Recommendations for Bicycling

Argonne Drive

Bicycle lanes are recommended on Argonne Drive. The street is wide enough to accommodate bicycle lanes, but the current angled parking would make traditional, right-side bicycle lanes dangerous. The bicycle lanes must be accompanied by a conversion to back-in angled parking, in order to reduce the chance of crashes. Alternatively, left-side bicycle lanes could be installed adjacent to the existing medians once the turn-arounds are closed to car traffic. See the pedestrian recommendations for Argonne Drive (pg ?), for more information.

Bicycle Prioritization

The proposed bicycle improvements in Kirkwood are broken into three phases. Each phase is presented as a coherent set of projects that will provide connectivity to important destinations, and build upon one another.

The first phase focuses on connecting parks and regional trails in Kirkwood, in addition to connecting existing bicycle infrastructure. The first phase is the largest, as it establishes a network for bicycling in Kirkwood, that can be built upon in the future. The total mileage for Phase 1 is 10.8 miles with an estimated cost of approximately $930,900 (see Figure 12).

The second phase focuses on connecting neighborhoods to the bicycling network. The total mileage is 9.3, with an estimated cost of approximately $1,148,200 (See Figure 13). The third phase expands the network to enhance connectivity. This is the smallest phase with a total length of 4.1 miles and an estimated cost of approximately $530,200 (See Figure 14). The recommended improvements along routes owned by MoDOT and St. Louis County make up 10.5 miles and are estimated to cost $842,300. The majority of these projects involve restriping and should be considered when the streets are scheduled for routine maintenance. The recommendations for Manchester will require right of way acquisition, and are part of the Gateway Bike Plan.

Bike St. Louis in Kirkwood signage helps mark the bicycling route from Grant's Trail to Downtown Kirkwood.

The trailhead for Grant's Trail, one of the region's most popular biking corridors, is in Kirkwood.

Figure 13:

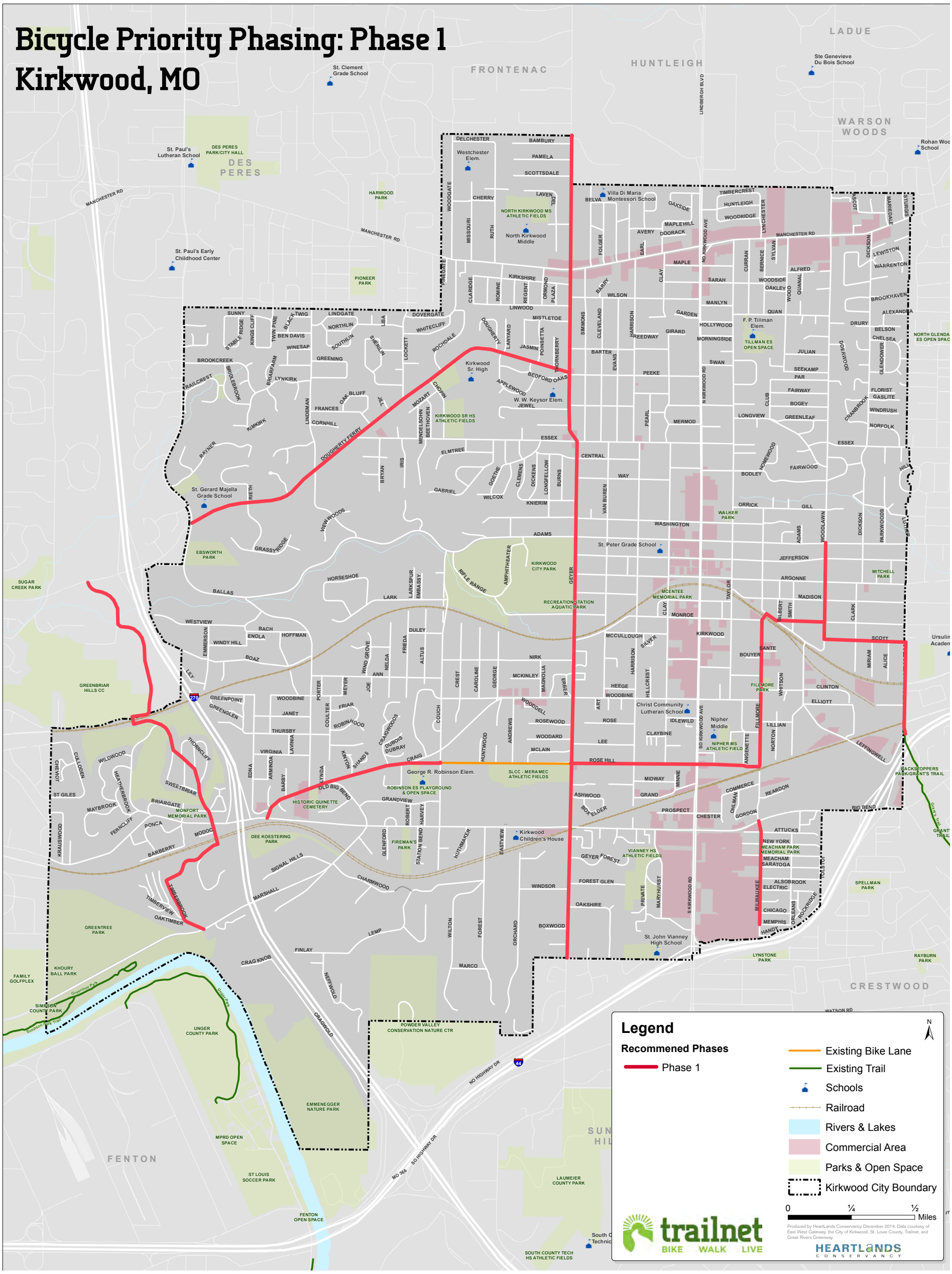

Bicycle Priority Phasing: Phase 1
Kirkwood, MO
FRONTENAC
HUNTLEIGH
LADUE
WARSON WOODS
DES PERES
FENTON
CRESTWOOD
St. Clement Grade School
Ste Genevieve Du Bois School
St. Paul's Lutheran School
DES PERES PARK/CITY HALL
HARWOOD PARK
PIONEER PARK
St. Paul's Early Childhood Center
Westchester Elem.
Villa Di Maria Montessori School
NORTH KIRKWOOD MS ATHLETIC FIELDS
North Kirkwood Middle
F. P. Tillman Elem.
TILLMAN ES OPEN SPACE
Kirkwood Sr. High
W. W. Keysor Elem.
KIRKWOOD SR HS ATHLETIC FIELDS
St. Gerard Majella Grade School
St. Peter Grade School
KIRKWOOD CITY PARK
RECREATION STATION AQUATIC PARK
MCENTEE MEMORIAL PARK
WALKER PARK
Christ Community Lutheran School
Nipher Middle
NIPHER MS ATHLETIC FIELD
George R. Robinson Elem.
ROBINSON ES PLAYGROUND & OPEN SPACE
SLCC - MERAMEC ATHLETIC FIELDS
HISTORIC QUINETTE CEMETERY
Kirkwood Children's House
FIREMAN'S PARK
DEE KOESTERING PARK
MONFORT MEMORIAL PARK
VIANNEY HS ATHLETIC FIELDS
St. John Vianney High School
EBSWORTH PARK
GREENBRIAR HILLS CC
SUGAR CREEK PARK
GREENTREE PARK
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON OPEN SPACE
POWDER VALLEY CONSERVATION NATURE CTR
LAUMEIER COUNTY PARK
SOUTH COUNTY TECH HS ATHLETIC FIELDS
LYNSTONE PARK
RAYBURN PARK
SPELLMAN PARK
MEACHAM PARK MEMORIAL PARK
MEACHAM SARATOGA
ALSOBROOK ELECTRIC
BACKSTOPPERS PARK/GRANT'S TRAIL
GRANT'S TRAIL
NORTH GLENDA ES OPEN SPAC
MANCHESTER RD
LINDBERGH BLVD
DOUGHERTY FERRY
BIG BEND
I-270
I-44
MO 366
SO HIGHWAY DR
NO HIGHWAY DR
Legend
Recommened Phases
Phase 1
Existing Bike Lane
Existing Trail
Schools
Railroad
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
N
0
¼
½
Miles
trailnet
BIKE WALK LIVE
Produced by HeartLands Conservancy December 2014. Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.
HEARTLANDS CONSERVANCY

Figure 14:

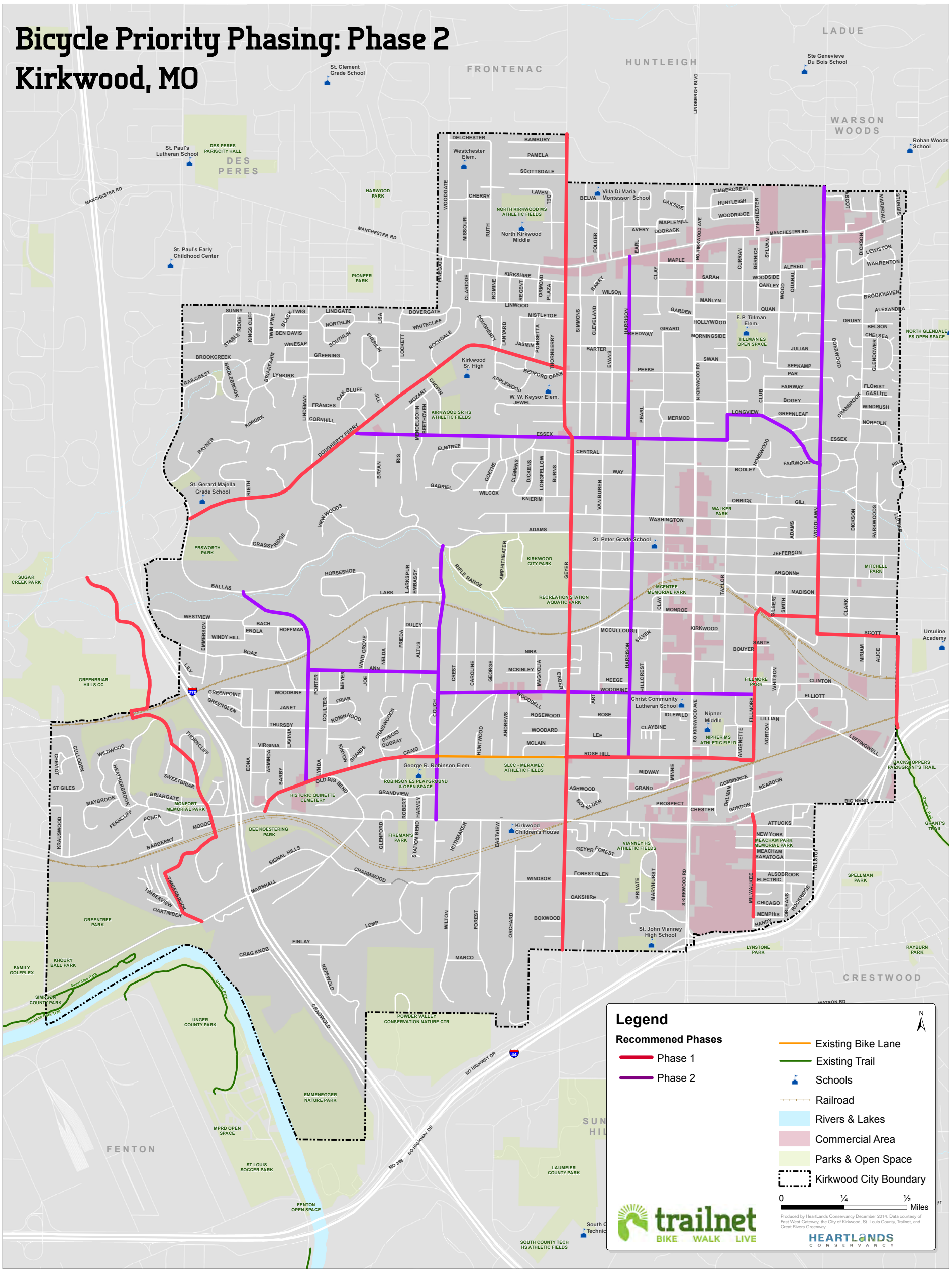

Bicycle Priority Phasing: Phase 2
Kirkwood, MO
Legend
Recommened Phases
Phase 1
Phase 2
Existing Bike Lane
Existing Trail
Schools
Railroad
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
0
¼
½
Miles
Produced by HeartLands Conservancy December 2014. Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.
trailnet
BIKE WALK LIVE
HEARTLANDS CONSERVANCY
FRONTENAC
HUNTLEIGH
LADUE
WARSON WOODS
DES PERES
CRESTWOOD
FENTON
St. Clement Grade School
Ste Genevieve Du Bois School
Rohan Woods School
St. Paul's Lutheran School
DES PERES PARK/CITY HALL
St. Paul's Early Childhood Center
Westchester Elem.
Villa Di Maria Montessori School
North Kirkwood Middle
NORTH KIRKWOOD MS ATHLETIC FIELDS
HARWOOD PARK
PIONEER PARK
Kirkwood Sr. High
W. W. Keysor Elem. JEWEL
KIRKWOOD SR HS ATHLETIC FIELDS
F. P. Tillman Elem.
TILLMAN ES OPEN SPACE
St. Gerard Majella Grade School
St. Peter Grade School
KIRKWOOD CITY PARK
RECREATION STATION AQUATIC PARK
MCENTEE MEMORIAL PARK
WALKER PARK
Ursuline Academy
Christ Community Lutheran School
Nipher Middle
NIPHER MS ATHLETIC FIELD
George R. Robinson Elem.
ROBINSON ES PLAYGROUND & OPEN SPACE
SLCC - MERAMEC ATHLETIC FIELDS
HISTORIC QUINETTE CEMETERY
Kirkwood Children's House
FIREMAN'S PARK
DEE KOESTERING PARK
VIANNEY HS ATHLETIC FIELDS
St. John Vianney High School
LYNSTONE PARK
RAYBURN PARK
SPELLMAN PARK
BACKSTOPPERS PARK/GRANT'S TRAIL
NORTH GLENDALE ES OPEN SPACE
FILLMORE PARK
MONFORT MEMORIAL PARK
EBSWORTH PARK
SUGAR CREEK PARK
GREENBRIAR HILLS CC
GREENTREE PARK
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON OPEN SPACE
LAUMEIER COUNTY PARK
SOUTH COUNTY TECH HS ATHLETIC FIELDS
POWDER VALLEY CONSERVATION NATURE CTR
MANCHESTER RD
LINDBERGH BLVD
NO HIGHWAY DR
SO HIGHWAY DR
MO 366
DOUGHERTY FERRY
GRAVOIS RD
WATSON RD

