessment of pedestrian activity can be taken through visual observation and by reviewing national studies on pedestrian travel.

In Union, most of the pedestrian activity occurs on sidewalks or, where they are absent, on streets. The images to the left illustrate some of this activity, and highlight a central goal in transportation - to take the straightest and shortest possible route between a trip origin and its destination.

Nationally, the U.S. Census Bureau reports that 2.5% of Americans walk to work. Union's 2005-2009 American Community Survey data revealed that 83 residents walked to work. This is roughly 2% of the commuting population.

With improved pedestrian linkages between residential areas and nearby job centers, walking to work as a transportation mode could be further increased. In addition to the practical



savings in reduced transportation costs, walkability provides significant health, social, environmental and economic gains, including the following:¹⁵

- Positive Correlation with body mass index and physical activity;
- Opportunities for increased social interaction;
- An increase in the average number of friends and associates where people live;
- Reduced crime with more people walking and watching over neighborhoods, open space and main streets;
- Increased sense of pride, and increased volunteerism.
- Decrease of the automobile footprint in the community
Carbon emissions can be reduced if more people choose to walk rather than drive;
- Economic benefits in terms of transportation cost savings – both to individuals and to the public;
- Economic benefits from improved public health;
- Economic benefits in terms of supporting/facilitating retail development;
- The World Cancer Research Fund and American Institute for Cancer Research released a report that new developments should be designed to encourage walking, on the grounds that walking contributes to a reduction of cancer.

Studies have also shown that pedestrian-friendly environments are more attractive to home buyers and therefore also attract more interest from developers and builders.

15 Frank, et al. "Many pathways from Land Use to Health," JAPA, Winter, 2006, p. 77; Frank, et al. "Linking objectively measured physical activity with objectively measured urban form: Findings from SMARTTRAQ," American Journal of Preventive Medicine, February 2005, pp. 117-25; Lopez, Russel P. and H. Patricia Hynes, "Obesity, physical activity, and the urban environment: public health research needs," Environmental Health: A Global Access Science Source, 2006; Todd Littman, "Economic Value of Walkability," Transportation Research Board of the National Academies, Vol. 1828, 2003.



2. Projected Bicycle and Pedestrian Facilities Needs

Trail Needs. The National Recreation and Park Association (NRPA) publishes standards for a variety of open space-related facilities, including three types of trails: Walking/jogging trails, bicycle paths, and nature trails. Its benchmarks are .5 miles of each type of trail facility per 1000 population. (It does not have standards for a relatively new type of bicycle facility, the ATB/mountain bike trail.)

From a practical perspective, if shared use paths are designed to national standards (including wide asphalt or concrete surfaces with soft mulch or gravel shoulders, longer turn radii, etc), then they would also be more than sufficient for the needs of walkers and joggers, persons with disabilities, roller-bladers, and for a variety of other non-bicycling trail activities as well. Moreover, there has been a major external funding source for the development of facilities designed to shared use path standards, whereas grant opportunities for walking/jogging trails and for nature trails are somewhat limited.

In terms of projected trail needs for Union, two of the three NRPA facility categories should be combined and examined as one facility type: shared use paths that accommodate both bicycles and walking/jogging, as well as other related activities. According to the present NRPA standard of 0.5 miles of each type of shared use path per 1000 population (1.0 miles total), and using the city's Year 2009 population estimate of 9,369, there was a need for roughly 10 miles of shared use paths at that time. A projection of future need out to 2020 has been developed using the city's average growth rate for each decade between 1980 and 2010, as a basis for the calculation. The growth rate for 1980-1990 was 7.3%, whereas the growth rate for the period 1990-2000 was 31.2%. The projected growth rate for the 2000-2010 period is 23.1%. The average rate of growth per decade over this longer period is 20.6%. Using this percentage as a basis, the City's 2020 population is estimated to be 11,511 persons, with a total projected shared use path



need of roughly 11.5 miles.

Specialized Nature Trails and Mountain Bike Trails. In terms of nature trails (the third type of trail defined in the NRPA standards), a trail of approximately one-mile presently exists in Union. Nature trails are narrower paths paved with natural materials such as packed earth, wood chips, or soft gravel and sited in more rustic and environmentally sensitive areas where any activity other than walking would inflict environmental damage. Nature trails are intended primarily for walkers or hikers who desire a more natural experience, and are not suitable for any type of bicycle – road bike or MTB. Using the NRPA standard (.5 miles of nature trail per 1,000 population) and allowing for the existing mileage, therefore, results in a projected need for 5 miles of nature trails.

Mountain, or off-road, bicycling is another segment of the cycling market not addressed above. Mountain bikes (MTBs) are a significant component of the bicycle market. However, most mountain bikes are not substantially ridden on off-road trails. They tend to be ridden on conventional bicycle facilities and on streets. This probably relates to the fact that there is a general shortage of specially-designated trails for MTBs, and this deficiency is reflected in Union as well as the entire region. It is therefore probable that off-road riding would increase if more specialized facilities existed. For this study, .1 mile of MTB trail per 1000 population is assumed to be adequate. A total of 1.1 miles MTB trails in the city is therefore an appropriate goal.



On-Street (Shared Roadway) Bicycle Facility Needs. Per capita mileage benchmarks are not used by planners in the assessment of need for on-street bicycle facilities. The reason is that bicycles have been and are increasingly used as a form of transportation and they require access to typical destinations and therefore to all streets (except where presently prohibited such as on interstate highways).

Many lightly-travelled city streets are currently sufficient for bicycle usage. But in order to establish an interconnected and more functional on-street bikeway system with access to most/all destinations, some streets should receive specific bikeway treatments. This approach is not necessarily cost-prohibitive and will be addressed in the plan chapter.

An on-street bikeway system is intended to be used by a variety of residents including those who use bicycles for commuting to work, for short-distance utilitarian trips (to the store, library, etc.), and for recreation and/or fitness. Many recreational riders enjoy the convenience of starting and ending a ride at their place of residence.

Importantly, an improved on-street bikeway system will also help to make streets safer for school children who already use those streets and, it is believed, for additional children who would use them if they are improved.

Other significant reasons to consider the development of a comprehensive on-street bikeway system include:

- The strategic need for additional transportation options to help shift some trips away from automobile use;
- An opportunity to create more livable (and marketable) communities to help attract younger residents who increasingly want access to close-to-home amenities;
- A natural and healthful means of accessing trails without the need for an intervening motor vehicle trip to get to those facilities.



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

Pedestrian Facility Needs. Because most trips begin and end with walking, pedestrian facility needs are best defined by the degree of completeness of a sidewalk system rather than by actually measuring local walking activity. The city presently requires sidewalks on one side of the street in new residential subdivisions. A modification of zoning and subdivision regulations to require sidewalks on both sides of the street in all new subdivisions – both residential and commercial – would greatly improve future conditions. For upcoming redevelopment or infill projects, the city should consider requiring compliance with the new sidewalk requirements rather than a “grandfathering” of the current condition. The sidewalk system should also be directly connected to any multipurpose trails to be subsequently developed. These requirements will help to establish a new citywide sidewalk system that will meet future needs.



3. Conclusion

This study has analyzed existing conditions in the City of Union as they relate to bicycling and walking. There are needs for more facilities to serve both pedestrian and bicycle modes. There is also a need for improved pedestrian crossings at high-traffic locations.

These needs are substantial and will require a coordinated improvement program to meet increasingly sophisticated demands for both transportation- and recreation-oriented facilities. It is likely that residents will increasingly seek non-motorized transportation options for short-distance trips - a trend that is occurring elsewhere - in response to the volatility of fuel prices, the awareness of climate change, and increased interest in healthier lifestyles. The next chapter will present a specific bicycle and pedestrian facilities plan with implementation elements to address these needs.



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CHAPTER 3.

The Bikeable Walkable Community Plan

This chapter presents a plan to establish an improved system of bicycle and pedestrian facilities in Union. It reflects the information and analysis conducted in the previous chapter, as well as comments and input received from citizens and city officials during several meetings and a public forum held after completion of the analysis chapter. It also incorporates additional field reconnaissance during the present phase of work.

The purpose of this plan is to significantly enhance the transportation, recreation and fitness infrastructure in Union. The plan contains goals and objectives, bicycle and pedestrian facility components, and a detailed implementation strategy.

A. Vision, Goals and Objectives

Based on input from members of the community, a long-term vision and accompanying goals and objectives have been formulated to guide future bicycle and pedestrian improvements in Union. Each objective creates a course of action to help achieve a particular goal, which in turn brings the City closer to the ultimate vision.

Vision. The City of Union will be a community in which residents, employees and visitors of all ages and abilities can safely, comfortably and conveniently travel to destinations in and around the City by bike and foot. In the City of Union, bicycling and walking are:

- Integral components of an interconnected transportation network
- Safe and convenient for people of all ages and abilities
- Routinely accommodated in transportation decisions and infrastructure improvements
- Contributing to personal and community health
- Supported by local government, schools, and the private sector
- Important to residents' quality of life



- Options to reduce vehicle miles traveled, automobile congestion, and greenhouse gas emissions

Goals and Objectives.

Goal One: Develop and maintain safe, interconnected, and accessible bicycle and pedestrian facilities as an integral component of the city's transportation system.

Objective 1.1 Incorporate bicycle and pedestrian considerations into transportation policy, planning, design, construction and maintenance.

Objective 1.2 Utilize existing rights-of-way to provide direct connections to public parks and recreation areas, public and private schools, commercial activity centers, and other significant community destinations.

Objective 1.3 Selectively modify existing streets, when financially feasible, to include bicycle accommodations that are appropriate to the traffic levels and to the type of traffic. Fill gaps in the sidewalk system and ensure compliance with ADA requirements.

Objective 1.4 Work in close partnership with neighboring municipalities, Franklin County Agencies, the Missouri Department of Transportation, the Missouri Department of Conservation, and other state and local agencies during plan implementation and system maintenance.

Objective 1.5 Develop a greenway network utilizing existing parks and conservation areas and through the acquisition of new easements and/or rights-of-way along utility corridors and creeks and rivers.

Objective 1.6 Consider the needs of all cyclist types (advanced, casual and basic) in the planning, development, and maintenance of the bicycle facilities network.



Objective 1.7 Require all new development to provide safe, continuous and convenient pedestrian and bicycle facilities.

Objective 1.8 Require commercial, industrial and institutional development to incorporate bicycle parking facilities.

Objective 1.9 Establish a committee of city staff and other necessary stakeholders to oversee the design, engineering, development, and ongoing operation of the system.

Goal Two: Apply consistent geometry, road markings, and signage standards to bicycle and pedestrian facility design in order to create a safe and continuous network that is easy for residents and visitors alike to navigate.

Objective 2.1 Utilize design guidelines set forth by the American Association of State Highway Transportation Officials (AASHTO), the Federal Highway Administration (FHWA) and the Department of Justice's Americans With Disabilities Act (ADA) Standards for Accessible Design.

Goal Three: Improve regional connectivity for cyclists and pedestrians.

Objective 3.1 Provide linkages between Union's bicycle and pedestrian network and existing and planned facilities in Franklin County.

Objective 3.2 Partner with MoDOT, Franklin County, and other government agencies to enhance existing connections and develop new connections to regional destinations and activity centers.

Goal Four: Develop education, encouragement and enforcement programs and activities to support walking and bicycling as safe, convenient and practical means of transportation.



Objective 4.1 Work with public and private schools to encourage walking and cycling to and from school, to educate children on bicycle and pedestrian safety, and to promote the benefits of walking, bicycling, and active living.

Objective 4.2 Create a community wide map to highlight walking and bicycling routes and connections to destinations in and around the City.

Objective 4.3 Work with the Chamber of Commerce and local businesses to provide an incentive program that encourages walking and bicycling to local commercial destinations.

Objective 4.4 Provide educational opportunities for safe cycling and bicycle maintenance to youth and adult residents.

Objective 4.5 Work with the local police department to address pedestrian and bicyclist safety issues in targeted areas throughout the community, such as school zones and areas with high volumes of pedestrian and/or cyclist activity.

Objective 4.6 Develop educational materials to promote the economic, health, and environmental benefits of non-motorized transportation.

Objective 4.7 Develop brochures and other materials for distribution regarding the safe and responsible sharing of the road between cyclists and motorists.



B. Bicycle & Pedestrian Facility Components

1. Introduction

The physical elements of the Union Bikeable Walkable Community Plan are identified in this section. The principal components include shared use paths, on-street bicycle facilities, and sidewalks and pedestrian paths, and are shown on larger scale maps in this section of the plan, with detailed elements described in the text.

2. Shared Use Paths

Building on the popularity and usage of existing shared use paths and walking paths in Union City Park and at East Central College, the recommended shared use paths, greenways, and shared use path connector will increase connectivity, enhance safety, and provide additional opportunities for transportation- and recreation-oriented trips not currently afforded to Union residents. Described below are some of the more significant shared use path recommendations, followed by Table 11, which details all the recommended shared use paths.

St. Andrews Trail. This shared use path segment would connect with the East Central College Fitness Trail to the west and with the planned East City Park and St. Andrews Subdivision to the east.

Highway 50-College Trail. This 2.2-mile segment is the longest recommended shared use path segment, connecting East Central College's Fitness Trail with the proposed bicycle and pedestrian bridge over the Bourbeuse River near Highway 50.

Middle School Trail. This shared use path segment would provide an off-street connection from Autumn Hill Drive to Union Middle School Athletic Fields and the existing shared use path system in Union City Park.



Flat Creek Trail. This 0.5-mile recommended segment extends from Park Street's eastern terminus to Main Street, running parallel to Flat Creek and providing access to the Union City Ball Fields.

Connectors and Extensions. In order to maximize the functionality of the City's shared use path system, a number of connectors and extensions have been recommended in the plan. These connectors and extensions provide direct connections between existing and planned shared use paths and adjacent land uses and destinations. These small connections, ranging in distance from less than a tenth of a mile to nearly a half a mile, increase opportunities for continuous transportation and recreation activity along paths segregated from automobile use.

The development of these greenways and shared use paths reflects an increasing awareness of the strong interrelationships between natural corridors and rail corridors as the raw material from which an interconnected non-motorized transportation–recreation infrastructure can be built to serve Union's future needs.

Excluding the rail-to-trail and rail-with-trail, the recommended shared use path system is roughly 5.5 miles in length. With this system, Union can begin to approach its paved trail needs while simultaneously enhancing non-motorized transportation, providing a significant new recreational asset, and creating a major new health and wellness resource. The shared use path system will also help to sustain property values, an outcome that is occurring elsewhere where longer trail systems exist. The specific shared use paths and greenways are identified in the table on the following page.



Table 11: Planned and Recommended Shared Use Path Facilities					
Shared Use Path	Limit To	Limit From	Length (ft.)	Length (mi)	Cost
Hwy 50-College Trail	East Central College	Hwy 50 Bike Bridge	11,606	2.2	\$2,175,912.10
St. Andrews Trail	St. Andrews	Prairie Dell	5,587	1.1	\$1,047,450.84
Hwy 50-RWT Connector	RWT	Hwy 50 Bike Bridge	2,638	0.5	\$494,573.74
Clark Vitt Park Trail	Clark	Autumn Hill	2,296	0.4	\$430,484.13
Middle School Trail	Autumn Hill	City Park	2,068	0.4	\$387,755.80
Flat Creek Trail	Park	Main	1,617	0.3	\$303,140.73
Swimplex Trail	RWT	City Park	1,257	0.2	\$235,627.50
City Park-Grant Connector	City Park Trail	Grant Ave	658	0.1	\$123,298.17
Hwy 50-Main Connector	Main St	Hwy 50 Bike Bridge	571	0.1	\$106,962.33
South Clark Vitt Extension	Main	Clark Vitt Park Trail	493	0.1	\$92,442.68
North Clark Vitt Extension	Independence Crossing	Clark Vitt Park Trail	327	0.1	\$61,368.32
Shared Use Path Totals:			29,118	5.5	\$5,459,016.36



3. On-Street Bikeways

Purpose and Intended Users. Union's on-street bikeway facilities will consist primarily of treatments intended to make conditions safer for bicycle travel and to facilitate connectivity to destinations including city parks, other public facilities, retail areas, job centers and others. The primary intended users of these on-street bicycle facilities are experienced and casual adult cyclists, and teenage riders who can most appropriately use an on-street bikeway and who are comfortable sharing the road with motor vehicles.

Facilities recommended on arterials and collectors are not intended for child riders who, under the supervision of their parents, should use other elements of the system including trails, sidewalks (in accordance with AASHTO bikeway guidance), and low volume residential streets. It should be noted here that important education, encouragement and law enforcement activities, initiated and managed by city departments and assisted by appointed committees, are central components supporting responsible usage of the physical elements of this plan. As new facilities are developed, it will be important to provide outreach and educational material to community members that focuses on how to use different on-street bicycle facilities, on basic rules and responsibilities for cyclists, and how automobile drivers can safely share the road with cyclists. These elements are identified and addressed in implementation section of this chapter.

The purpose of the on-street bicycle facilities is to reduce the need for some motor vehicle trips and increase opportunities for transportation- and recreation-oriented cycling. Each recommended street segment is assigned an on-street bicycle facility type that most appropriately fits the geometric constraints of the existing roadway and addresses the intended user's needs and considerations. This can be used as a guide during the design-engineering process to develop the system. These facility types are essentially consistent with the bicycle



facility policy material and typical sections in the Missouri Department of Transportation's *Engineering Policy Guide*. (Refer to Appendix A). Considerable portions of the MoDOT *Engineering Policy Guide* reflect guidelines found in the *Guide for the Development of Bicycle Facilities*, published by the American Association of State Highway and Transportation Officials (AASHTO), and the draft version of the *Guide for the Planning, Design and Operation of Bicycle Facilities*, soon to be published by AASHTO in 2012. They are also supported by bikeway signage standards defined in the *Manual on Uniform Traffic Control Devices* (MUTCD). This material comprises a substantial and growing body of information establishing acceptable on-street bikeway design practices. It should be noted that the level of documentation provided in the appendices is considered appropriate for a conceptual planning level of analysis. However, the actual source material *must* be consulted for specific and detailed guidance during the design/engineering phase of work.


Table 12: Recommended On-Street Bicycle Facilities

Street Name	Limit To	Limit From	Length (ft)	Length (mi)	Cost
Denmark	Route 66/Service Rd	Prairie Dell	16,460	3.1	\$18,705
Independence	Hwy 47	Hwy 50	13,017	2.5	\$14,792
Old Hwy 50	St. Andrews	Prairie Dell	8,703	1.6	\$9,890
Main	Hwy 47	Springfield	11,131	2.1	\$12,648
Prairie Dell	Southern City Limit	Old Hwy 50	9,612	1.8	\$10,922
Springfield	Oak	Main	9,293	1.8	\$10,560
Park	Independence	Fenton Creek	7,657	1.5	\$8,701
Echo Valley	Old Hwy 50	RWT	5,556	1.1	\$6,313
St. Andrews	Old Hwy 50	Augusta	4,210	0.8	\$4,784
Clearview	Bend	Hwy 50	3,206	0.6	\$3,643
Porterford	Oak	Bend	3,149	0.6	\$3,578
Oak	Main	Porterford	2,823	0.5	\$3,208
End	Christina	Park St.	2,290	0.4	\$2,602
Memorial	Park	Clark	1,809	0.3	\$2,055
Autumn Hill	Independence	Clark	1,532	0.3	\$1,741
Grant	Washington	Church	1,352	0.3	\$1,536
Church	Grant	Main	1,252	0.2	\$1,423
Main	Hwy 47	Hwy 50	1,161	0.2	\$1,320
Water	Washington	Park	760	0.1	\$863
Hwy 50	Clearview	Independence	749	0.1	\$851
Christina	Water St.	End	637	0.1	\$724
Bend	Porterford	Clearview	554	0.1	\$629
Clark	Memorial	Autumn Hill	540	0.1	\$614
Washington	State	Main	467	0.1	\$531
Shared Lane Totals:			107,918	20.4	\$122,634