Figure 15:

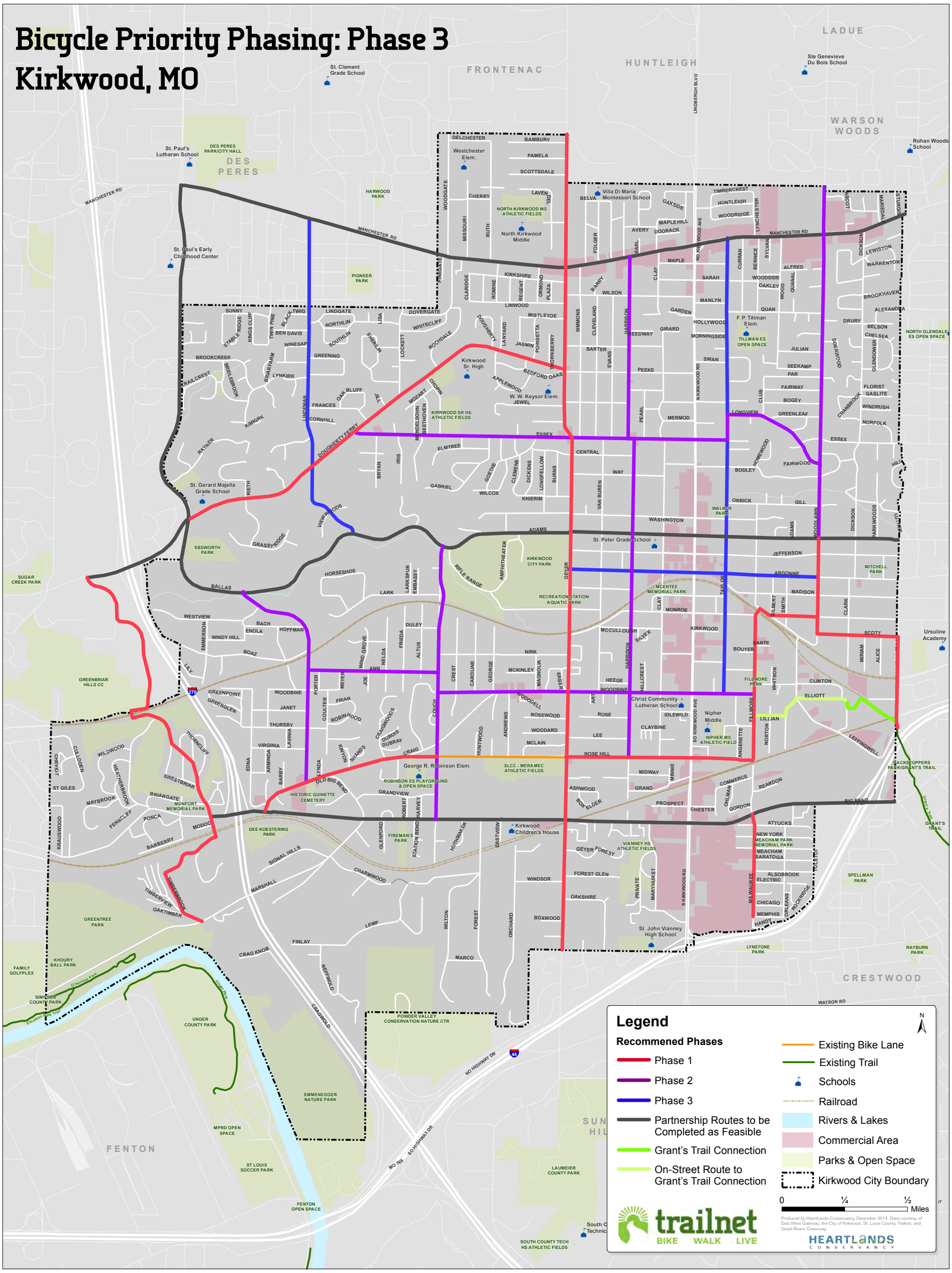

Bicycle Priority Phasing: Phase 3
Kirkwood, MO
Legend
Recommened Phases
Phase 1
Phase 2
Phase 3
Partnership Routes to be Completed as Feasible
Grant's Trail Connection
On-Street Route to Grant's Trail Connection
Existing Bike Lane
Existing Trail
Schools
Railroad
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
0 ¼ ½ Miles
Produced by HeartLands Conservancy December 2014. Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.
trailnet BIKE WALK LIVE
HEARTLANDS CONSERVANCY
FRONTENAC
HUNTLEIGH
LADUE
WARSON WOODS
DES PERES
CRESTWOOD
FENTON
St. Clement Grade School
Ste Genevieve Du Bois School
Rohan Woods School
St. Paul's Lutheran School
Westchester Elem.
Villa Di Maria Montessori School
North Kirkwood Middle
St. Paul's Early Childhood Center
F. P. Tillman Elem.
Kirkwood Sr. High
W. W. Keysor Elem.
St. Gerard Majella Grade School
St. Peter Grade School
Christ Community Lutheran School
Nipher Middle
George R. Robinson Elem.
Kirkwood Children's House
Ursuline Academy
St. John Vianney High School
MANCHESTER RD
LINDBERGH BLVD
WOODGATE
DELCHESTER
BAMBURY
PAMELA
SCOTTSDALE
CHERRY
LAVEN
MISSOURI
RUTH
NORTH KIRKWOOD MS ATHLETIC FIELDS
HARWOOD PARK
PIONEER PARK
DES PERES PARK/CITY HALL
KIRKSHIRE
CLARIDGE
ROMINE
REGENT
ORMOND PLAZA
PINEGATE
LINWOOD
DOVERGATE
MISTLETOE
WHITECLIFF
ROCHDALE
DOUGHERTY
LANYARD
JASMIN
POINSETTA
THORNBERRY
SIMMONS
CLEVELAND
HARRISON
FREEDWAY
GIRARD
MORNINGSIDE
HOLLYWOOD
GARDEN
MANLYN
WILSON
BARRY
SARAH
MAPLE
CLAY
FOLGER
EARL
NO KIRKWOOD AVE
OAKSIDE
BELVA
TIMBERCREST
HUNTLEIGH
WOODRIDGE
MAPLEHILL
DOORACK
AVERY
LYNCHESTER
CURRAN
BERNICE
SYLVAN
WOODSIDE
OAKLEY
WOOD
QUANAL
ALFRED
QUAN
DICKSON
LEWISTON
WARRENTON
BROOKHAVEN
ALEXANDRIA
DRURY
BELSON
CHELSEA
GLENDOWER
DGERWOOD
FLORIST
GASLITE
WINDRUSH
NORFOLK
CRANBROOK
ESSEX
MARIEDALE
STURGIS
SCOTT
NORTH GLENDALE ES OPEN SPACE
TILLMAN ES OPEN SPACE
JULIAN
SEEKAMP
PAR
FAIRWAY
BOGEY
GREENLEAF
LONGVIEW
CLUB
PEEKE
SWAN
BARTER
EVANS
N KIRKWOOD RD
PEARL
MERMOD
ESSEX
CENTRAL
WAY
BODLEY
HOMEWOOD
FAIRWOOD
HILL
ORRICK
GILL
WALKER PARK
WASHINGTON
ADAMS
WOODLAWN
PARKWOODS
LOCUST
JEFFERSON
ARGONNE
MITCHELL PARK
MADISON
CLARK
SMITH
GILBERT
TAYLOR
GEYER
KIRKWOOD CITY PARK
AMPHITHEATER
RIFLE RANGE
MCENTEE MEMORIAL PARK
RECREATION STATION AQUATIC PARK
MONROE
KIRKWOOD
MCCULLOUGH
SILVER
BOUYER
SANTE
SCOTT
MIRIAM
ALICE
CLINTON
ELLIOTT
FILLMORE PARK
WHITSON
FILLMORE
LILLIAN
NORTON
LEFFINGWELL
BACKSTOPPERS PARK/GRANT'S TRAIL
GRANT'S TRAIL
BIG BEND
REARDON
COMMERCE
OHLMAN
GORDON
CHESTER
PROSPECT
BOX ELDER
ASHWOOD
GRAND
MIDWAY
MINNIE
ROSE HILL
CLAYBINE
IDLEWILD
ROSE
LEE
WOODDELL
WOODARD
ROSEWOOD
MCLAIN
ANDREWS
HUNTWOOD
ANGENETTE
SO KIRKWOOD AVE
NIPHER MS ATHLETIC FIELD
SLCC - MERAMEC ATHLETIC FIELDS
ROBINSON ES PLAYGROUND & OPEN SPACE
HISTORIC QUINETTE CEMETERY
GRANDVIEW
ROBERT
HARVEY
STATION BEND
HITHMAKER
EASTVIEW
GLENFORD
FIREMAN'S PARK
VIANNEY HS ATHLETIC FIELDS
GEYER FOREST
ATTUCKS
NEW YORK
MEACHAM PARK MEMORIAL PARK
MEACHAM SARATOGA
ALSOBROOK
ELECTRIC
CHICAGO
MEMPHIS
HANDY
ROCKRIDGE
ORLEANS
MILWAUKEE
S KIRKWOOD RD
PRIVATE
MARYHURST
FOREST GLEN
WINDSOR
OAKSHIRE
BOXWOOD
ORCHARD
FOREST
WILTON
LEMP
MARCO
FINLAY
CRAG KNOB
NEFFWOLD
CRAIGWOLD
NO HIGHWAY DR
SO HIGHWAY DR
MO 366
I-270
I-44
MANCHESTER RD
BALLAS
HORSESHOE
LARK
LARKSPUR
EMBASSY
DULEY
FRIEDA
ALTUS
NELDA
WIND GROVE
ANN
CREST
CAROLINE
GEORGE
MAGNOLIA
EBERLE
NIRK
HEEGE
WOODBINE
PORTER
MEYER
JOE
COULTER
FRIAR
ROBIN HOOD
CRAIGWOOD'S
DUBOIS
DUBRAY
KINYON
SHANDS
CRAIG
COUCH
ART
HILLCREST
HARRISON
SILVER
BOUYER
SANTE
SCOTT
MIRIAM
ALICE
WESTVIEW
BACH
ENOLA
HOFFMAN
WINDY HILL
EMMERSON
BOAZ
LILY
GREENPOINT
GREENGLEN
WOODBINE
JANET
THURSBY
LAVINIA
VIRGINIA
ARMINDA
BARBY
EDNA
OLD BIG BEND
LYNDA
THORNCLIFF
CHEVIOT
CULLODEN
WILDWOOD
HEATHERBROOK
FERNCLIFF
ST GILES
MAYBROOK
BRIARGATE
SWEETBRIAR
MONFORT MEMORIAL PARK
PONCA
MODOC
KRAUSWOOD
BARBERRY
DEE KOESTERING PARK
SIGNAL HILLS
MARSHALL
CHARMWOOD
TIMBERVIEW
TIMBERBROOK
OAKTIMBER
GREENTREE PARK
SUGAR CREEK PARK
GREENBRIAR HILLS CC
EBSWORTH PARK
SUNNY
STABLE RIDGE
KINGS CLIFF
TWIN PINE
BLACK TWIG
LINDGATE
BEN DAVIS
WINESAP
NORTHLIN
SOUTHLIN
LISA
SHERLIN
LOCKETT
BROOKCREEK
BRIDLEBROOK
RAILCREST
BRIARFARM
LYNKIRK
GREENING
KIMKIRK
RAYNER
LINDEMAN
OAK BLUFF
FRANCES
CORNHILL
JILL
DOUGHERTY FERRY
MOZART
CHOPIN
MENDELSHON
BEETHOVEN
KIRKWOOD SR HS ATHLETIC FIELDS
ELMTREE
IRIS
BRYAN
GABRIEL
WILCOX
KNIERIM
GOETHE
CLEMENS
DICKENS
LONGFELLOW
BURNS
VAN BUREN
VIEW WOODS
GRASS RIDGE
RIETH
LYNDA
SUNSET HILLS CC
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
Simpson Park Trail
Greentree Park
Unger Park
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON OPEN SPACE
POWDER VALLEY CONSERVATION NATURE CTR
LAUMEIER COUNTY PARK
SOUTH COUNTY TECH HS ATHLETIC FIELDS
SPELLMAN PARK
RAYBURN PARK
LYNSTONE PARK