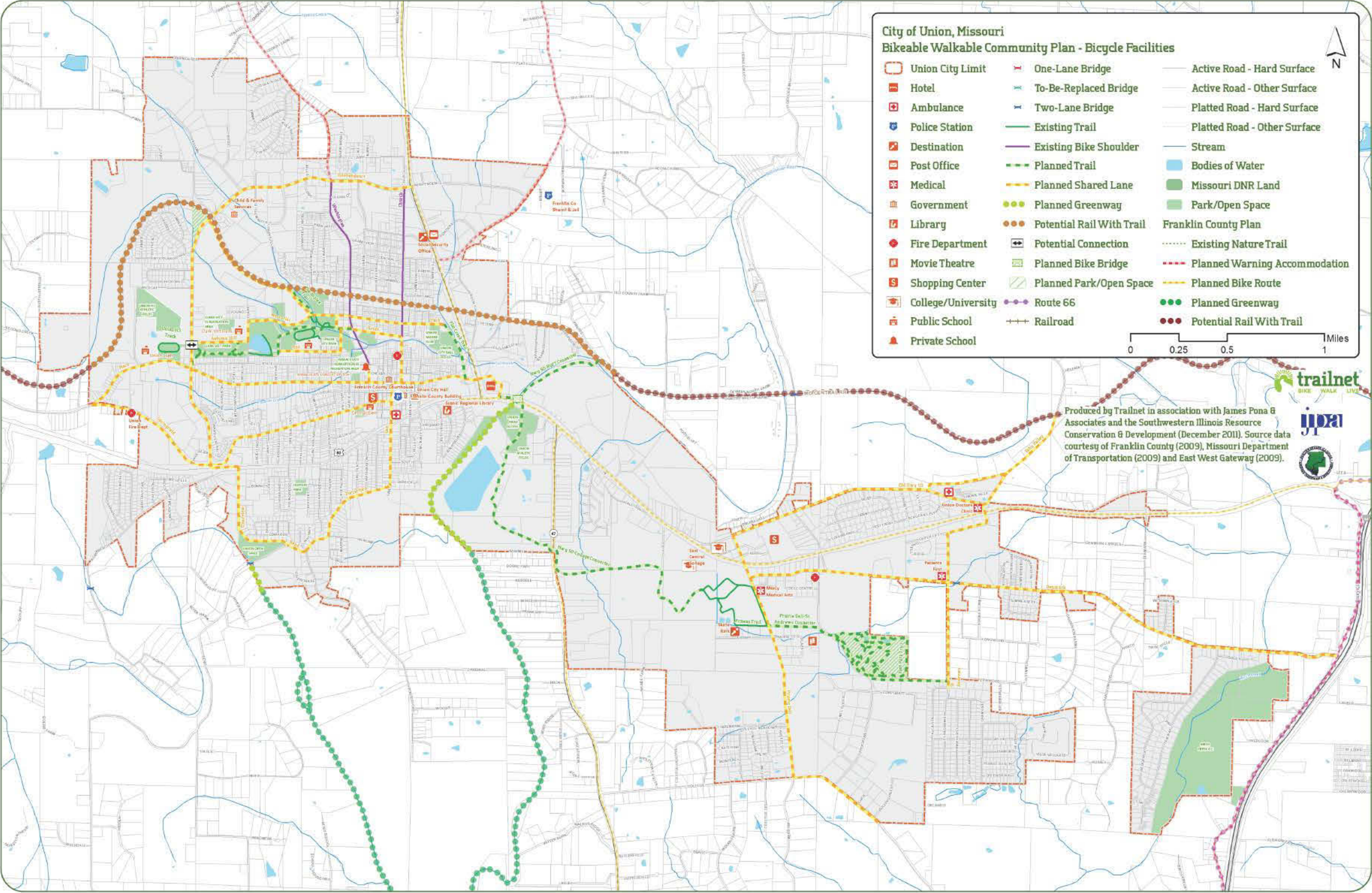
4. Bike Route Network.

Purpose and Intended Users. The Bike Route Network consists of designated, signed bicycle routes to guide cyclists to destinations throughout the community. The Bicycle Route Network consists of certain low-volume residential streets, shared use paths, and off-street connectors that link neighborhoods throughout the City to schools, parks, commercial areas, civic institutions, and other significant community assets. The purpose of Bike Route Network is to provide wayfinding and route guidance to help cyclists reach local destinations. These routes have been chosen for the network based on their ability to accommodate a wide variety of users, including commuters, recreational cyclists, basic adult cyclists, and in many cases children riders as well.

Not every recommended on-street bicycle facility or shared use path will be a part of the Bike Route Network. Only those recommended bike facilities and shared use paths that create vital to accessing key community destinations and that allow for a basic level of comfort for a variety of cyclist types, including basic adult cyclists, have been selected for the Bike Route Network. Table 13 on the following page details street segments recommended for the Bike Route Network.

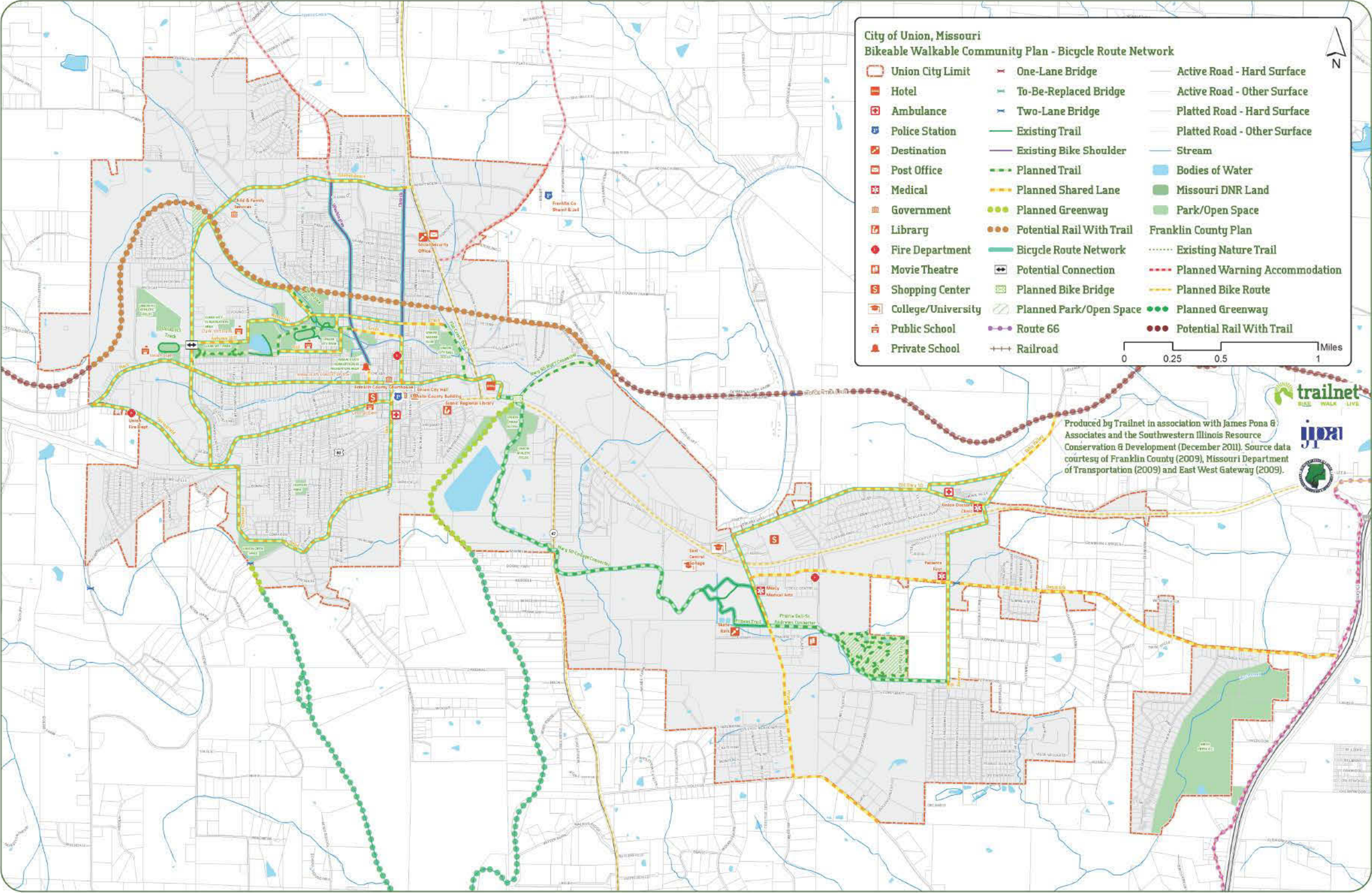

Table 13: Bike Route Network

Shared Use Paths	Limit To	Limit From	Length (ft.)	Length (mi)
Hwy 50-College Trail	East Central College	Hwy 50 Bike Bridge	11,606	2.2
St. Andrews Trail	St. Andrews	Prairie Dell	5,587	1.1
Hwy 50-RWT Connector	RWT	Hwy 50 Bike Bridge	2,638	0.5
Clark Vitt Park Trail	Clark	Autumn Hill	2,296	0.4
Middle School Trail	Autumn Hill	City Park	2,068	0.4
Flat Creek Trail	Park	Main	1,617	0.3
Swimplex Trail	RWT	City Park	1,257	0.2
City Park-Grant Connector	City Park Trail	Grant Ave	658	0.1
Hwy 50-Main Connector	Main St	Hwy 50 Bike Bridge	571	0.1
South Clark Vitt Extension	Main	Clark Vitt Park Trail	493	0.1
North Clark Vitt Extension	Independence Crossing	Clark Vitt Park Trail	327	0.1
Shared Use Path Totals:			29,118	5.5
On-Street Segments	Limit To	Limit From	Length (ft.)	Length (mi)
Independence	Hwy 47	Hwy 50	13,017	2.5
Old Hwy 50	St. Andrews	Prairie Dell	8,703	1.6
Main	Hwy 47	Springfield	11,131	2.1
Prairie Dell	Proposed Trail	Old Hwy 50	9,612	1.8
Springfield	Oak	Main	9,293	1.8
Park	Independence	Fenton Creek	7,657	1.5
Echo Valley	Old Hwy 50	RWT	5,556	1.1
St. Andrews	Old Hwy 50	Augusta	4,210	0.8
Clearview	Bend	Hwy 50	3,206	0.6
Porterford	Oak	Bend	3,149	0.6
Oak	Main	Porterford	2,823	0.5
End	Christina	Park St.	2,290	0.4
Memorial	Park	Clark	1,809	0.3
Autumn Hill	Independence	Clark	1,532	0.3
Church	Grant	Main	1,252	0.2
Main	Hwy 47	Hwy 50	1,161	0.2
Water	Washington	Park	760	0.1
Hwy 50	Clearview	Independence	749	0.1
Christina	Water St.	End	637	0.1
Bend	Porterford	Clearview	554	0.1
Clark	Memorial	Autumn Hill	540	0.1
Washington	State	Main	467	0.1
Shared Lane Totals:			90,105	17.1
Bike Route Network Totals:			119,224	22.6