Figure 16:

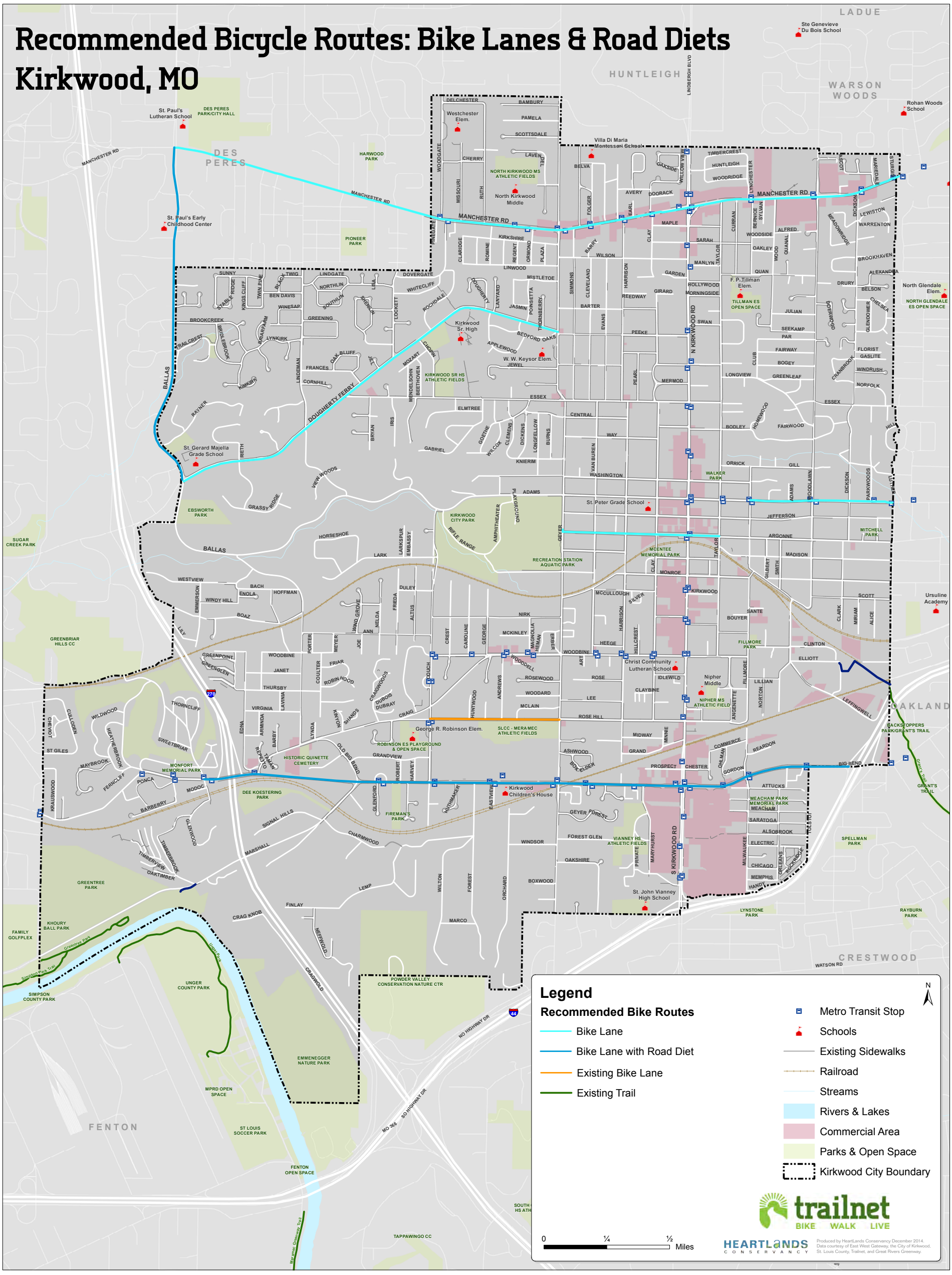

Recommended Bicycle Routes: Bike Lanes & Road Diets
Kirkwood, MO
LADUE
HUNTLEIGH
WARSON WOODS
Ste Genevieve Du Bois School
Rohan Woods School
St. Paul's Lutheran School
DES PERES PARK/CITY HALL
DES PERES
HARWOOD PARK
PIONEER PARK
St. Paul's Early Childhood Center
Westchester Elem.
Villa Di Maria Montessori School
NORTH KIRKWOOD MS ATHLETIC FIELDS
North Kirkwood Middle
MANCHESTER RD
F. P. Tillman Elem.
TILLMAN ES OPEN SPACE
North Glendale Elem.
NORTH GLENDALE ES OPEN SPACE
Kirkwood Sr. High
W. W. Keysor Elem.
KIRKWOOD SR HS ATHLETIC FIELDS
St. Gerard Majella Grade School
St. Peter Grade School
KIRKWOOD CITY PARK
RECREATION STATION AQUATIC PARK
McENTEE MEMORIAL PARK
Ursuline Academy
Christ Community Lutheran School
Nipher Middle
NIPHER MS ATHLETIC FIELD
George R. Robinson Elem.
SLCC - MERAMEC ATHLETIC FIELDS
ROBINSON ES PLAYGROUND & OPEN SPACE
HISTORIC QUINETTE CEMETERY
MONFORT MEMORIAL PARK
DEE KOESTERING PARK
Kirkwood Children's House
FIREMAN'S PARK
MEACHAM PARK MEMORIAL PARK
VIANNEY HS ATHLETIC FIELDS
St. John Vianney High School
OAKLAND
CRESTWOOD
GREENBRIAR HILLS CC
GREENTREE PARK
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON OPEN SPACE
TAPPAWINGO CC
POWDER VALLEY CONSERVATION NATURE CTR
SUGAR CREEK PARK
EBSWORTH PARK
KIRKWOOD CITY PARK
LYNSTONE PARK
RAYBURN PARK
SPELLMAN PARK
BACKSTOPPERS PARK/GRANT'S TRAIL
Legend
Recommended Bike Routes
Bike Lane
Bike Lane with Road Diet
Existing Bike Lane
Existing Trail
Metro Transit Stop
Schools
Existing Sidewalks
Railroad
Streams
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
N
0
¼
½
Miles
trailnet
BIKE WALK LIVE
HEARTLANDS CONSERVANCY
Produced by HeartLands Conservancy December 2014.
Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.

Figure 17:

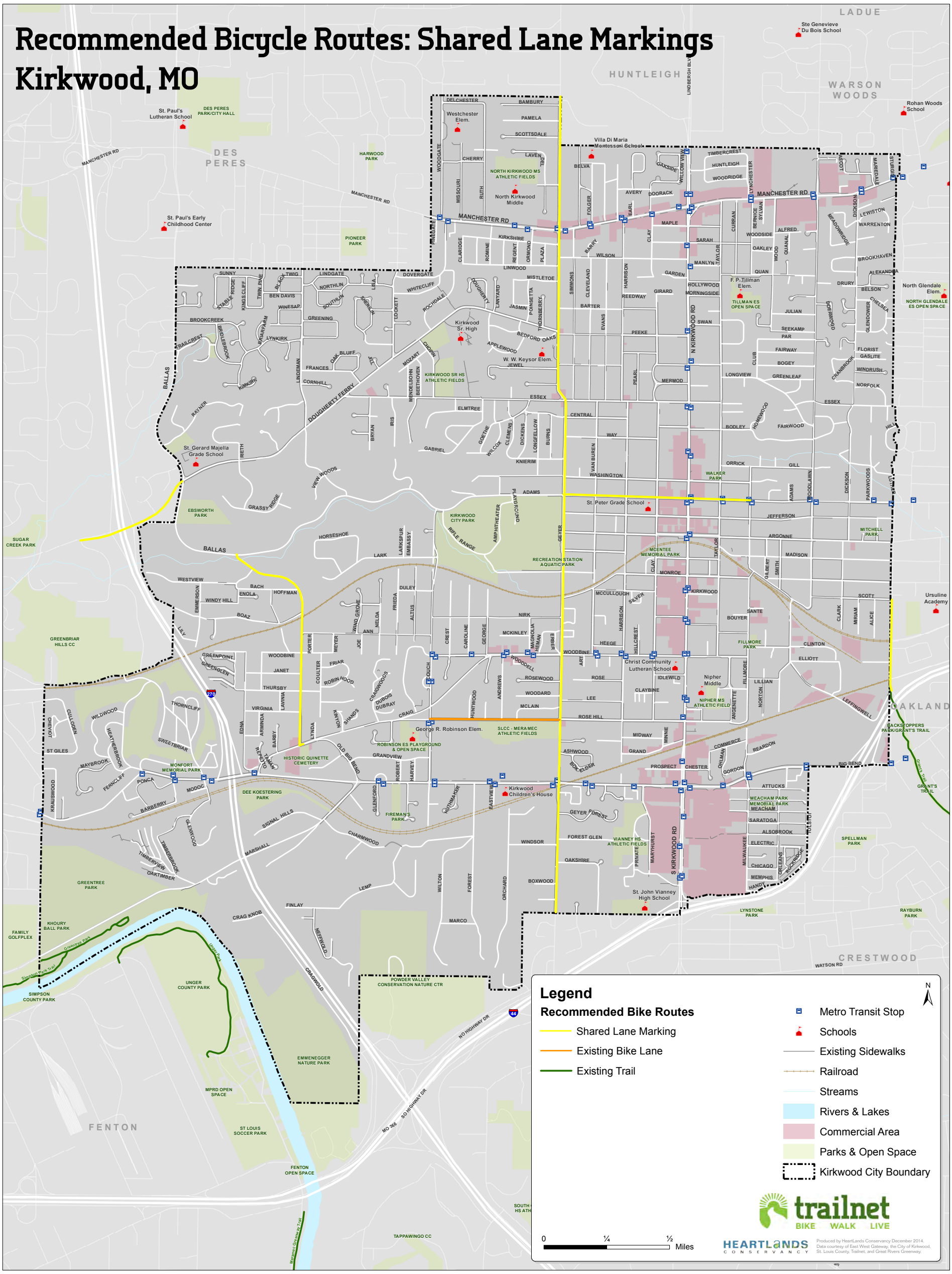
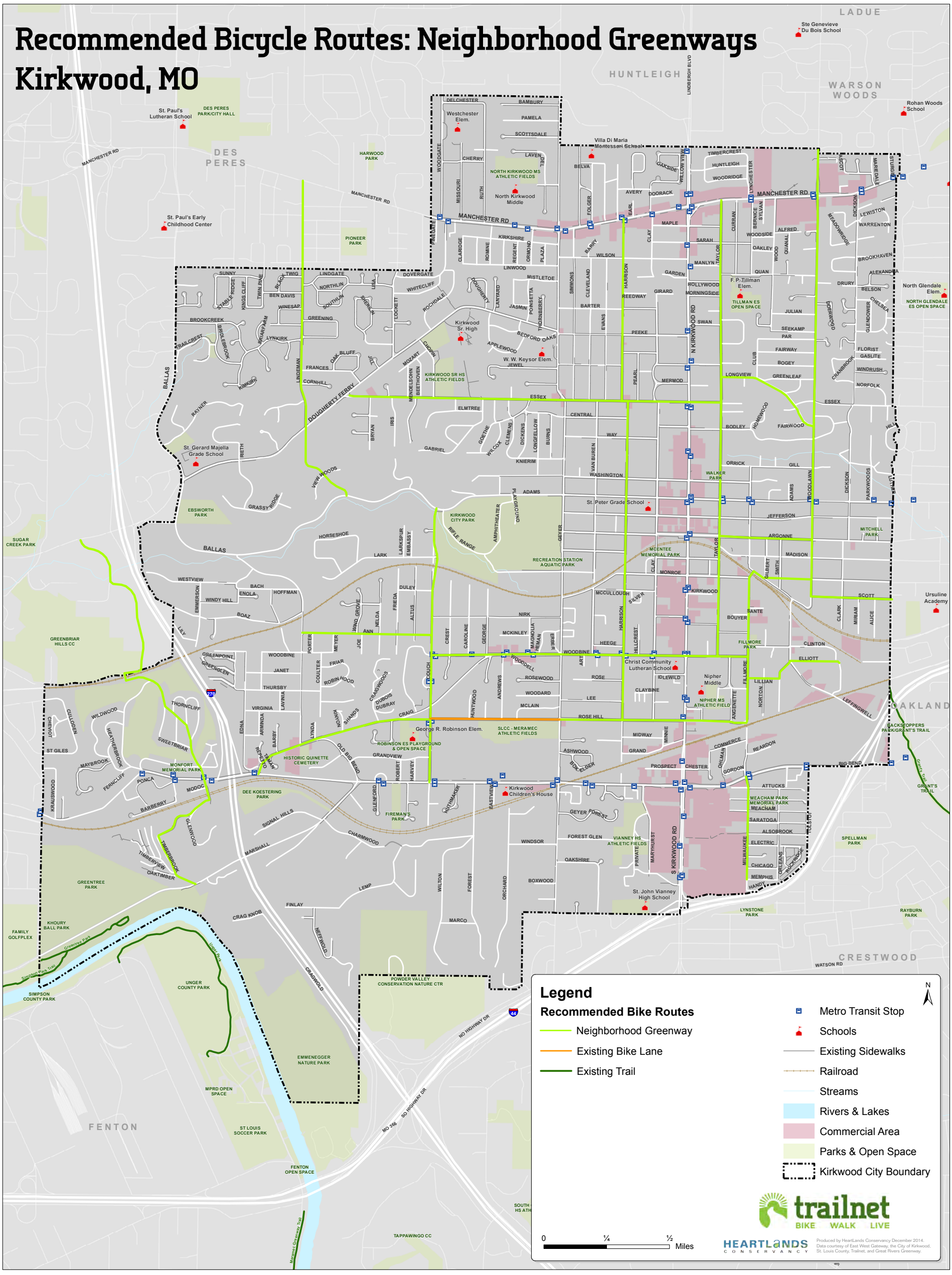
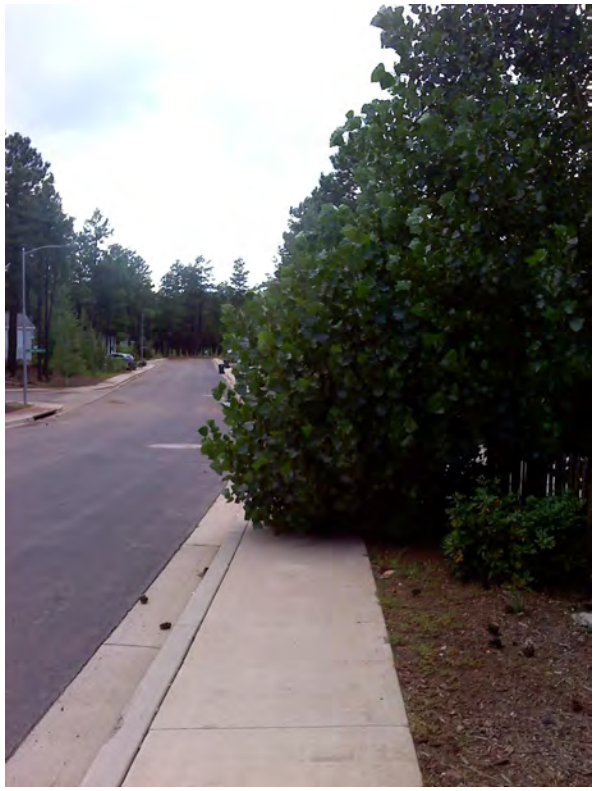

Recommended Bicycle Routes: Shared Lane Markings
Kirkwood, MO
LADUE
HUNTLEIGH
WARSON WOODS
Ste Genevieve Du Bois School
Rohan Woods School
St. Paul's Lutheran School
DES PERES PARK/CITY HALL
DES PERES
HARWOOD PARK
PIONEER PARK
St. Paul's Early Childhood Center
Westchester Elem.
North Kirkwood Middle
NORTH KIRKWOOD MS ATHLETIC FIELDS
Villa Di Maria Montessori School
MANCHESTER RD
Kirkwood Sr. High
W. W. Keysor Elem.
KIRKWOOD SR HS ATHLETIC FIELDS
F. P. Tillman Elem.
TILLMAN ES OPEN SPACE
North Glendale Elem.
NORTH GLENDALE ES OPEN SPACE
St. Gerard Majella Grade School
St. Peter Grade School
KIRKWOOD CITY PARK
RECREATION STATION AQUATIC PARK
McENTEE MEMORIAL PARK
MITCHELL PARK
EBSWORTH PARK
SUGAR CREEK PARK
Ursuline Academy
Christ Community Lutheran School
Nipher Middle
NIPHER MS ATHLETIC FIELD
George R. Robinson Elem.
ROBINSON ES PLAYGROUND & OPEN SPACE
SLCC - MERAMEC ATHLETIC FIELDS
HISTORIC QUINETTE CEMETERY
MONFORT MEMORIAL PARK
DEE KOESTERING PARK
Kirkwood Children's House
FIREMAN'S PARK
VIANNEY HS ATHLETIC FIELDS
St. John Vianney High School
OAKLAND
CRESTWOOD
GREENBRIAR HILLS CC
GREENTREE PARK
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON
FENTON OPEN SPACE
TAPPAWINGO CC
POWDER VALLEY CONSERVATION NATURE CTR
SPELLMAN PARK
RAYBURN PARK
LYNSTONE PARK
BACKSTOPPERS PARK/GRANT'S TRAIL
GRANT'S TRAIL
Legend
Recommended Bike Routes
Shared Lane Marking
Existing Bike Lane
Existing Trail
Metro Transit Stop
Schools
Existing Sidewalks
Railroad
Streams
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
N
0
¼
½
Miles
trailnet
BIKE WALK LIVE
HEARTLANDS CONSERVANCY
Produced by HeartLands Conservancy December 2014.
Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.

Figure 18:


Recommended Bicycle Routes: Neighborhood Greenways
Kirkwood, MO
Legend
Recommended Bike Routes
Neighborhood Greenway
Existing Bike Lane
Existing Trail
Metro Transit Stop
Schools
Existing Sidewalks
Railroad
Streams
Rivers & Lakes
Commercial Area
Parks & Open Space
Kirkwood City Boundary
0
¼
½
Miles
N
trailnet
BIKE WALK LIVE
HEARTLANDS CONSERVANCY
Produced by HeartLands Conservancy December 2014.
Data courtesy of East West Gateway, the City of Kirkwood, St. Louis County, Trailnet, and Great Rivers Greenway.
MANCHESTER RD
DOUGHERTY FERRY
ESSEX
ARGONNE
JEFFERSON
ADAMS
ORRICK
WASHINGTON
WOODBINE
KIRKWOOD
ROSE HILL
WOODARD
LEE
MCLAIN
ROSEWOOD
WOODDELL
WOODWARD
MIDWAY
GRAND
ASHWOOD
PROSPECT
CHESTER
GEYER FOREST
FOREST GLEN
WINDSOR
OAKSHIRE
BOXWOOD
CENTRAL
WAY
ELMTREE
ORRICK
GILL
WALKER PARK
MITCHELL PARK
MCENTEE MEMORIAL PARK
RECREATION STATION AQUATIC PARK
KIRKWOOD CITY PARK
RIFLE RANGE
AMPHITHEATER
PLAYGROUND
EBSWORTH PARK
SUGAR CREEK PARK
GREENBRIAR HILLS CC
GREENTREE PARK
KHOURY BALL PARK
FAMILY GOLFPLEX
SIMPSON COUNTY PARK
UNGER COUNTY PARK
EMMENEGGER NATURE PARK
MPRD OPEN SPACE
ST LOUIS SOCCER PARK
FENTON OPEN SPACE
TAPPAWINGO CC
POWDER VALLEY CONSERVATION NATURE CTR
FENTON
CRESTWOOD
LADUE
HUNTLEIGH
WARSON WOODS
OAKLAND
DES PERES
DES PERES PARK/CITY HALL
HARWOOD PARK
PIONEER PARK
BALLAS
St. Paul's Lutheran School
St. Paul's Early Childhood Center
Westchester Elem.
North Kirkwood Middle
NORTH KIRKWOOD MS ATHLETIC FIELDS
Villa Di Maria Montessori School
Ste Genevieve Du Bois School
Rohan Woods School
Kirkwood Sr. High
W. W. Keysor Elem.
KIRKWOOD SR HS ATHLETIC FIELDS
St. Gerard Majella Grade School
St. Peter Grade School
George R. Robinson Elem.
ROBINSON ES PLAYGROUND & OPEN SPACE
SLCC - MERAMEC ATHLETIC FIELDS
Christ Community Lutheran School
Nipher Middle
NIPHER MS ATHLETIC FIELD
F. P. Tillman Elem.
TILLMAN ES OPEN SPACE
North Glendale Elem.
NORTH GLENDALE ES OPEN SPACE
Kirkwood Children's House
St. John Vianney High School
VIANNEY HS ATHLETIC FIELDS
Ursuline Academy
HISTORIC QUINETTE CEMETERY
MONFORT MEMORIAL PARK
DEE KOESTERING PARK
FIREMAN'S PARK
MEACHAM PARK MEMORIAL PARK
LYNSTONE PARK
RAYBURN PARK
SPELLMAN PARK
BACKSTOPPERS PARK/GRANT'S TRAIL
GRANT'S TRAIL
Meramec Greenway Trail
Simpson Park Trail
Unger Park
MO 366
SO HIGHWAY DR
NO HIGHWAY DR
LINDBERGH BLVD
S KIRKWOOD RD
N KIRKWOOD RD

Curb ramps should be in the direction of travel.
Photo by: Dan Burden, www.pedbikeimages.org



Trees and shrubs can block sidewalks if left untrimmed.
Photo by: Justin Pryzby, www.pedbikeimages.org

Design Guidelines

The American with Disabilities Act (ADA)

In 1990, Congress passed the American with Disabilities Act, which prohibits discrimination and ensures equal opportunities for people with disabilities. This includes planning in the public rights of way and assuring accessibility for all roadway users. Title II of the American with Disabilities Act requires all public rights of way and facilities be accessible for all users.

It is important to assure all pedestrian facilities accommodate people with disabilities. There are several retirement facilities in Kirkwood, and it is important to provide a comfortable and safe walking environment for these residents that may be unable to drive or lack access to a car.

The United States Access Board develops guidelines for public rights of way for various users including people with visual impairments and people in wheelchairs. These guidelines cover pedestrian access to streets and sidewalks (crossings, curb ramps, etc), roadway designs, constraints such as slopes, and placement of street amenities (benches, signs, bus stops, etc.) Below is a list of common pedestrian facilities and minimum ADA standards and design guidelines. It is important to note, these are only minimums. To achieve an optimal pedestrian environment, sidewalks, for instance, should actually be wider.

- Sidewalks – Minimum width for the pedestrian access route of a sidewalk is four feet. This means that the clear zone should be four feet. If planning to add amenities (street furniture, etc.) in the right of way, then sidewalks should be much wider. To accommodate for passing, sidewalks should be a minimum of five feet, otherwise sidewalks should include intervals of passing space every 200 feet. Sidewalk grade and pedestrian access routes should be no greater than five percent grade.

- Curb ramps – The minimum dimension of the turning space of a curb ramp shall be four feet by five feet, while the running slope shall be five percent minimum but no greater than 8.3 percent.

- Detectable warning surfaces – Delineate the boundary between the pedestrian access route and vehicular routes. All curb ramps shall consist of truncated domes aligned in a square or radial grid pattern. Detectable warning surfaces shall also contrast with adjacent surfaces, either light on dark or dark in light. Bright yellow is a popular color for truncated domes.

- Pedestrian Signals – All pedestrian signal phase timing shall comply with the Manual on Uniform Traffic Control Devices (MUTCD). Accessible pedestrian signals provide information in non-visual formats. Accessible signals can be integrated into the pushbutton, as to activate a sound when the WALK signal

activates. Signal standards and designs must follow MUTCD guidelines, which can be found here: http://mutcd.fhwa.dot.gov/htm/2009/part4/part4e.htm.

There are many resources available to ensure pedestrian facilities are complying with ADA guidelines and regulations. All federally funded projects including new and altered facilities must comply with ADA guidelines.

Resources

- United States Access Board: Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way: http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines

- Federal Highway Administration: Americans with Disabilities Act/ Section 504 of the Rehabillitation Act of 1973 (504): http://www.fhwa.dot.gov/civilrights/programs/ada.cfm

- Federal Highway Administration: Designing Sidewalks and Trails for Access: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/index.cfm

- United States Access Board ADA Standards: http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards

- US Department of Transportation: Bicycles and Pedestrians: http://www.dot.gov/bicycles-pedestrians

- United States Access Board Public Rights-of-Way Resources: http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/other-prow-resources

- Accessible Pedestrian Signals: A Guide to Best Practics: http://www.apsguide.org/index.cfm

- US Department of Transportation: Accessible Sidewalks and Street Crossings: http://www.bikewalk.org/pdfs/sopada_fhwa.pdf

- Federal Highway Administration: Manual on Uniform Traffic Control Devices: http://mutcd.fhwa.dot.gov/index.htm

Gaps between the roadway and rail can pose a danger to people walking, biking, or using mobility devices.

Railroad crossings can be a challenge for people traveling by bicycle.