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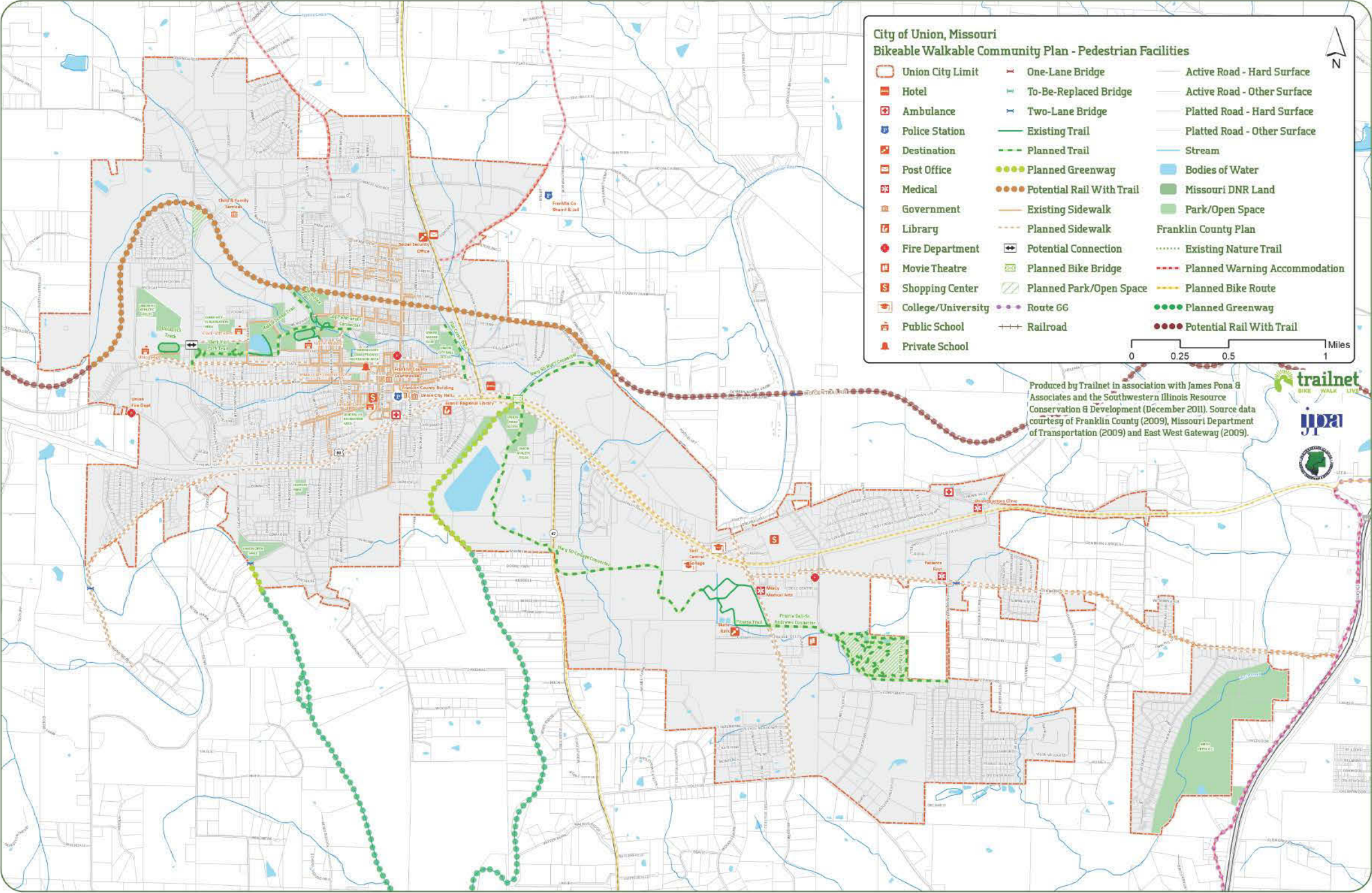


4. Sidewalks and Pedestrian Paths.

Planned and Recommended Facilities. Presently Union has 15.5 miles of existing sidewalks and 23 miles of planned and recommended facilities. Planned facilities represent projects already scheduled by the City of Union Public Works Department, while recommended facilities are those identified and introduced through this plan. Both planned and recommended facilities are identified in the Table 14 on the following page and displayed in Map 4: Planned and Recommended Sidewalks on the following page.


Table 14: Planned and Recommended Sidewalks

Street Name	Orientation	Limit To	Limit From	Length (ft.)	Length (mi.)	Cost
Highway 50	North	Springfield	Prairie Dell	16,157	3.06	\$484,702
Highway 50	South	Clearview	Prairie Dell	15,822	3.00	\$474,654
Autumn Hill	North	Independence	Clark	1,490	0.28	\$44,689
Christina	East	FlatCrk/Water	College/End	556	0.11	\$16,667
Christina	West	FlatCrk/ Water	College/End	527	0.10	\$15,818
Denmark	North	Progress	St. Andrews	3,479	0.66	\$104,374
Denmark	North	Prairie Dell	Progress	1,922	0.36	\$57,674
Denmark	North	St. Andrew's	Service Rd(44)	10,935	2.07	\$328,052
Denmark	South	Progress	St. Andrews	3,492	0.66	\$104,751
Denmark	South	Prairie Dell	Progress	1,900	0.36	\$56,995
Denmark	South	St. Andrew's	Service Rd(44)	10,922	2.07	\$327,664
Grandview	North	Washington	Union	384	0.07	\$11,508
Grandview	South	Washington	Jefferson	722	0.14	\$21,652
Main Street	North	Wildcat	Independence	1,356	0.26	\$40,682
Main Street	South	Wildcat	Independence	1,436	0.27	\$43,069
Koko Beach	Northwest	50&Independence	Koko Loop	7,437	1.41	\$223,122
Koko Beach	Southeast	Clearview	Koko Loop	7,942	1.50	\$238,257
Main Street	North	Independence	Westmoreland	3,188	0.60	\$95,642
Main Street	North	Washington	Jefferson	191	0.04	\$5,722
Main Street	North	Old St. Louis	FlatCrkTrail/47	390	0.07	\$11,710
Main Street	South	Independence	Bertha/Wmorland	2,615	0.50	\$78,463
Main Street	South	Lincoln	Jefferson	454	0.09	\$13,621
Main Street	South	McKinley/Maple	Hwy 47	1,118	0.21	\$33,547
Prarie Dell	East	Old US 50	College	6,883	1.30	\$206,478
Prarie Dell	West	Old US 50	College	6,858	1.30	\$205,742
Springfield	North	Independence	East/Moutier	2,906	0.55	\$87,187
Springfield	South	US50&Clearview	Johnson Ct.	2,614	0.50	\$78,426
State Street	North	Clark	Westmoreland	1,628	0.31	\$48,845
State Street	North	Independence	N of Lindner	1,417	0.27	\$42,497
State Street	Northeast	N State&Maple	Old St. Louis	649	0.12	\$19,462
State Street	South	Linder/Bertha	Clark/Wmoreland	818	0.15	\$24,538
State Street	South	Independence	Clark	1,583	0.30	\$47,497
State Street	Southwest	State/Maple	Main	315	0.06	\$9,436
Total Recommended Sidewalks:				120,105	22.7	\$3,603,143.14





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C. Implementation Strategy

1. Introduction

The creation of a functional non-motorized transportation network will require an ongoing commitment to incremental improvements and accompanying programs and activities. In order for the City to sustain momentum for the plan and implement plan recommendations in a timely, cost-effective manner, the plan details an implementation strategy that incorporates opinions of probable cost for recommended projects, prioritization tables for bicycle and pedestrian projects, funding sources for plan implementation, and programming opportunities to engage, educate, and encourage residents to increase bicycling and walking activity.

2. Pre-Engineering Opinion of Probable Cost to Develop the Union Bicycle and Pedestrian Network

Tables 11, 12, and 14 which detail recommended shared use paths, on-street bicycle facilities and pedestrian improvements (P 61, P 64, and P 71, respectively), each include preliminary opinions of probable cost for each recommended project. This is essentially a rough order-of-magnitude (ROM) based on actual development costs of other bikeway and pedestrian facility projects in the St. Louis region. The level of estimation is considered to be appropriate for a planning study, which cannot reflect more precise estimates to be developed during the subsequent design/engineering phase of work. Moreover, it cannot account for future conditions in the construction market which will be a factor in determining actual price outcomes during the bid phase of work. These cost estimates will prove most useful as supporting information in the procurement of external funding sources to develop specific projects.



3. Project Prioritization

While each recommended project will play an important role in creating a comprehensive, interconnected system of bicycle and pedestrian facilities, certain projects carry greater importance in improving safety and accessibility, providing connections between residential neighborhoods and community destinations, and meeting the needs cited by the community. The recommended bicycle facility projects have been prioritized according to weighted criteria identified during the planning process, which include proximity, connectivity, public feedback, and ease of implementation. This ranking system should not be used as a chronological schedule for project implementation; if the opportunity arises to undertake a recommended project, the City of Union should capitalize on that opportunity regardless of project rank.

Proximity. Bicycle and pedestrian facilities in close proximity to local schools, transit stops, commercial activity centers, and public facilities such as parks and libraries are essential in creating a functional non-motorized transportation network. They provide access to community destinations and encourage residents to incorporate bicycling and walking into residents' daily routines, whether it is a trip to school, the library, a park, or a local store. These criteria are listed in the prioritization matrix as items 1.1 through 1.4.

Adjacent Residential Population (Criterion 2.1). Bicycle and pedestrian infrastructure in and around residential neighborhoods offers people an alternative mode of transportation to many of the previously identified community destinations. Recommended projects are scored according to their adjacent residential population, with greater importance given to projects that have the potential to affect a greater number of people.

Connectivity (3.1 through 3.4). Facilities that close an existing gap in the network, link to other routes, provide the most



direct route choice, and connect Union residents to regional destinations enhance the network's coverage and efficiency while also improving safety for cyclists and pedestrians.

Public Feedback (4.1). Through the public engagement process, residents of Union have voiced their priorities, goals and ideas for improving the bicycle and pedestrian environment throughout the city. Priority is given to projects that have garnered considerable public support and to projects that address safety, access and connectivity issues identified by the public.

Ease of Implementation (5.1). A number of projects may involve other entities such as Franklin County and MoDOT, or utility and railroad rights-of-way. These projects will require additional coordination with both governmental and non-governmental entities with regard to property or easement acquisition, design standards, project funding, or other considerations. There are also a significant number of projects located on City of Union right-of-way and as such will be easier to implement. Many of the projects under city jurisdiction are located on residential or collector streets and may be important bikeways and walkways on which a large share of transportation-oriented biking and walking trips will occur.

Bike Route Network (6.1) (Bicycle Project Prioritization Only). Projects that contribute to the creation of the City's Bike Route Network receive additional points.

Tables 15 and 16 on the following pages shows the priority rankings for bicycle and pedestrian improvements, respectively. Segments over one mile in length, as well as shorter segments that warrant prioritization, have been included in the matrix. Project criteria described above are listed as 1.1 through 6.1.