At Grade Railroad Crossings

What

When a street or trail crosses a railroad track, the crossing must be safe for all modes. For years, railroads and the Department of Transportation have worked to close at grade railroad crossings to increase safety and efficiency. At grade crossings for light rail (e.g. MetroLink) and heavy rail (e.g. freight or Amtrak trains) have different challenges and regulations due to speed and size of the trains; pedestrian at grade crossings for light rail are more common and easily accomodated than at grade crossings for heavy rail.

Why

For people walking and biking, smooth surface treatments at crossings are very important to prevent bicycles and other wheeled vehicles from getting stuck in the tracks.

When

At Grade Railroad Crossings are used when it is impractical to provide underpasses or overpasses for people walking, bicycling, or driving across the railroad tracks. When there is frequent trespassing, either providing a crossing or channelization should be considered to increase safety.

If there are no safe, nearby crossings to channelize pedestrians toward, a railroad crossing should be considered. Any new crossing must be approved by the railroad company and the Missouri Department of Transportation. At Grade Railroad Crossings should NOT be considered when a crossing would be dangerous due to sight lines or speed and volume of train traffic, or when trains are frequently stopped in the crossing area.

How

Every railroad crossing provides unique challenges. The design should be based on engineering judgment and close collaboration between the railroad and the agency that owns the roadway or path crossing the railroad. In Designing Sidewalks and Trails for Access, the FHWA provides the following best practices:

- Approaches to the track and the area between the tracks should be raised to the level of the top of the rail because rail ties that are not flush with the travel surface create a tripping hazard in addition to the gap hazard. A surface material that will not buckle, expand, or contract significantly (e.g., textured rubber railroad crossing pads) should be used;

- Approaches to the track should ramped with minimal grades and should be flat for a distance of 1.525 m (5 feet) on either side of the tracks, free of obstacles, and have a firm and stable surface;

- For recreation trails, the trail surface should be hardened to reduce the debris that scatters over the tracks as users pass;

- Sight lines and signage should ensure that all users, and particularly those with disabilities affecting hearing, vision, or

mobility impairments, have adequate warning about the intersection;

- Signals and/or gates should be considered to warn trail users of the rail crossing.

The gap between the roadway and the rail, called the flangeway, can be dangerous for people walking, biking, or using wheeled devices. For light rail trains, a rubber flangeway filler can improve safety and access. However, there are no flangeway fillers currently available for heavy rail. In order to mitigate danger, paths and sidewalks should direct pedestrians and bicyclists across railroad tracks at 90 degrees.

Using the street

All users should check for trains and pay attention to signage and active warning devices. Bicyclists and wheeled devices should cross tracks at a 90 degree angle.

Resources

- Compilation of Pedestrian Safety Devices In Use at Grade Crossings (Federal Rail Administration, 2008): https://www.fra.dot.gov/eLib/Details/L02732

- Designing Sidewalks and Trails for Access, Part II of II: Best Practices Design Guide (FHWA, Updated 02/10/2014): http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks216.cfm

- Guidance on Traffic Control Devices at Highway-Rail Grade Crossings (FHWA, 2002) http://safety.fhwa.dot.gov/media/twgreport.htm.

- Guide for the Development of Bicycle Facilities (American Association of State Highway and Transportation Officials, 2012): 4.12.1 Railroad Grade Crossings

- Manual on Uniform Traffic Control Devices (US Department of Transportation, 2009): Section 8D. Pathway Grade Crossings

- Rails-with-Trails: Lessons Learned (FHWA, Updated: 02/11/2014)
  SECTION IV: Legislation, Liability, and Insurance: Crossings: https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page18.cfm#s4i

  SECTION V: Design: Crossings https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt page22.cfm#s5f

An employee at the store adjacent to the informal railroad crossing reported seeing students walk across the railroad tracks daily.

The path to the railroad tracks is well defined at Fillmore.

Bicycle Lane
Photo by: Jennifer Campos, www.pedbikeimages.org

Bicycle Lanes

What
Bicycle lanes are defined by solid white lines 5' or more from the edge of the roadway. Painted bicycle symbols show the lanes are reserved for the exclusive use of bicyclists.

Why
Bicycle lanes improve safety and create a comfortable space for bicyclists of all levels. Cities in the United States with more developed bike lane networks tend to have higher rates of cycling and lower bicycle crash rates.

When
Bicycle lanes are most useful on streets with volumes over 3,000 ADT and speed limits under 35 mph. They should not be placed to the right of right turn lanes.

How
Bicycle lanes should be 5' or wider. They are defined by solid white lines with bicycle markings and arrows placed in the lanes. Bike lanes can be continued through intersections using dotted lines. They should not be placed to the right of right turn only lanes.

Bicycle lanes can be retrofitted onto existing streets that are below capacity through narrowing traffic lanes (a lane diet), or removing traffic lanes (a road diet).

Using the street
Motorists may not drive in the bicycle lanes. Motorists should check for bicyclists when turning turning left or right.

Bicyclists should be aware of motor vehicles turning at intersections. Bicyclists are not required to ride in the bicycle lanes.

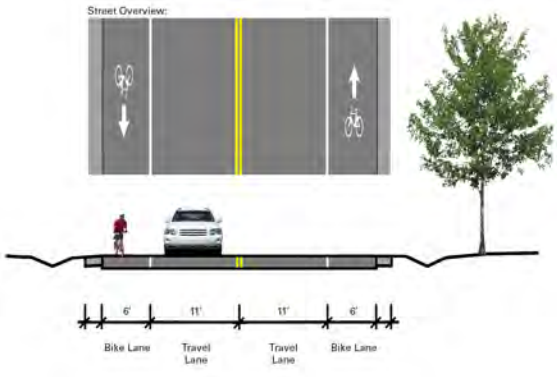
Resources

- Manual on Uniform Traffic Control Devices, 2009 (US Department of Transportation): Section 9C.04 Markings for Bicycle Lanes

- Guide for the Development of Bicycle Facilities, Fourth Edition (American Association of State Highway and Transportation Officials):
  - 4.6 Bicycle Lanes
  - 4.7 Bicycle Lane Markings and Signs
  - 4.8 Bicycle Lane at Intersections
  - 4.9 Retrofitting Bicycle Facility on Existing Streets and Highways

- Urban Bikeway Design Guide, Second Edition (National Association of City Transportation Officials) http://nacto.org/cities-for-cycling/design-guide/bike-lanes

Figure 19: Example Bicycle Lane



Bicycle Parking

Secure bicycle parking is essential for people who use their bicycles for any kind of trip.

Design

Bicycle racks must support the bicycle frame and allow the user to lock both their frame and their front wheel to the rack simultaneously (two-point locking). Many bicycles feature "quick-release" tires that can be removed within seconds, so many bicyclists insist on two-point locking.

The safest, easiest, and most cost-effective design is the u-rack, shaped like an inverted U. One rack can support two bicycles, and costs approximately $100. Creative racks typically cost far more money, and do not provide the safety or capacity of a standard u-rack. Wave racks, schoolyard racks, and comb racks do not support the frame, and can bend the tires on bicycles.

Placement

Destinations that should offer bicycle parking:

- Civic buildings
- Parks
- Schools
- Trailheads
- Stores
- Restaurants
- Apartment buildings

Racks should be placed at least 24" from the nearest wall and 30" from the nearest rack.

Racks should be placed near convenient entrances for bicyclists, without blocking doorways or presenting trip hazards to pedestrians. Racks should be placed in conspicuous, well-lit areas to discourage theft. When possible, racks should be placed under roof overhangs or shelters to protect bicycles.

Cost

For private development, the City can require developers to provide bicycle parking, just as it does with car parking.

Basic u-racks are approximately $100 each. The installation is estimated at $200 for labor.

More information on site design and rack placement can be found in the Association of Pedestrian and Bicycle Professionals' "Bicycle Parking Guidelines." (c.ymcdn.com/sites/www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf)

U-racks are sturdy, affordable, and popular.

Decorative bicycle racks can be difficult to use and expensive.

Figure 20: Wayfinding can be incorporated into Bike Route Signs

Unique signs can help brand the neighborhood greenways
Photo by: Adam Fukushima, www.pedbikeimages.org

Designated Route Signage

What

Designated route signs help guide people walking and biking along safer, lower-traffic streets. Signs should include information on popular destinations and distance. Well-designed signs can enhance the aesthetics and sense of place.

Why

The best routes for driving are not necessarily the best routes for walking and biking. Many residents may not be familiar with navigating local streets beyond their own neighborhood. Wayfinding signs raise awareness of walking and biking as an option, and help people find destinations through local streets.

When

Route signs should be placed along safe streets for biking and walking. The frequency of signs depends on the number of turns in the designated route. At a minimum, signs should be placed before and after every turn or junction to ensure people are able to navigate the routes.

How

The Manual on Uniform Traffic Control Devices contains Bicycle Route signs (Section 9B.21). These signs can contain destination and distance information. Many cities choose to create customized signs, which enhance local identity, and/or contain pedestrian information as well. The Bike St. Louis wayfinding signs are a local example of custom wayfinding.

Using the street

Route signs do not alter how people driving, walking, or biking use the street.

Resources

- Manual on Uniform Traffic Control Devices, 2009 (US Department of Transportation):
  Section 9B.20 Bicycle Guide Signs

- Wayfinding System Study (City of Portland, Maine, 2008): http://www.portlandmaine.gov/planning/wayfindingreport.pdf

- Urban Bikeway Design Guide, Second Edition (National Association of City Transportation Officials): http://nacto.org/cities-for-cycling/design-guide/bikeway-signing-marking/bike-route-wayfinding-signage-and-markings-system/

Intersections

Throughout the public engagement process, Kirkwood residents expressed interest in enhanced intersection design to increase safety and comfort. At intersections, people walking, biking, and driving have to negotiate with traffic coming from multiple directions. The complexity of intersections necessitates a careful design approach taking into account volume, lane configuration, and speeds. The following treatments are recommended as potential solutions for intersections in Kirkwood.

High visibility crosswalks

Crosswalks with thick lines perpendicular to the pedestrian's path, as opposed to the traditional parallel lines, increase visibility for people driving. High Visibility Crosswalks are appropriate for any place where crosswalks should be used. High visibility crosswalks should be used near schools, and other destinations that draw a high volume of pedestrians. High visibility crosswalks can be used at signalized intersections, at mid-block crossings, and at stop-controlled intersections. On streets with more than three lanes, or with high volumes or speed, crosswalks alone will not improve safety.

Pedestrian safety islands

On streets with more than two lanes, pedestrian safety islands, or medians, can enhance safety and allow pedestrians to cross the street in two stages. Safety islands are especially important for intersections nears schools, childcare facilities, and retirement homes, or other locations that are likely to attract pedestrians that may walk more slowly than the general population. Medians can also help to calm traffic by narrowing the lane width. The pedestrian safety island should be defined by concrete, but the area where the pedestrians stand does have to be raised above street level.

Restrict right turn on red

Restricting right turns on red signals improves pedestrian safety with relatively low costs. Right turns on red can increase pedestrian crashes, as drivers may not yield to the pedestrians, though they are legally required to do so. The restriction should be considered as a possible solution near schools or other locations where there are a high number of pedestrians.

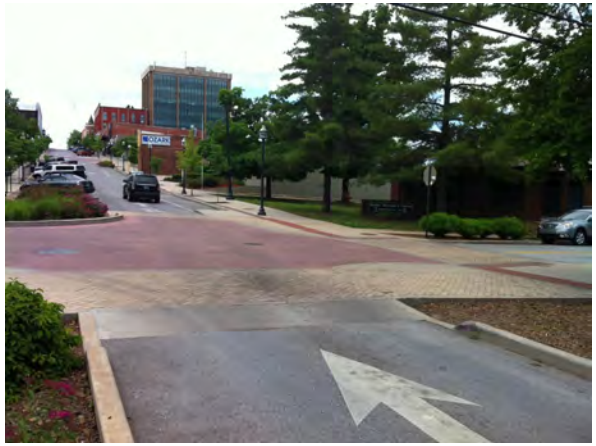
Right-sizing intersections

Safety for all users can be improved by retrofitting intersections to include more pedestrian space and a context-sensitive design speed. Intersections that have excess space for motor vehicles, such as wide lanes and corner radii designed for high speeds, encourage fast driving. In residential neighborhoods and in Downtown Kirkwood, intersections with wide corner radii and long pedestrian crossing distances offer an opportunity to improve safety and increase compliance with traffic laws at a relatively low cost. Every intersection is unique and will have a different solution; all road projects in residential neighborhoods or downtown should be seen as an opportunity to right-size intersections. Tools include pedestrian safety islands and curb extensions (pg xx).

On streets with existing medians, the median

Safe intersection design can encourage walking
Photo by: Dan Burden, www.pedbikeimages.org

Right turn on red restrictions can increase



Decorative raised crossing.
Photo by: Kristen Langford, www.pedbikeimages.org

Mid block crossings can improve safety.
Photo by: Lyubov Zuyeva, www.pedbikeimages.org

should be extended to the crosswalk in order to provide protection for people walking and to encourage drivers to drive carefully through the intersection. A pedestrian safety island can be created by adding a curb to the opposite side of the crosswalk.