Table 15: Recommended Bicycle Facility Prioritization

The projects on this list represent the initial bicycle facility recommendations. The projects have been prioritized using a weighted scale that takes into account criteria determined by the City of Union and the planning team, and identified through the public participation process. Number of schools and public facilities along the route, proximity to other community destinations, population of adjacent neighborhoods, connections to other bicycle facilities, projects identified as important by residents and stakeholders, and a number of similar factors have been quantified to determine a priority ranking system. This ranking system should not be used as a chronological schedule for project implementation. If the opportunity arises to undertake a recommended project, the City of Union should capitalize on that opportunity regardless of project rank.

Project	Facility Type	Length (ft)	Project Limits	Projected Cost
Main	Shared Lane	11,131	Hwy 47, Springfield	\$7,346
Springfield	Shared Lane	9,293	Oak, Main	\$6,133
Park	Shared Lane	7,657	Independence, Fenton Creek	\$5,053
Oak	Shared Lane	2,823	Main, Porterford	\$1,863
Christina	Shared Lane	637	Water St, End	\$420
Middle School Trail	Shared Use Path	2,068	Autumn Hill, City Park	\$103,415
Church	Shared Lane	1,252	Grant, Main	\$827
Washington	Shared Lane	467	State, Main	\$308
End	Shared Lane	2,290	Christina, Park St	\$1,511
Hwy 50-Main Connector	Shared Use Path	571	Main St, Hwy 50 Bike/Ped Bridge	\$28,527
Independence	Shared Lane	13,017	Hwy 47, Hwy 50	\$8,591
Hwy 50-College Trail	Shared Use Path	11,606	East Central College, Hwy 50 Bike/Ped Bridge	\$580,316
Main	Shared Lane	1,161	Hwy 47, Hwy 50	\$766
Clark Vitt Park Trail	Shared Use Path	2,296	Clark, Autumn Hill	\$114,810
Grant	Shared Lane	1,352	Washington, Church	\$892
Water	Shared Lane	760	Washington, Park	\$501
City Park-Grant Connector	Shared Use Path	658	City Park Trail, Grant Ave	\$32,884
Autumn Hill	Shared Lane	1,532	Independence, Clark	\$1,011
North Clark Vitt Extension	Shared Use Path	327	Independence Crossing, Clark Vitt Park Trail	\$16,367
St. Andrews Trail	Shared Use Path	5,587	St Andrews, Prairie Dell	\$279,355
Swimplex Trail	Shared Use Path	1,257	Rail-With-Trail, City Park	\$62,842
South Clark Vitt Extension	Shared Use Path	493	Main St, Clark Vitt Park Trail	\$24,654
Memorial	Shared Lane	1,809	Park St, Clark	\$1,194
Clark	Shared Lane	540	Memorial, Autumn Hill	\$357
Flat Creek Trail	Shared Use Path	1,617	Park St, Main St	\$80,848
Prairie Dell	Shared Lane	9,612	Southern City Limit, Old Hwy 50	\$6,344
Clearview	Shared Lane	3,206	Bend, Hwy 50	\$2,116
Porterford	Shared Lane	3,149	Oak, Bend	\$2,078
Hwy 50	Shared Lane	749	Clearview, Independence	\$494
Denmark	Shared Lane	16,460	Route 66/Service Rd, Prairie Dell	\$10,864
Old Hwy 50	Shared Lane	12,728	St. Andrews, Prairie Dell	\$8,401
St. Andrews	Shared Lane	4,210	Old Hwy 50, Augusta	\$2,779
Bend	Shared Lane	554	Porterford, Clearview	\$365
Hwy 50-RWT Connector	Shared Use Path	2,638	Rail-With-Trail, Hwy 50 Bike/Ped Bridge	\$131,903
Echo Valley	Shared Lane	5,556	Old Hwy 50, Rail-With-Trail	\$3,667


Table 15: Recommended Bicycle Facility Prioritization, Part II

Project	Proximity to schools (K-12)	Direct access to commercial destinations	Proximity to public facilities	Adjacent residential population	Completes gap in bicycle network	Connected existing and planned routes	Directness of route	Regional route	Public feedback & support	Ease of Implementation	Bike Route Network	Total score
	1.1	1.2	1.3	2.0	3.1	3.2	3.3	3.4	4.1	5.1	6.1	
Main	25	5	55	20	5	14	5	0	40	10	10	189
Springfield	20	5	45	20	5	6	5	0	35	10	10	161
Park	20	0	35	16	5	12	5	0	30	10	10	143
Oak	20	5	35	16	5	6	5	0	25	10	10	137
Christina	15	0	35	16	5	8	5	0	25	10	10	129
Middle School Trail	15	0	25	16	5	10	5	0	40	10	0	126
Church	10	5	40	16	5	4	5	0	20	10	10	125
Washington	10	5	35	16	5	4	5	0	25	10	10	125
End	20	0	30	16	5	4	5	0	20	10	10	120
Hwy 50-Main Connector	0	5	35	8	5	6	5	0	45	0	10	119
Independence	10	0	20	16	5	16	5	0	25	10	10	117
Hwy 50-College Trail	5	5	20	8	5	10	0	0	50	0	10	113
Main	0	5	35	8	5	4	5	0	30	10	10	112
Clark Vitt Park Trail	15	0	25	12	5	10	0	0	35	10	0	112
Grant	10	0	20	16	5	14	5	0	25	10	0	105
Water	10	0	30	16	0	8	0	0	20	10	10	104
City Park-Grant Connector	10	0	30	16	0	6	5	0	35	0	0	102
Autumn Hill	15	0	25	12	0	4	0	0	25	10	10	101
North Clark Vitt Extension	10	0	20	8	5	6	5	0	35	10	0	99
St. Andrews Trail	5	5	10	4	5	4	5	0	50	0	10	98
Swimplex Trail	10	0	20	12	0	6	5	0	35	10	0	98
South Clark Vitt Extension	10	0	20	8	5	4	5	0	35	10	0	97
Memorial	15	0	20	12	0	4	0	0	25	10	10	96
Clark	15	0	20	12	0	4	0	0	25	10	10	96
Flat Creek Trail	5	0	20	12	5	4	5	0	35	10	0	96
Prairie Dell	5	5	10	8	5	6	5	5	20	10	10	89
Clearview	0	5	10	12	5	4	0	0	20	10	10	76
Porterford	5	0	10	12	5	4	0	0	20	10	10	76
Hwy 50	0	5	10	12	5	4	5	0	25	0	10	76
Denmark	5	5	10	8	0	6	5	0	25	10	0	74
Old Hwy 50	5	5	5	8	5	6	5	0	10	10	10	69
St. Andrews	0	0	5	8	5	6	5	0	20	10	10	69
Bend	0	0	10	8	5	4	0	0	20	10	10	67
Hwy 50-RWT Connector	0	0	10	8	0	6	5	0	30	0	0	59
Echo Valley	0	5	0	4	0	4	0	0	5	0	0	18


Table 16: Recommended Pedestrian Facility Prioritization

The projects on this list represent the initial pedestrian facility recommendations. The projects have been prioritized using a weighted scale that takes into account criteria determined by the City of Union and the planning team, and identified through the public participation process. Number of schools and public facilities along the route, proximity to other community destinations, population of adjacent neighborhoods, connections to other bicycle facilities, projects identified as important by residents and stakeholders, and a number of similar factors have been quantified to determine a priority ranking system. This ranking system should not be used as a chronological schedule for project implementation. If the opportunity arises to undertake a recommended project, the City of Union should capitalize on that opportunity regardless of project rank. Recommended pedestrian projects do not include shared use path facilities, which are scored in Table 15.

Project	Facility Type	Length (ft)	Project Limits	Projected Cost
Highway 50 N	5' Sidewalk	16,157	Springfield, Prarie Dell	\$484,702
Highway 50 S	5' Sidewalk	15,822	Clearview, Prarie Dell	\$474,654
Springfield N	5' Sidewalk	2,906	Independence, b/w East and Moutier	\$87,187
Springfield S	5' Sidewalk	2,614	Highway 50 east of Independence, Johnson Ct	\$78,426
Main N	5' Sidewalk	3,188	Independence, Westmoreland	\$95,642
Main N	5' Sidewalk	191	Washington, Jefferson	\$5,722
Main S	5' Sidewalk	2,615	Independence, Bertha/Westmoreland	\$78,463
Main S	5' Sidewalk	454	Lincoln, Jefferson	\$13,621
State N	5' Sidewalk	1,628	Clark, Westmoreland	\$48,845
Main S	5' Sidewalk	1,118	McKinley, Highway 47	\$33,547
State S	5' Sidewalk	818	West of Bertha, West of Westmoreland	\$24,538
Main N	5' Sidewalk	390	Old St. Louis, Highway 47	\$11,710
Christina E	5' Sidewalk	556	Water St, End St	\$16,667
Christina W	5' Sidewalk	527	Water St, End St	\$15,818
State N	5' Sidewalk	1,417	Independence, Lindner	\$42,497
State S	5' Sidewalk	1,583	Independence, Clark	\$47,497
Autumn Hill N	5' Sidewalk	1,490	Independence, Clark	\$44,689
State NE	5' Sidewalk	649	Maple, Old St. Louis	\$19,462
HS/Main N	5' Sidewalk	1,356	Wildcat, Independence	\$40,682
HS/Main S	5' Sidewalk	1,436	Wildcat, Independence	\$43,069
State SW	5' Sidewalk	315	Maple, Main	\$9,436
Grandview S	5' Sidewalk	722	Washington, Jefferson	\$21,652
Denmark N	5' Sidewalk	1,922	Prarie Dell, Progress	\$57,674
Denmark S	5' Sidewalk	3,492	Progress, St. Andrews	\$104,751
Grandview N	5' Sidewalk	384	Washington, Union	\$11,508
Denmark N	5' Sidewalk	3,479	Progress, St. Andrews	\$104,374
Denmark S	5' Sidewalk	1,900	Prarie Dell, Progress	\$56,995
Prairie Dell E	5' Sidewalk	6,883	Old US 50, College	\$206,478
Prairie Dell W	5' Sidewalk	6,858	Old US 50, College	\$205,742
Koko Beach NW	5' Sidewalk	7,437	Highway 50 at Independence, Koko Loop	\$223,122
Koko Beach SE	5' Sidewalk	7,942	Clearview, Koko Loop	\$238,257
Denmark N	5' Sidewalk	10,935	St. Andrews, I-44 Service Rd	\$328,052
Denmark S	5' Sidewalk	10,922	St. Andrews, I-44 Service Rd	\$327,664