Signal timing

Signal timing offers an inexpensive way of enhancing walking and biking safety and comfort. Signals should be timed to provide adequate time for pedestrians to cross the street. The MUTCD requires a minimum of 7 seconds for the initial walk phase. The entire walk phase should allow a pedestrian to cross the street at an average of 3.5 seconds or less (4E.06). Lower speed calculations should be used near schools, retirement homes, or other places where pedestrians may walk more slowly than the general population.

Resources

- The Urban Street Design Guide
  - http://nacto.org/usdg/intersection-design-elements/crosswalks-and-crossings/conventional-crosswalks/
  - http://nacto.org/usdg/pedestrian-safety-islands/
  - http://nacto.org/usdg/intersection-design-elements/corner-radii/

- The FHWA Pedestrian Safety and Countermeasure Selection System: http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=49

Mid Block Crossings

What

A mid block crossing is a safe pedestrian or bicycle crossing that is not at an intersection used by motor vehicles.

Why

Mid-block crossings improve safety in places where it is likely that people walking will want to cross the street. When people are walking across the street frequently without a crossing, it can create danger and uncertainty for all road users. Long blocks and infrequent crossings can also cause minutes of delay for people walking out of their way to use a crossing signal.

When

Mid-block crossings are appropriate in places where a pedestrian "desire line" crosses the street in the middle of the block. Common pedestrian destinations including schools, parks, libraries, bus stops, and shops often entice pedestrians to cross the street away from a crossing. In areas of town with longer blocks (over 400 ft long), mid-block crossings should be considered to provide pedestrians with a safe way to cross the street.

How

On low traffic, residential streets a high visibility crosswalk may be sufficient. On higher volume or higher speed streets, mid-block crossings should be designed to ensure safety for all users. Options include:

Raised crossings, which improve visibility of pedestrians, while also slowing car traffic. Raised crossings are appropriate on neighborhood streets. Their design must take into account drainage and emergency access.

Pedestrian safety islands, which allow people to cross in two phases. These are appropriate on higher traffic streets, and can also have a traffic calming effect. For more information, see pg 43.

Rectangular rapid flash beacons (RRFB), which are appropriate for streets with higher traffic volumes. An RRFB consists of two poles with flashing lights activated by a pedestrian. The RRFB signals drivers to yield to the pedestrian. The drivers can proceed once the pedestrian has cleared the intersection.

High intensity crosswalk beacons (HAWK), which are appropriate on the busiest and fastest streets. A HAWK or Pedestrian Hybrid Beacon, is hung overhead, like a traffic signal, and is based on beacons used at railroad crossings. When a pedestrian activates a HAWK, it flashes yellow and then turns solid red, as the pedestrian crosses the street. The HAWK continues to flash red as the pedestrian crosses, allowing drivers to proceed through the intersection once it is cleared, as opposed to a traditional signal.

Using the street

People walking should check for traffic before entering the street; drivers should yield to people in the crossing.

Resources

- Urban Street Design Guide (National Association of City Transportation Officials): http://nacto.org/usdg/intersection-design-elements/crosswalks-and-crossings/midblock-crosswalks/

- Manual on Uniform Traffic Control Devices (US Department of Transportation, 2009): Chapter 4F: Pedestrian Hybrid Beacons Interim approval for RRFBs: http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/fhwamemo.htm

High Intensity Crosswalk Beacons
Photo by: Mike Cynecki, www.pedbikeimages.org

High Intensity Crosswalk Beacons
Photo by: Micheal Frederick, www.pedbikeimages.org

Neighborhood Greenways
Photos by: Greg Raisman

Neighborhood Greenways

What

Neighborhood greenways, or bicycle boulevards, are streets that are designed for people biking and driving to share the street safely. They are neighborhood streets with low volume and low speed where signs and traffic calming help people to feel safe walking and biking.

Why

Many neighborhood streets already serve as popular walking and biking routes. Neighborhood greenways are a low-cost way to leverage these existing routes into a safe, connected network for people of all ages and abilities.

When

Neighborhood greenways are most appropriate for local streets with less than 3,000 vehicles per day. Ideally traffic will be less than 1,5000 vehicles per day. The street should have good pavement and should be prioritized for repaving, as the quality of pavement impacts bicyclists.

How

The essential features of a neighborhood greenway are signs and pavement markings to designate the route and a posted speed of 20 mph, with traffic calming designed to reduce speeds to 20 mph. Traffic diversion can be used to ensure traffic volumes under 3,000 vehicles per day. At intersections with neighborhood streets, a two-way stop should be used, giving priority to the neighborhood greenway in order to allow bicyclists to proceed safely and comfortably. At intersections with major streets, protected crossing treatments should be used for safety and convenience.

Using the street

Drivers should use the street for local travel only and respect the priority of bicyclists.

Resources

- Urban Bikeway Design Guide, Second Edition (National Association of City Transportation Officials): http://nacto.org/cities-for-cycling/design-guide/bicycle-boulevards/

Pedestrian Plazas

What

Pedestrian plazas create space for people to walk, socialize, and enjoy the public realm. In cities across the US, pedestrian plazas are being created in underutilized street space with low-cost and attractive infrastructure, including large planters, paint, and seats. In Kirkwood, a pop-up pedestrian plaza was installed on Argonne and was well received by residents and visitors alike.

Why

Pedestrian plazas can enhance the sense of community by creating informal places for socialization. They can also bolster sales at local businesses, by creating comfortable places for people to linger and eat donuts or drink coffee. Plazas that are designed to have a traffic-calming impact can also reduce speeding and help pedestrians to cross the street safely, by reducing their exposure to traffic.

When

Pedestrian plazas are typically placed in sections of the street that have low vehicle traffic and are not necessary for safe and efficient operating of motor vehicles. Pedestrian plazas should be considered for streets with existing pedestrian demand or in places where they can improve pedestrian safety and accessibility. Argonne in Kirkwood is an example.

How

Pedestrian plaza design varies greatly, as they are often placed in “reclaimed” space. They are typically created using low-cost but attractive planters, paint, chairs and tables. A pedestrian plaza must follow three guidelines:

- Parking not allowed;
- ADA compliant design with tactile warning strips at crosswalks;
- Defined and strong edge using striping, bollards and fixed objects.

In addition, a pedestrian plaza should be designed to create a place for people; chairs, tables, and umbrellas are one of the most popular additions to pedestrian plazas.

Using the street

Pedestrians should enjoy the new space. Motor vehicles should not drive or park in the plaza. Bicyclists should dismount in the plaza

Resources

- Urban Street Design Guide (National Association of City Transportation Officials): http://nacto.org/usdg/interim-design-strategies/interim-public-plazas/

Pedestrian Plazas
Photo by: Laura Sandt, www.pedbikeimages.org

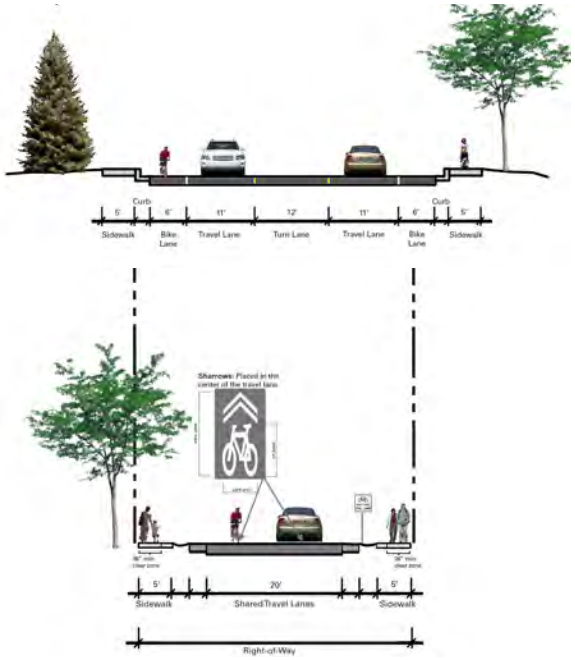


Figure 21:
Example Road Diet & Shared Lane Markings (Sharrow)

Shared Lane Markings
Photo by: Greg Raisman, xx

Road diet

Why
A road diet allows for easier left turns for people driving, reduces the number of motor vehicles exceeding the speed limit, increases safety for all modes, and makes room for people walking and biking.

What
Four lanes of traffic are restriped to create two through lanes of traffic. Kirkwood Rd. in downtown Kirkwood is an example.

When
On four-lane roads with less than 20,000 ADT, a three lane road diet can improve traffic flow through the center turn lane, while giving room to people biking and walking

How
A four lane roadway can be restriped to two throughways. This creates room for parking and left turn lanes at intersections.

Shared lane markings

What
A white bicycle and two chevron arrows are painted in the middle of the traffic lane. The shared lane markings are applied along the entire bicycle route to help guide cyclists.

Why
Shared lane markings alert drivers to the presence of cyclists. The markings indicate proper lane position to cyclists and to drivers.

When
Shared lane markings should be used on street with speeds under 30 mph and with less than 3,000 ADT. Streets with shared lane markings should not have centerlines, as they discourage the sense of shared space.

How
Shared lane markings should be placed every 100 to 250 feet or more along a street. More frequent placing is used to guide cyclists along higher traffic routes or as wayfinding along routes with frequent turns.

Using the street
Motorists should give cyclists room to operate safely. If there is no opposing traffic, they may pass on the left, giving cyclists at least 3 feet of passing distance.

Cyclists should position themselves over the shared lane markings to increase safety, visibility, and predictability

Resources

- Manual on Uniform Traffic Control Devices, 2009 (US Department of toTransportation):
Section 9C.07 Shared Lane Marking

- Guide for the Development of Bicycle Facilities, Fourth Edition (American Association of State Highway and Transportation Officials): 4.4 Marked Shared Lanes

- Urban Bikeway Design Guide, Second Edition (National Association of City Transportation Officials): http://nacto.org/cities-for-cycling/design-guide/bikeway-signing-marking/shared-lane-markings/

Shared Use Path

What
Shared use paths are for people walking, bicycling, skating, or using other forms of nonmotorized transportation. Paths can be in a separated right-of-way, such as Grant's Trail, or adjacent to a roadway.

Why
Shared use paths create dedicated space for pedestrians and bicyclists. Shared use paths complement the on-street system by providing connectivity to destinations and sense of buildings or other destinations to increase safety for many users.

When
Shared use paths can be used to provide convenient access to destinations, such as parks and schools. Paths can be popular recreation destinations as well. However, acquiring the right-of-way and funding needed for paths can be quite challenging.

How
The design of the path should be based on the expected users and should be compliant with the Americans with Disabilities Act (ADA). For paths that are adjacent to a roadway, the path can follow the slope of the roadway. Trail crossing signs (MUTCD W11-15 and W11-15p) should be used in advance of all intersections. The Guide for the Development of Bicycle Facilities, Fourth Edition (AASHTO) provides a detailed engineering guide for the construction of paths.

Using the street
Motorists must watch for through traffic coming from the left and right when making turns.

Pedestrians have the right of way, but should be aware of bicyclists They must be careful when crossing streets and driveways.

Bicyclists must yield to pedestrians and give audible signal when passing. They must be careful when crossing streets and driveways.

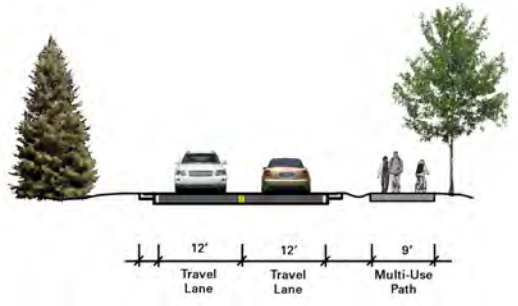
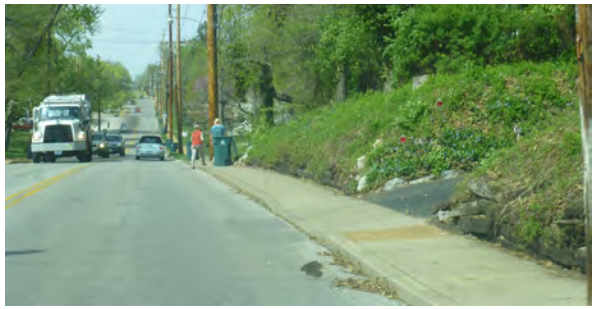


Figure 22 : Example Multi-Use Path

Shared Use Path



Kirkwood has an extensive network of sidewalks, but utilities and trash receptacles can block the sidewalks.

Sidewalks support foot traffic in Kirkwood's vibrant downtown.

Sidewalks and ramps make it easier to families to travel safely.

Sidewalks

What

Sidewalks are elevated from the roadway by several inches, separated from the street by a curb, and made of concrete.

Why

Sidewalks improve safety and comfort for pedestrians.

When

Sidewalks give pedestrians safe and comfortable space on virtually any roadway.