Table 16: Recommended Pedestrian Facility Prioritization, Part II

Project	Proximity to schools (k-12)	Direct access to commercial destinations	Proximity to public facilities	Adjacent residential population	Completes gap in pedestrian network	Connected existing and planned routes	Directness of route	Regional route	Public feedback & support	Ease of Implementation	Total score
Highway 50 N	20	5	50	20	5	5	5	5	50	0	165
Highway 50 S	20	5	50	20	5	5	5	5	50	0	165
Springfield N	20	5	45	16	5	5	5	0	35	10	146
Springfield S	20	5	45	16	5	5	5	0	35	10	146
Main N	25	5	35	12	5	5	5	0	40	10	142
Main N	20	5	40	12	5	5	5	0	40	10	142
Main S	25	5	35	12	5	5	5	0	40	10	142
Main S	20	5	40	12	5	5	5	0	40	10	142
State N	25	0	40	12	5	5	5	0	35	10	137
Main S	10	5	45	12	5	5	5	0	35	10	132
State S	25	0	30	12	5	5	5	0	35	10	127
Main N	5	5	40	8	5	5	5	0	35	10	118
Christina E	15	0	30	12	5	5	5	0	35	10	117
Christina W	15	0	30	12	5	5	5	0	35	10	117
State N	15	0	25	12	5	5	5	0	35	10	112
State S	15	0	25	12	5	5	5	0	35	10	112
Autumn Hill N	15	0	25	12	5	5	5	0	30	10	107
State NE	10	0	35	12	5	5	0	0	25	10	102
HS/Main N	10	0	20	8	5	5	5	0	35	10	98
HS/Main S	10	0	20	8	5	5	5	0	35	10	98
State SW	10	0	35	8	5	5	0	0	25	10	98
Grandview S	5	0	20	12	5	5	0	0	25	10	82
Denmark N	5	5	10	8	5	5	5	0	25	10	78
Denmark S	5	5	10	8	5	5	5	0	25	10	78
Grandview N	5	0	15	12	5	5	0	0	25	10	77
Denmark N	5	5	10	4	5	5	5	0	25	10	74
Denmark S	5	5	10	4	5	5	5	0	25	10	74
Prairie Dell E	5	5	10	4	5	5	5	0	25	10	74
Prairie Dell W	5	5	10	4	5	5	5	0	25	10	74
Koko Beach NW	0	5	5	12	0	5	0	0	25	10	62
Koko Beach SE	0	5	5	12	0	5	0	0	25	10	62
Denmark N	0	0	0	8	5	5	5	0	15	10	48
Denmark S	0	0	0	8	5	5	5	0	15	10	48



4. Funding Sources

The City of Union can draw from a variety of federal, state, local, and private-sector funding sources to fund bicycle and pedestrian infrastructure improvements and programs. Where possible, local funds should be leveraged as match to secure external funding, maximizing the impact of local investment.

Federal Funding Sources. With a new federal transportation bill currently in development, the future of bicycle and pedestrian funding through the United States Department of Transportation (USDOT) remains uncertain. Moving Ahead for Progress in the 21st Century (MAP 21) will replace the current transportation bill, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Programs listed below are currently available through SAFETEA-LU. Some of these programs, such as the Congestion Mitigation and Air Quality Program (CMAQ), will remain in the new transportation bill, while others, including the Surface Transportation Program (STP) and the Transportation Enhancement Program (TE), will be consolidated into new programs.

There are a number of federal programs that fund bicycle and pedestrian projects that are not funded through the USDOT. These programs are described at the end of this list of federal funding sources.

Surface Transportation Program (STP). The Surface Transportation Program provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the NHS, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. The STP is administered by MoDOT through the East West Gateway Council of Governments on an annual basis.

More information:

<http://www.ewgateway.org/>

<http://www.fhwa.dot.gov/safetealu/factsheets/stp.htm>



Highway Safety Improvement Program (HSIP). Developed to reduce traffic fatalities and serious injuries on all public roads, the HSIP provides a funding source for local entities to develop countermeasures to improve bicyclist and pedestrian safety. Eligible projects include safety improvements for cyclists and pedestrians both on-road and on publicly owned bicycle and pedestrian pathways or trails.

More information:

<http://safety.fhwa.dot.gov/hsip/>

<http://www.fhwa.dot.gov/safetealu/factsheets/hsip.htm>

Transportation Enhancements Program (TE). A significant portion of Missouri's Surface Transportation Program funds are required to be set aside projects that increase transportation options, enhance the transportation experience, and provide a sense of place. TE projects must meet at least one of the twelve eligible categories, including trail and greenway development, landscaping and beautification, provision of safety and education programs for pedestrians and bicyclists, and historic preservation. A local match of 20 percent is required. The program is administered by Missouri Department of Transportation (MoDOT) in cooperation with East West Gateway Council of Governments.

More information:

<http://www.ewgateway.org/>

<http://www.enhancements.org/>

<http://www.fhwa.dot.gov/environment/te/>

Congestion Mitigation and Air Quality Program (CMAQ).

The CMAQ Program funds projects and programs that improve air quality by reducing automobile emissions. Potential projects include bicycle and pedestrian facilities, traffic flow improvements, diesel engine retrofits, and shared ride services.

More information:

http://www.fhwa.dot.gov/environment/air_quality/cmaq/



State and Community Highway Safety Grant Program

(Section 402). Section 402 Highway Safety Funds can be used to develop and support programs that aim to reduce traffic crashes and increase pedestrian safety. While these funds are more commonly used to increase law enforcement activities and develop statewide data systems, they can be utilized to develop safety education programs and community-wide pedestrian safety campaigns.

More information:

<http://safety.fhwa.dot.gov/policy/section402/>

<http://www.bikeleague.org/resources/reports/section402.php>

Safe Routes to School (SR2S). Funding is available annually through the Missouri Department of Transportation through federal highway safety funds to provide for safe biking and walking infrastructure and behavior programs for children in grades K-8, including children with disabilities.

More information:

<http://www.modot.mo.gov/safety/SafeRoutesToSchool.htm>

<http://safety.fhwa.dot.gov/saferoutes/>

<http://www.saferoutesinfo.org/>

Transportation, Community and System Preservation

Program (TCSP). The Federal Highway Administration's TCSP program provides funding for planning grants, implementation grants, and research that investigates the links between transportation, community, and system preservation. The implementation grants have been used to fund pedestrian improvements, bike paths, multi-use paths, complete streets implementation, and other non-motorized transportation initiatives.

More information:

<http://www.fhwa.dot.gov/tcsp/projects.html>



Recreational Trails Program (RTP). Grants are available for motorized and non-motorized trail development, renovation, and preservation for cities, counties, schools, and all business types. Projects require a 20% minimum match. The grant application period ends in August and is administered by the Missouri Department of Natural Resources-Division of State Parks. The funding is provided through the Federal Highway Administration.

More information:

<http://mostateparks.com/page/55065/outdoor-recreation-grants>

<http://www.fhwa.dot.gov/environment/rectrails/>

Rivers, Trails and Conservation Assistance Program (RTCA). Administered by the National Parks Service, the RTCA works throughout the country to assist community-led natural resource conservation and outdoor recreation projects. While the RTCA does not provide direct funding for projects, they do provide valuable technical assistance for conceptual planning, capacity building, and organizational development.

More information:

<http://www.nps.gov/ncrc/programs/rtca/>

Land & Water Conservation Fund (LWCF). Grants are available to cities, counties and school districts for outdoor recreation facilities, including trails. Projects require a 55% match. Funded facilities must remain for the purpose of public outdoor recreation in perpetuity. LWCF grants are funded by the US Department of Interior, National Park Service and administered by the Missouri Department of Natural Resources-Division of State Parks.

More information:

<http://mostateparks.com/page/55065/outdoor-recreation-grants>

<http://www.nps.gov/lwcf/>



Local Funding Sources. Local funding for bicycle and pedestrian improvements and programs is an integral component of the overall funding strategy. Local funds can be used to fund projects in full, or to provide the necessary match to external funding sources. The City of Union should identify and isolate local funding sources that can provide a steady source for investment in bicycle and pedestrian infrastructure and programs.

Local Option Sales Taxes. Cities throughout the State of Missouri have utilized local option sales taxes to provide facilities and services for related to parks and/or stormwater management. At either 1/4 or 1/2 cent, these sales taxes can provide funding for shared use paths, land acquisition for park and trail development, sidewalk construction associated with curb, gutter, and stormwater facilities, and other improvements that improve the bicycle and pedestrian environment.

System Development Charges / Developer Impact Fees.

As new development occurs, the municipality may charge developers to fund the additional service capacity required by the development. These development charges, or impact fees, can be used to construct transportation infrastructure, including roads, transit stations or stops, and bicycle and pedestrian facilities.

More information:

<http://www.impactfees.com/index.php>

<http://www.mdt.mt.gov/research/toolkit/m1/ftools/dei/if.shtml>

Community Improvement Districts (CIDs). A CID is a defined area in which property owners pay an additional tax or fee to finance capital improvements, additional security, or marketing the district as a commercial destination. Potential capital improvements include sidewalks, street lighting, benches, trash receptacles, information kiosks, public art projects, and other pedestrian-oriented features.



More information:

<http://www.moga.mo.gov/const/a03038c.htm>

http://www.stlrcga.org/Documents/Incentives/MO_CID%20Detail.pdf

<http://www.missouridevelopment.org/community%20services/Local%20Finance%20Initiatives/Community%20Improvement%20District.html>

Neighborhood Improvement Districts (NIDs). Similar to Community Improvement Districts, NID's are created to finance public-use improvements through special tax assessments to property owners in which the improvements are made. Typical improvements in NID's include sidewalk and crosswalk improvements, street lighting systems, parks and recreational facilities, pedestrian bridges, overpasses or tunnels, and landscaping enhancements.

More information:

<http://www.moga.mo.gov/statutes/C000-099/0670000453.HTM>

<http://www.missouridevelopment.org/community%20services/Local%20Finance%20Initiatives/Neighborhood%20Improvement%20District.html>

Private Funding Sources. Private funding sources can play a significant role in the development of bicycle and pedestrian projects and programs. In the City of Union, partnerships, project and event sponsorships, and other collaborations have resulted in successful improvements to the park system, including tree plantings, creek clean-ups, and even the construction of park facilities. Private funding sources can also be used to provide the local match for external funding sources.

The Kodak American Greenways Program. Funded by The Conservation Fund, Eastman Kodak Company, and the National Geographic Society, the program provides "seed" grants for the planning and design of greenways and other open space



systems. Since 1989, the program has granted over \$800,000 to nearly 700 organizations across the country.

More information:

http://www.conservationfund.org/kodak_awards

Bikes Belong Grant Program. Bikes Belong, a national organization dedicated to putting more people on bikes more often. The organization funds multi-use trail projects, BMX facilities, mountain bike trails, and advocacy efforts, with a strong desire to leverage federal funding in the process. Bikes Belong has awarded over 200 grants since 1999, investing \$1.7 million and leveraging close to \$650 million in federal, state, and private sector funding.