How

Sidewalks should be a minimum of 5' wide. Street furniture or light posts should be placed to preserve at least a 48" continuous through path. Each intersection should have a sidewalk ramp (see ADA guidelines for more information). When possible, sidewalks should be on both sides of the street. If it is only possible to provide sidewalks on one side of the street, it is important to ensure that the sidewalk is provided on the same side along the length of the street. Every time a pedestrian crosses the street, it increases the chances of a crash.

Resources

- Urban Street Design Guide (National Association of City Transportation Officials): http://nacto.org/usdg/street-design-elements/sidewalks/

Traffic calming

Traffic calming can improve safety, reduce noise in neighborhood streets, and enhance walking and biking friendliness when there is not enough right-of-way to add separate facilities. During public meetings, and through the public survey, several residents reported that they felt drivers were speeding on neighborhood streets. The perception that people are driving dangerously fast on local streets can prevent people from walking or biking for transportation or recreation.

Well-designed traffic calming should be implemented as the last step in a phased approach to lowering speeds on neighborhood streets. The following process outlines steps that should be taken before considering traffic calming:

1. **Establish need:** If residents perceive speeding on their streets, the first step is to establish that drivers are exceeding the speed limit. Speed should be monitored during peak hours and off-peak hours to determine if speeds exceed the speed limit, and by how much.

2. **Speed monitor trailer**: If speeding is determined to be a problem, the City should place their speed monitor trailer along the street, in order to raise awareness of speeding behavior. The trailers allow drivers to monitor their own speed and self-correct. The speed monitor can be placed on the street for as long as the City and the neighbors feel it is appropriate. Three months after the speed trailer is removed, speeds should be monitored to determine if the trailer had a lasting effect.

3. **Neighborhood efforts:** If speeding persists on the street, the City should encourage residents to raise awareness of speeding issues by placing signs in their yards asking drivers to slow down. Ready-made signs can be purchased if the neighborhood wants a uniform look. However, homemade signs can offer more variety and may slow traffic more effectively by increasing intrigue, as drivers slow to look at the individual signs. Again, speeds should be monitored three months after the signs were installed to determine if they have had a lasting effect.

4. **Spot enforcement:** If speeding persists, an officer should monitor speeds on the street, and issue warnings or tickets as necessary. Speeds should be monitored three months after the spot enforcement activities in order to determine if they have had a lasting effect.

5. **Traffic calming:** If the previous steps have not had a lasting impact in reducing speeds, physical traffic calming should be considered. Traffic calming generally works to slow speeds by diverting drivers from a straight line of travel, either horizontally (like speed tables) or vertically (like an extra curve). This guide will list a number of possible traffic calming techniques that can be used. Many communities have

This bumpout in front of the Kirkwood Library helps to narrow the roadway and calm traffic.

Speed cushions for designed for emergency vehicle access
Photo by: Dan Burden, www.pedbikeimages.org

Miniature roundabout and curb bumpouts
Photo by: Dan Burden, www.pedbikeimages.org

Speed tables are an effective and low cost traffic calming solution. Photo by: Austin Brown, www.pedbikeimages.

funded traffic calming by combining it with green infrastructure, such as rain gardens. The Funding Sources Guide has more information on green infrastructure grants.

Options for Traffic Calming

The following traffic calming techniques can be considered in Kirkwood on neighborhood streets if other options to reduce speeding have been exhausted. The options are listed in order of effectiveness. The first option is the lowest cost, while the cost of curb extensions or mini-roundabouts depends largely on the size and material used.

Centerlines: One of the simplest traffic calming approaches can be to leave streets free of centerlines unless they are warranted. When centerlines are not present, drivers tend view the street as shared space, and slow down in order to be able to negotiate with oncoming traffic. As drivers often hesitate to cross centerlines when passing people on bicycles, streets without centerlines can be more bicycle-friendly as well. Currently, Kirkwood has many residential streets without centerlines that function well.

When streets are scheduled for resurfacing, it creates the opportunity to evaluate if streets meet the warrant for centerline striping. The MUTCD establishes that centerline markings shall be placed on streets with an Average Daily Traffic (ADT) of 6,000 or greater (Section 3B.01). For collectors with less than 6,000 ADT and a traveled way of 20' or more, centerlines may not be necessary.

Curb extensions: Kirkwood has curb extensions in the downtown area. These curb extensions help to slow traffic, by narrowing driving lanes, and encouraging drivers to slow down in order to negotiate the tighter lanes. Curb extensions can also shorten pedestrian crossing distance and increase visibility of pedestrians crossing the street. Curb extensions can take multiple forms, from the bulb-outs used in Kirkwood, to a simple extension that tightens the curb radii, in order to discourage fast turning movements.

Mini Roundabout: Mini Roundabouts are often used to enhance the aesthetics of a neighborhood, in addition to traffic calming. Mini roundabouts require drivers to turn out slightly out of a straight path of travel, thereby slowing. Unlike full-size roundabouts, they do not require additional right-of-way. A mini roundabout, typically with planters or a rain garden, is placed in the middle of the intersection. Traffic circulates through the intersection in one lane, and yields upon entry to the intersection. Mini-roundabouts can reduce crashes and slow speeds on local streets.

Resources

- The City of Alameda, summary of centerline removal approaches: http://www.acgov.org/pwa/programs/traffic/measures.htm#1A

- The Urban Street Design Guide
  - http://nacto.org/usdg/intersections/minor-intersections/mini-roundabout/
  - http://nacto.org/usdg/street-design-elements/curb-extensions/

Evaluation and Implementation

Evaluation is an essential part of planning, as it allows the City to see if the recommendations are achieving the desired goals, and make changes as needed. The evaluation and implementation process starts as part of the planning process, and the following recommendations have been integrated into the planning work.

Annual bike walk counts

Biking and walking counts are an annual inventory of how many people are using active transportation in the community and can track progress over time. The national American Community Survey contains some data on transportation, but it is infrequent and the margin of error increases in communities with smaller populations. The National Project for Bicycle and Pedestrian Documentation coordinates an annual nation wide count. The methodology has been designed to be easy for volunteers to use. Counting locations and protocol for Kirkwood will be created as part of the planning process.

Walk and bike audits

Both a walk audit and bike audit were conducted with City staff as part of the planning process. The staff was provided with walk and bike audit tools in order to perform audits before any planned street work. The purpose of the audits are to look for opportunities to improve walking and/or biking access along streets.

Designate a bicycle and pedestrian coordinator on City staff

The bicycle and pedestrian coordinator serves as the central point for coordinating information about bicycling and walking, especially in regards to implementation of the plan. The main staff contact for coordinating the planning process should remain the main staff contact for implementation. Coordination duties for a plan of this size are estimated to take approximately 10 hours per month, which would not justify additional staff. The coordinator will perform the following tasks:

- Be prepared to be the go-to person for biking and walking questions within the community
- Monitor Local Government Briefings for regional and federal grant opportunities, check for potential projects and submit applications as appropriate
- Monitor street maintenance and repair; when streets are scheduled for repaving, look for opportunities to implement plan
- When Saint Louis County or MoDOT facilities within the City bounds are set for repaving, contact the appropriate agency to see how plan can be implemented during the restriping process

Seek Bicycle Friendly Community and Walking Friendly Community status

The Bicycle Friendly and Walk Friendly program are free and help the communities receive national and regional attention for their achievements. Both programs honor cities with different levels of awards: Bronze, Silver, Gold, or Platinum, and honorable mentions. The Bicycle Friendly program has recently introduced Diamond level as the highest level possible. The programs are designed to be easy to use for the communities, with comprehensive websites and online applications. Feedback is tailored to help communities identify the most important steps to take to advance rankings.

To apply for a Bicycle or Walk Friendly Designation, the bicycle and pedestrian coordinator should:

- Review the application online, and decide which objectives need to be completed before the community will be ready to go for bronze
- When the community is ready, the bicycle and pedestrian coordinator will complete and submit the application.

Updates to City Code

Updating the City Code to be supportive of all modes of transportation will help the City of Kirkwood to implement the recommendations in the plan and to ensure that street design and law enforcement are supportive of walking

and biking. The plan recommends considering revisiting the following provisions in the Kirkwood City Code.

The Kirkwood City Code includes an entire section devoted to bicycles, Chapter 4 1/2. The Code differs from Missouri State Law in two ways:

1. The requirements for retroreflective material on the pedals and wheels of a bicycle are much more specific than those of the Missouri State Statutes. Currently the Kirkwood City Code requires reflectors on both sides of the pedals in addition to reflectors on both the rims and spokes of both sides of bicycle tires (Section 4 ½ - 3 P. 4).

   While it would be ideal for all bicyclists to have such reflectors, it may be easier to enforce a law that follows the Missouri States Statutes, which require reflectors on moving parts, but do not specify color, location, and size with such detail.

2. The City Code requires bicyclists to use paths adjacent to streets or highways when they have been officially designated (4 ½ - 5). Typically, bicyclists do use the paths, when they are available.

Similar laws across the country have been controversial, as they can be difficult to interpret and enforce, especially if there is glass, standing water, driveways, parked cars, or some other hazards for cyclists in or near the designated path.

Updating these two ordinances will bring Kirkwood's laws in line with those of the state of Missouri and many surrounding communities. This will reduce confusion when the laws are enforced.

Complete Streets

The City Council should consider Complete Streets for the City of Kirkwood. A Complete Streets policy ensures that all modes of transportation are considered equally when transportation decisions are made. Enacting Complete Streets does not require additional funding, instead it works to shift priorities so that existing funds are spent in a way that addresses a wider variety of transportation needs. Several municipalities in the region and St. Louis County have a Complete Streets policy that can serve as the basis for the City of Kirkwood. In 2012, Clayton's Complete Streets policy was selected as one of the ten best policies in the United States.

Resources

- The League of American Bicyclists report on the importance of bicycle and pedestrian staff in communities: http://www.advocacyadvance.org/site_images/content/why_bike_ped_staff_april_2010.pdf

- League of American Bicyclists Bicycle Friendly Program: http://www.bikeleague.org/content/communities

- Walk Friendly Communities: http://www.walkfriendly.org/

- The National Complete Streets Coalition, including sample policies, available: http://www.smartgrowthamerica.org/complete-streets

Pre-Engineering Opinion of Pedestrian Facilities Cost

The following information provides a general opinion of probable construction costs for the recommended pedestrian facilities. Costs are based on conceptual design evaluation of the facilities and pre-engineering design development. The unit cost numbers are based on cost data in Trailnet's Streets For Everyone (2013) and FHWA's Costs for Pedestrian and Bicyclist Infrastructure Improvements (2013). The costs were adjusted for inflation to reflect the year 2016 construction market. They are subject to traditional market place fluctuations.

The following costs estimates are based on adding curb and sidewalk to identified sidewalk gaps. They do not include an estimate of land acquisition, due to the high variability of costs. The cost estimates also include the costs associated with replacing all the sidewalks along recommended walking routes to meet ADA compliance. Many of these priority corridors already have full or partial sidewalks, at least along one side. As the scope of the project did not include a detailed, sidewalk assessment, this cost estimate is based on the worst-case scenario. The engineering phase of any sidewalk project should start by inspecting the sidewalk for ADA compliance.

Finally, the railroad crossing at Fillmore and the Grant's Trail extension calls for a detailed engineering feasibility study in order to produce a credible cost estimate. Pedestrian bridges over railroads can range from $1 million to several million, based on design, width, and right-of-way constraints. The Grant's Trail extension is based on cost estimates from national and local sources, however every site is unique and will require detailed engineering estimates.