More information:

<http://www.bikesbelong.org/grants/>

Adopt a Bikeway/Sidewalk/Trail Program. Local organizations, businesses and community groups often engage in civic projects, including Adopt-A-Highway programs and other landscaping and beautification projects. The City could develop an "Adopt-A-Trail" or "Adopt-A-Sidewalk" program to assist in the routine maintenance or landscaping of the City's bicycle and pedestrian network.

Missouri Foundation for Health's Healthy and Active Communities Program. The Missouri Foundation for Health (MFH), the state's largest healthcare foundation, works to improve health in the communities it serves. Through the Healthy and Active Communities program, MFH funds organizations to combat obesity through changes in policy, environment, and social networks. Funded projects include community-wide intervention strategies, bike-to-school programs, increasing multi-use trail accessibility, efforts to adopt complete streets policies, bike check-out programs, and other innovative programs and infrastructure improvements to increase physical activity. In addition to the Healthy and



Active Communities program, the MFH offers a variety of other services and grant programs to assist communities in creating more healthy and active environments.

More information:
<http://www.mffh.org/>

St. Louis County Municipal Park Grant. This program provides roughly \$3 million annually for the 91 municipalities throughout St. Louis County to fund regional and local parks initiatives. The Funds are administered through the St. Louis County Municipal League.

More information:
<http://www.muniparkgrants.org/>

Robert Wood Johnson Foundation. The Robert Wood Johnson Foundation (RWJF) offers a wide range of funding opportunities dealing with healthy and active living. Anyone is eligible to apply, but check the website to make sure that you meet requirements per grant. For more information, check the website periodically for new calls for proposals.

More information:
<http://www.rwjf.org/applications/solicited/cfplist.jsp>

Contributions from Local Businesses. Many employers recognize that safe and attractive places to walk and bike can contribute to building community and attracting a quality work force. As such, there has been a recent interest from private businesses to support bicycle and pedestrian projects and programs. The City of Union should seek to develop relationships with the business community to increase interest in and support for the City's efforts to deliver projects and programs that support walking and cycling.

More information:
http://www.railstotrails.org/ourwork/trailbuilding/toolbox/informationsummaries/funding_financing.html#private



5. Programs, Events and Activities

Successful implementation of the Union Bikeable Walkable Community Plan will rely considerably on the efforts of the City of Union and its community partners to deliver effective programs that build and sustain momentum for bicycling and walking in throughout the community. Safe Routes to Schools programs, walking and bicycling route maps, bicycling safety and skills courses, walking groups, shop-by-bike, and other programs and activities can significantly contribute to the accomplishment of multiple goals and activities expressed in this plan.

The following programs, events and activities represent potential opportunities for the City of Union and its community partners to engage residents, employees and visitors in the City of Union and encourage walking and cycling for both transportation and recreation purposes.

Safe Routes To School Program. In 1969, 42 percent of all students from grades 1 through 12 walked or biked to school, and 49 percent of all elementary school students walked or biked.¹⁶ By 2001, less than 15 percent of all trips to school were made on foot or bike, with more than half of all students arriving at school in a private automobile (up from 16 percent in 1969).¹⁷ In an effort to reverse this trend, the Federal Highway Administration initiated the Safe Routes to School Program (SR2S) in 2005. While local efforts to increase walking and cycling to school had been underway throughout the country, most activity occurred at the local community level and received little support from the state or federal level. The objective of the FHWA's SR2S is twofold, focusing on 1) infrastructure improvements intended to improve safety and

¹⁶ "Transportation Characteristics of School Children," Report No. 4, Nationwide Personal Transportation Study, Federal Highway Administration, Washington, DC, July, 1972.

¹⁷ Federal Highway Administration, National Household Travel Survey, 2001.



accessibility in school areas, and on 2) behavioral programs to increase the number of children walking and biking to school.

The City of Union should explore opportunities to work with the Union R-XI School District, as well as private schools in the City, to encourage and provide support for the development of Safe Routes to School efforts, such as Walking School Busses, Bike Trains, National Walk to School Day, Bike Rodeos, and other events aimed at increasing walking and bicycling to school. Trailnet, a nonprofit working to foster healthy and active communities in the St. Louis Metropolitan Area, provides school districts and local communities with resources and assistance for developing Safe Routes to School programs and activities. The City should also consider utilizing Trailnet's resources while exploring Safe Routes to Schools opportunities.

Shop by Bike/Shop by Foot Program. Shop by Bike and Shop by Foot programs encourage residents to walk and bike to local businesses for short daily trips. Nearly forty percent of all trips in the United States are two miles or less, a distance that can be traveled on foot or bicycle, yet 74 percent of these trips are made by private automobile.¹⁸ Shop by Bike and Shop by Foot programs can help to reduce automobile congestion, lower carbon emissions, improve individual health, and support local businesses.

The City of Union should explore opportunities to partner with local businesses, the Chamber of Commerce, the Union Development Corporation, and other local entities to develop a program to encourage residents and visitors to bike and walk to local restaurants, retail, and other commercial destinations. Other successful programs in the area. Such a program could include incentives or discounts to customers who patronize local businesses by bike or on foot, educational material for how to properly equip a bicycle for transporting goods, the designation of bicycle friendly businesses for businesses that

¹⁸ Federal Highway Administration, National Household Travel Survey, 2001.



take steps to encourage employees and patrons to bike, and improved bicycle parking at destinations throughout town.

Public Awareness Campaigns. Throughout the implementation of the Bikeable Walkable Community Plan, the City of Union should identify and capitalize on opportunities to increase the public's awareness of bicycling and walking as vital components of the quality of life in Union. This outreach can correspond to or complement infrastructure improvements like shared use paths, sidewalks, and on-street facilities, or it can be more general, touching upon the benefits of walking and cycling and the rules and responsibilities for sharing the roadway with other road users.

Bicycle Awareness Efforts. Throughout the planning process, community members have expressed their concerns about cycling on local roadways and the perceived dangers of sharing the roadway with motor vehicles. In effort to raise awareness for cycling activity and encourage motorists and cyclists to share the road, the City of Union should consider the creation of a public awareness campaign. Such a campaign could include door hangers, flyers distributed to local residents, businesses, and public facilities, yard signs, print ads, commercials, and other methods of outreach, all designed to educate motorists and cyclists of basic rights, rules and responsibilities for sharing the road.

Pedestrian Awareness Efforts. Pedestrian safety was another significant issue vocalized by community members during the planning process. Perceived safety for pedestrians walking along Highway 50 and Highway 47, children walking to school, families walking Union City Park, seniors walking to local businesses - each of these types of members of the community have their own unique challenges and issues while walking throughout Union. In order to promote pedestrian safety, the City of Union should develop a city-wide pedestrian awareness campaign.



Project-Specific Awareness Efforts. In addition to a community-wide outreach campaign, the City of Union should target specific neighborhoods and corridors and bicycle and pedestrian facilities are developed. This localized outreach effort would intend to educate residents and property owners about the type of bicycle and/or pedestrian facility that the City will be constructing, how that facility relates to the City's Bikeable Walkable Community Plan, and how community members should properly use that facility. The door hanger pictured on the left, created by the Seattle Department of Transportation, includes the necessary information on facility type, facility usage, and contact information for City Staff.

Biking and Walking Maps. In order to promote current biking and walking opportunities, the City of Union should develop maps highlighting bicycling and walking facilities, including shared use paths in Union's public park system and the East Central College Fitness Trail. Whether in print form or online as a Portable Document Format file (PDF), such a map can also incorporate information about walking and/or bicycling safety tips, health facts about walking and bicycling, and other information detailing the City's efforts to make walking and cycling, safer and easier for residents of all ages and abilities.

Other maps can be created that focus on specific issues or assets. For example, one map focusing on fitness and health could highlight walking and jogging routes of specific distances, while another map focusing on historic assets might highlight a walking tour of historic homes and buildings in and around the central business district. The may also want to sell commercial advertisement space to help offset the cost of development and printing.

Pedestrian Safety Campaigns. Residents in Union have expressed their concerns about pedestrian safety and the potential conflict with motor vehicles in a number of specific locations in town, including the Central Business District, Union High School, elementary and middle schools, and Union City



Park. In an effort to encourage motorists to slow down and be more cognizant of the presence and safety of pedestrians, the Union Police Department should carry out targeted pedestrian safety campaigns to enforce motor vehicle and pedestrian laws and to distribute safety information and tips to motorists and pedestrians. Corresponding outreach to media outlets and community groups can increase public awareness and highlight the City's efforts to create a more pedestrian-friendly environment.

It is important to note the difference between a pedestrian safety campaign and the aforementioned public awareness campaigns. In a pedestrian safety campaign, the involvement of the Union Police Department and the focus on enforcement of motor vehicle and pedestrian regulations take center stage. In a public awareness campaign, the focus is less on enforcement and more on general education of the community on broader issues, like how cyclists and motorists can share the road, or tips to be a more attentive pedestrian when walking to school. There is naturally some overlap in general content, but the main difference is enforcement versus education.

External Resources and References. The sample of potential education, encouragement, and enforcement programs and activities listed above represent only a small fraction of successful programs that have been implemented throughout the United States. There are a number of useful resources available that detail some of these successful programs and can provide additional ideas for engaging and creative means to support walking and cycling in Union. These resources should be consulted as the City explores new opportunities to best connect with Union residents and visitors.

Pedestrian and Bicycling Information Center. This expansive clearinghouse of information related to bicycling and walking is funded by the Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center. Useful information includes tools and programs to



educate drivers, cyclists and pedestrians, case studies of successful programs and projects that have positively impacted walking and cycling, ideas for promoting walking and cycling for health purposes, and many other relevant resources.

Link: <http://www.pedbikeinfo.org/>

League of American Bicyclists. Originally founded in 1880 as the “League of American Wheelmen”, the League of American Bicyclists is a non-profit working throughout the United States to support walking and cycling through a variety of unique programs. Resources available at the LAB’s website include safety and educational materials, National Bike Month promotional materials, and Bicycle Friendly Businesses and Bicycle Friendly Communities checklists to help encourage businesses and municipalities to support cycling.

Link: <http://www.bikeleague.org/>

National Center for Safe Routes To School. Funded by the Federal Highway Administration, maintained by the University of North Carolina Highway Safety Research Center, and supported by a number of national institutions and organizations, the National Center for Safe Routes to School provides information and resources for the federal Safe Routes to School program, technical support for communities interested in developing a Safe Routes program, and information about the U.S. National Walk to School Day.

Link: <http://www.saferoutesinfo.org/>

Safe Routes to School National Partnership. Launched in 2005, the Safe Routes to School National Partnership is a network of organizations, government agencies, and professional groups whose mission is to “set goals, share best practices, leverage infrastructure and program funding, and advance policy change to help agencies that implement Safe Routes to School programs.” On their website you will find



information about the partnership as well as useful information for developing a local Safe Routes to School program.

Link: <http://www.saferoutespartnership.org/>

Trailnet, Inc. Trailnet, a local non-profit working throughout the St. Louis Metropolitan area to promote healthy and active living, provides a variety of programs, events and activities to encourage walking and cycling. Group bicycle rides, Safe Routes to School programs, bicycle maintenance and on-road skills training, Shift Your Commute bicycle commuter program, and National Bike to Work Day events are just a few of the programs Trailnet delivers throughout the area.

Link: <http://www.trailnet.org>

Missouri Bicycle and Pedestrian Federation. Founded in 1993, the Missouri Bicycle and Pedestrian Federation is a statewide non-profit that advocates for the advancement of bicycle and pedestrian access, safety, and education. Their website functions as a resource for bicycle and pedestrian news in Missouri, legislative updates, and resources for statewide Safe Routes to School information.

Link: <http://mobikefed.org>

Walk Friendly Communities. A project of the Pedestrian and Bicycle Information Center, Walk Friendly Communities (WFC) is a recognition program developed to encourage communities throughout North America to establish or recommit to a high priority for supporting safer walking environments. Available on the WFC website is a comprehensive guide to creating safer public and private places for walking and includes resources for pedestrian planning, complete streets, ADA issues, public involvement, trails, parking, mixed-use development, Safe Routes to School, walking maps and guides, sidewalk design and funding, crosswalks, traffic calming, and other tools for creating more a more walkable community. While the WFC



program is still relatively new, one community in Missouri - Lee's Summit - has been designated as a Walk Friendly Community (Bronze Level).

Link: <http://www.walkfriendly.org/>

6. Plan Adoption and Regulatory Actions

The following steps should be taken to implement the Union Bikeable Walkable Community Plan:

Local Adoption by Board of Alderman. Adoption of the plan as a guide for local policy development will help to ensure its implementation.

Park Land Dedication Program. The City of Union should consider establishment of a parkland set-aside or fee-in-lieu-of program, which would require developers to provide for not only the development costs of roads, but also to contribute toward the development of the bikeway system including greenways and trails. Greenways are essentially linear parks, and have long been recognized as important elements in the improvement of recreation and quality of life. They are a type of infrastructure that also directly supports transportation choices, health and vitality, and the residential and commercial environment in which they exist.

There is also considerable documented and anecdotal evidence that trails and greenways are good for the real estate development industry in that they positively affect property values. Examples include the following:

- Positive economic effects of a greenway corridor arise because of an increase in the value of taxable properties adjacent to the greenway. In an urban setting, this is almost beyond argument since the value of land for office buildings and apartment houses or condominiums will be enhanced



to some degree by adjacency to any public amenity of this sort.¹⁹

- (Burke-Gilman Trail, Seattle, WA.) ... Today, agents routinely advertise properties as being on or near the trail. According to the report (by the Seattle Engineering Department), 'property near ... the Burke-Gilman Trail is significantly easier to sell and, according to real estate agents, sells for an average of 6 percent more as a result of its proximity to the trail. Property....'²⁰
- In suburban areas of Chicago, Tampa, Union D.C., Seattle, and elsewhere, home-sale advertisements promote the properties' proximity to trails as a selling point.²¹
- Increased tax revenues are usually generated by an increase in property values on land near greenways.²²
- Downtown Minneapolis Central Riverfront is coming back, and it's parkland that's helping to make it happen. The \$40 million we've spent on parkland acquisition and development in the central river area is leveraging nearly ten times that amount in private expenditures for housing, office space, and commercial development.²³
- 'I strongly believe that the development of Downtown Park (Bellevue, Union) was a catalyst for the residential development around it,' said Matthew Terry, director of the Bellevue Department of Community Development.

19 Greenways for America, by Charles Little. 1990. The John Hopkins University Press; p. 185.

20 Greenways for America, by Charles Little. 1990. The John Hopkins University Press; p. 186.

21 Trails for the Twenty-First Century, second edition, by Charles Flink, Christine Olka, and Robert Searns. 2001, Island Press, p. 40.

22 Greenways: A Guide to Planning, Design, and Development, Loring LaB. Schwarz, editor. 1993, Island Press, p. 69.

23 Urban Parks and Open Space, by Alexander Garvin and Gayle Berens. 1997, Urban Land Institute, p. 59. Quote by David Fisher, Supt., Minneapolis Park Board.



Developers confirmed this view. One property owner said that the close proximity of Downtown Park to his parcel was critical to his decision to buy the land. When Kevin Lynch bought his parcel in 1980, he thought he was lucky to be close to a major regional shopping mall. Then when Downtown Park was developed next to his site, 'that was like winning a lotto ticket,' said Lynch. 'It's a blue-ribbon location to be next to a regional mall and a park.'²⁴

- (Pinellas Trail/Greenway, Pinellas County, Florida)In Oldona, adjacent to the trail, an upscale town home community was developed that uses the word trail in its name.... In addition, although firm figures on the trail's impact on nearby property values are not yet available, anecdotal evidence points to higher prices, which would yield higher tax receipts for the county. 'Both houses and commercial property along the trail are certainly more marketable,' said Scott Daniels, president of Pinellas Trails, Inc. 'Real estate ads mention proximity to the trail as one of the selling points.'²⁵

It is clear that, if homeowners gain, then so do the industries that develop homes that are made more marketable because of the availability of bicycle and pedestrian facilities. Therefore, it is appropriate for developers to participate in the parkland dedication program as they already do in other communities.

Additional Land Use, Zoning, and Policy Recommendations. In addition to the planned and recommended pedestrian facilities identified on the previous page, there are a number of policy-related steps that the city should consider to ensure that future growth, development and redevelopment support bicycle and pedestrian accessibility, connectivity, and circulation. The City of Union's zoning ordinances and subdivision regulations can have a significant impact on the pedestrian and bicycle

²⁴ Urban Parks and Open Space, by Alexander Garvin and Gayle Berens. 1997, Urban Land Institute, p. 78.

²⁵ Urban Parks and Open Space, by Alexander Garvin and Gayle Berens. 1997, Urban Land Institute, p. 76.



environments as properties are developed or redeveloped. Zoning ordinances determine the type of land use suitable for a given area and the relation of new buildings to the street and to one another. When new subdivisions are proposed, the City's subdivision regulations dictate the placement and character of streets, sidewalks, street lighting, cul-de-sacs, landscaping, block lengths, public utilities, easements, and other important elements. The following policy actions should be considered for their potential to create safe, accessible, and connected pedestrian and bicycle facilities:

- **Repeal Existing Sidewalk Moratorium.** Repealing the current sidewalk moratorium, which has been in place for close to ten years, would ensure that new subdivisions incorporate sidewalks as a basic component of the built environment. It is important to note that this policy change would affect only new subdivisions and would not require existing subdivisions built during the moratorium without sidewalks to construct new sidewalks.
- **Adopt A Complete Streets Policy.** A Complete Streets policy is a general policy statement that public streets will be designed, constructed, and maintained in a manner that accommodates all road users - automobiles, pedestrians, cyclists, disabled persons, and transit users. While the City of Union already takes many of these factors into account during roadway projects, the adoption of a Complete Streets policy could be a public demonstration of the City's commitment to creating a healthier environment that supports the needs of all roadway users.
- **Define Broader Uses for Floodways and Floodplains.** A floodway/floodplain overlay should be considered in existing districts where there are creeks, streams, and other low-lying areas. Here, greenways, trails, and park nodes would be allowed as appropriate uses, as well as a variety of other uses that are entirely consistent with these areas, such as interpretive trails, nature preserves, wildlife refuges,



ecological corridors, and other low impact uses. The overlay could allow such uses by right, or as special uses to be regulated on a case-by-case basis. The net effect of this designation would be to help facilitate the eventual use of floodways and floodplains for a wider variety of activities considered vital in today's progressive communities.

- **Incorporate Non Motorized Movement Into New Cul-de-Sac Design.** Cul-de-sacs should be carefully evaluated to ensure they provide the best solution for vehicular access within neighborhoods. When they are used, non-motorized trail pass-throughs (similar to crosswalks but wider to accommodate bicyclists) should be required so that adjacent neighborhoods can be interconnected.
- **Review/Modify Street Specifications.** Street specifications in the Subdivision Code should reflect the signage and design typology shown in the plan, with the objective of including all new streets in the evolving bikeway system. Elements include the following, described by street type:

New four-lane collectors with no on-street parking should have curb lane widths of at least fifteen feet to permit lane sharing by both automobiles and bicyclists. Collectors with curb side parking should have parking lanes of at least sixteen feet to allow sufficient room for bicyclists to pass adjacent to opening car doors without the need to swerve into the motor vehicle lane.

New two-lane collector streets should be designed with wide curb lanes, and posted either with "Share the Road with Bicycles" signs, "Bicycle Route" signs, or with "Bicycle Lane" striping and appropriate signage.

Arterial streets should include five-foot wide striped and stenciled bike lanes as well as "Share



the Road with Bicycles” signs and posted with lower speed limits consistent with published guidelines.

- **Review Pedestrian Facility Requirements.** Consider sidewalks on both sides of the street with minimum four-foot widths on residential streets, five- to six-foot widths on collectors and arterials, and wider sidewalks in higher density commercial districts.
- **Sidewalk Buffers.** Residential streets should be separated from sidewalks by grass and landscaped strips to provide a more effective buffer from auto traffic. (Studies show that these buffers also have a traffic calming effect.)
- **Shorter Corner Radii.** Use shorter radius corners to slow vehicle turning movements and facilitate pedestrian crossing.
- **Ongoing Review of Best Design Practices.** Continue to review best design practices for multi-modal transportation and traffic calming, as this is a rapidly evolving field.

All of these requirements should be communicated at the time of first contact with developers, and recommended pedestrian and bicycle facility improvements should be shown in all subdivision documents submitted to the City.

7. Monitoring and Evaluation

To ensure the plan’s continued effectiveness, the City should continue to monitor the implementation of the Bikeable Walkable Community Plan, evaluate the success of various projects, and update the Plan to meet changing community needs and local, state and national context. Monitoring and evaluation activities should be undertaken by representatives of various City Departments and members of the advisory committee referenced in Objective 1.9 on page 57. The



utilization of local and external implementation resources managed by a realistic development timetable should be central elements in this monitoring process. Monitoring of facility 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 timetables should be modified.