Figure 23: Cost Estimates of Pedestrian Facilities

Infrastructure Type	Description	Cost	Cost Unit
Pedestrian	Crosswalk	$3,3000	each
Pedestrian	Curb Ramp	$800	each
Pedestrian	Sidewalk + curb	$952,300	mile
Pedestrian	Pedestrian Route with crosswalks and signage	$61,500	mile
Pedestrian	Crossing Island	$11,100	each
Pedestrian	Ped/bike push button	$300	each
Pedestrian	Raised Crossing	$7,600	each
Pedestrian	Pedestrian Plaza	$25,000	each
Traffic Calming	Traffic circle	$28,900	each
Traffic Calming	Curb extension	$10,800	each
Traffic Calming	Speed table	$2,300	each

Figure 24: Pedestrian Recommendations

Recommendation	Cost Estimate	Length (mi)
High priority sidewalk gaps	$1,018,400	1.1
Additional sidewalks to complete one side network	$4,769,800	5.0
Sidwalks needed to complete two sided network	$21,215,600	22.3
Paths, connections, lane diets, and road diets.	$2,385,600	3.2
Total:	$29,389,400	31.6

* All cost estimates based on Cost for Pedestrian and Bicyclist Infrastructure

Figure 25: Cost Estimates of Sidewalks with Gaps in Recommended Network (Listed in order of Priority)

Streets	Recommendation	Length (mi)	Cost Estimate (sidewalks per side)
Kirkwood	Sidewalk	0.10	$92,600
Manchester	Sidewalk	0.08	$77,300
Big Bend	Sidewalk	0.35	$336,000
Jefferson	Sidewalk	0.07	$64,400
Fillmore south of railroad tracks	Sidewalk	0.08	$76,300
Fillmore at Madison	Sidewalk	0.07	$70,100
Ballas	Sidewalk	0.32	$301,700
Essex	Sidewalk	0.17	$159,100
Longview	Sidewalk	0.45	$429,400
Clark	Sidewalk	0.07	$69,100
Milwaukee	Sidewalk	0.09	$83,400
Van Buren	Sidewalk	0.13	$122,000
Madison	Sidewalk	0.57	$546,900
Southbrook	Sidewalk	0.10	$91,500
Timberbrook	Sidewalk	0.10	$91,800
Monroe	Sidewalk	0.38	$358,600
Rifle Range	Sidewalk	0.27	$261,200
Bodley	Sidewalk	0.27	$260,800
Brownell	Sidewalk	0.37	$354,800
Wilson	Sidewalk	0.34	$326,700
Lindeman	Sidewalk	0.37	$354,100
Glenwood	Sidewalk	0.59	$560,900
Highland	Sidewalk	0.73	$699,500
	Total	**6.08**	**$5,788,200**

Figure 26: Cost Estimates for Sidewalks with One Side Sidwalk (Listed in order of Priority)

Streets	Recommendation	Length (mi)	Cost Estimate (to add sidewalks on second side)
Kirkwood	Sidewalk	0.32	$309,100
Big Bend	Sidewalk	0.51	$487,400
Geyer	Sidewalk	0.61	$578,900
Manchester	Sidewalk	0.64	$608,300
Adams	Sidewalk	0.32	$305,400
Ballas	Sidewalk	2.09	$1,994,000
Couch	Sidewalk	0.31	$290,700
Dougherty Ferry between Ballas and Geyer	Sidewalk	0.81	$775,100
Dougherty Ferry at i-270	Sidewalk	0.25	$237,000
Rose Hill east of Kirkwood	Sidewalk	0.26	$247,400
Rose Hill at Couch	Sidewalk	0.13	$123,300
Essex at Dougherty Ferry	Sidewalk	0.42	$404,000
Essex east of Woodlawn	Sidewalk	0.16	$151,300
Woodlawn	Sidewalk	0.25	$239,400
Clay	Sidewalk	0.10	$94,200
Craig	Sidewalk	0.34	$322,700
Jefferson	Sidewalk	0.39	$370,500
Peeke	Sidewalk	0.15	$139,500
Harrison south of Essex	Sidewalk	0.15	$139,000
Harrison north of Monroe	Sidewalk	0.09	$81,800
Harrison south of Woodbine	Sidewalk	0.18	$175,500
Madison	Sidewalk	0.13	$119,800
Taylor	Sidewalk	0.19	$183,100
Fillmore	Sidewalk	0.44	$422,100
Scott	Sidewalk	0.05	$45,400

Cont. on next pg.

Figure 26 cont.: Cost Estimates for Sidewalks with One Side Sidwalk (Listed in order of Priority)

Streets	Recommendation	Length (mi)	Cost Estimate (to add sidewalks on second side)
Argonne	Sidewalk	0.31	$292,200
Monroe	Sidewalk	0.43	$411,700
Washington	Sidewalk	0.13	$121,800
Meacham	Sidewalk	0.11	$106,900
Memphis	Sidewalk	0.12	$115,500
Orleans north of Memphis	Sidewalk	0.05	$43,800
Orleans south of Attucks	Sidewalk	0.09	$86,800
Van Buren	Sidewalk	0.26	$247,800
Alsobrook	Sidewalk	0.24	$224,900
Attucks	Sidewalk	0.12	$114,700
Bodley	Sidewalk	0.18	$172,700
Milwaukee	Sidewalk	0.14	$129,800
Tolstoi	Sidewalk	0.09	$83,900
Lindeman	Sidewalk	0.70	$667,000
Ann	Sidewalk	0.38	$361,500
Dickson	Sidewalk	0.92	$878,200
Dickson	Sidewalk	0.09	$88,500
Holmes	Sidewalk	1.09	$1,038,600
Lockett	Sidewalk	0.43	$409,500
Quan	Sidewalk	0.26	$248,500
Scottsdale	Sidewalk	0.09	$86,400
Timberbrook	Sidewalk	0.52	$491,300
Wilson	Sidewalk	0.17	$160,100
	Total: (to add to streets that currently have sidewalks on one side)	**16.20**	$15,427,400
	Total: (for entire recommended network to have sidewalks on both sides)	**21.82**	$20,786,200

Figure 27: Cost Estimates for other connections (Listed in order of Priority)

Streets	Recommendation	Length (mi)	Cost Estimate
Fillmore	Ped Rail Crossing	0.03	$292,200
Kirkwood	Road Diet / On-Street Parking	1.28	$411,700
Marshall	Meramec Greenway Connection	0.06	$121,800
Ballas	Restriped Shoulder	0.45	$106,900
Adams	Restriped Shoulder	1.41	$115,500
	Total:	**3.24**	$2,385,600

Figure 28: Cost Estimates for Bicycle Facilities

Infrastructure Type	Description	Cost	Cost Unit
Bicycles	Bicycle lane	$95,000	mile
Bicycles	Buffered Bicycle Lane*	$122,100	mile
Bicycles	Signed route	$28,900	mile
Bicycles	Shared lane markings	$200	each
Bicycles	Signed route with SLM every 250 ft	$32,500	mile
Bicycles	Shared use path	$276,900	mile
Bicycles	Neigherhood Greenway*	$137,300	mile
Traffic Calming	Traffic Circle	$28,900	each
Traffic Calming	Curb extension	$10,800	each
Traffic Calming	Speed table	$2,300	each

Figure 29: Bicycle Recommendations

Recommendation	Cost Estimate	Length (mi)
Phase 1	$930,900	10.8
Phase 2	$1,148,200	9.3
Phase 3	$530,200	4.1
As Feasible	$1,026,800	10.5
Grants Trail Connection	$471,700	0.7
Total:	$4,107,800	35.3

All cost estimates based on Cost for Pedestrian and Bicyclist Infrastructure
* Cost estimate based on Streets For Everyone (Trailnet, 2014)

Pre-Engineering Opinion of Bicycle Facilities Cost

The following information provides a general opinion of probable construction costs for the recommended bicycle facilities in the Kirkwood Pedestrian and Bicycle Master Plan. See Page 54 for a description of the sources used in the cost estimates.

For corridors marked "As Feasible," several of the changes could come through restriping during routine mill and overlay. The cost is calculated based on painting the street after a routine mill and overlay and does not include the cost of grinding out the existing striping pattern, as grinding out existing lanes for changes is not recommended by the plan.

Figure 30: Cost Estimates for Bicycle Facilities (Listed in order of Priority)

Corridor	Recommended Facility	Length (mi)	Phase	Cost Estimate (per mile)	Total Cost Estimate
Dougherty Ferry	Bike Lane	1.73	Phase 1	$95,000	$164,100
Fillmore	Neighborhood Greenway	0.41	Phase 1	$137,300	$56,300
Fillmore	Neighborhood Greenway	0.60	Phase 1	$137,300	$82,800
Geyer	Shared Lane Marking	3.26	Phase 1	$5,280	$17,200
Glenwood	Neighborhood Greenway	0.77	Phase 1	$137,300	$106,100
Highland	Neighborhood Greenway	0.72	Phase 1	$137,300	$99,000
Holmes	Shared Lane Marking	0.36	Phase 1	$5,280	$2,000
Monroe	Neighborhood Greenway	0.24	Phase 1	$137,300	$32,700
Rose Hill	Neighborhood Greenway	0.74	Phase 1	$137,300	$102,200
Rose Hill	Neighborhood Greenway	0.75	Phase 1	$137,300	$103,100
Scott	Neighborhood Greenway	0.32	Phase 1	$137,300	$44,300
Timberbrook	Neighborhood Greenway	0.43	Phase 1	$137,300	$59,300
Woodlawn	Neighborhood Greenway	0.45	Phase 1	$137,300	$61,800
	Total Phase 1:	**10.79**			
Ann	Neighborhood Greenway	0.51	Phase 2	$137.300	$70,700
Ballas	Shared Lane Marking	0.93	Phase 2	$5,280	$5,000
Couch	Neighborhood Greenway	1.09	Phase 2	$137,300	$150,300
Essex	Neighborhood Greenway	1.47	Phase 2	$137,300	$202,100
Harrison	Neighborhood Greenway	2.02	Phase 2	$137,300	$277,200
Longview	Neighborhood Greenway	0.45	Phase 2	$137,300	$61,800
Taylor	Neighborhood Greenway	0.12	Phase 2	$137,300	$16,100
Woodbine	Neighborhood Greenway	1.26	Phase 2	$137,300	$173,200
Woodlawn	Neighborhood Greenway	1.40	Phase 2	$137,300	$191,800
	Total Phase 2:	**9.26**			$1,148,200
Argonne	Neighborhood Greenway	0.37	Phase 3	$137,300	$51,000
Argonne	Bike Lane	0.63	Phase 3	95,000	$60,200
Lindeman	Neighborhood Greenway	1.34	Phase 3	137,300	$184,500
Taylor	Neighborhood Greenway	1.71	Phase 3	$137,300	$234,500
	Total As Phase 3:	**4.06**			**$530,200**
Adams	Lane Diet	1.45	as Feasible	$95,000	$137,500
Adams	Shared Lane Marking	0.74	as Feasible	$5,280	$4,000
Adams	Bike Lane	0.58	as Feasible	$95,000	$54,900
Ballas	Lane Diet	0.49	as Feasible	$95,000	$47,000
Ballas	Bike Lane w/ Road Diet	1.38	as Feasible	$95,000	$130,800
Big Bend	Bike Lane w/ Road Diet	2.74	as Feasible	$95,000	$260,400
Manchester	Bike Lane	3.05	as Feasible	$95,000	$289,400
Connection to Meramec Greenway	Shared Use Path	0.07	as Feasible	$1,500,000	$102,800
	Total As Feasible:	**10.49**			**$1,026,800**
Elliot	Neighborhood Greenway	0.41	Phase 2	$137.300	$56,700
Planned Connection	Shared Use Path	0.28	Phase 2	$1,500,000	$415,000
	Total Connection:	**0.69**			**$471,700**
	Total for recommended improvements				**$4,107,800**

Funding Sources

Bicycle and pedestrian improvements can be funded through a variety of federal and local sources. Federal funds are well suited to higher cost infrastructure projects, such as sidewalks or the Grant's Trail Extension. Improvements that involve mainly paint, such as Shared Lane Markings, could be implemented through routine maintenance, set-aside funds, or grouped as one federal funding application. The City of Kirkwood should plan for the cost of ongoing maintenance for maintenance and paint, as grants for maintenance are rare.

Federal funding sources

The current transportation bill, Moving Ahead for Progress in the 21st Century, MAP-21, has since been extended through May 31, 2015. It is possible that a new funding bill will replace MAP-21, instituting new rules for funding. It is reasonable to expect that many of the same funding opportunities will exist under a new transportation bill, however the names or performance measures may change slightly. In addition to funding sources through Map-21, there are other federal funding options. Federal funding sources are described below in more detail, including contact information for each source.

Federal funding opportunities administered by East West Gateway Council of Governments

As part of the Transportation Improvement Plan, East West Gateway Council of Governments (East West Gateway), administers several federal transportation funds. The programs are described below.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The CMAQ Program is a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Projects eligible for CMAQ include walking and biking transportation infrastructure and programs encouraging walking and biking. In order to apply for the funding, an agency must demonstrate a project's impact on emissions. Applications are made available in December and are due in February on an annual basis.

Surface Transportation Program (STP)

The Surface Transportation Program provides flexible funding that may be used by States and localities for projects to preserve or improve conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for nonmotorized transportation, transit capital projects and public bus terminals and facilities. The funds can be used for walking and biking infrastructure, including on local roads. Applications are made available in December and are due in February on an annual basis.

- http://www.ewgateway.org/TIPAppInfo/tipappinfo.htm
- http://www.fhwa.dot.gov/map21/stp.cfm

Transportation Alternatives Program (TAP)

The Transportation Alternatives Program is a new funding program under MAP-21. TAP provides for a variety of alternative transportation projects that were previously eligible activities under separately federally funded programs. This program is funded at a level equal to two percent of the total of all MAP-21 authorized Federal-aid highway and highway research funds, with the amount for each State set aside from the State's formula apportionments. Pedestrian, bicycle, trails, and safe routes to school programs are eligible for TAP funding. Specifically:

- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation
- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs

East West Gateway typically does not have adequate funding to distribute TAP funds every year. As a round of TAP funding will be obligated in October 2015, the next round of applications for TAP funding should be expected in 2017.

- http://www.fhwa.dot.gov/map21/tap.cfm

- http://ewgateway.org/TransAlternatives/transalternatives.htm

Safe Routes to School Program (SRTS)

The SRTS Program was formerly an independent funding round focused on safe walking and bicycling to schools. With MAP 21, the program was rolled into the Transportation Alternatives Program as a potential funding category.

- http://www.fhwa.dot.gov/map21/tap.cfm

- http://www.modot.org/safety/SafeRoutestoSchool.htm

Federal funding opportunities administered by state and federal agencies

Highway Safety Improvement Program (HSIP)

The HSIP emphasizes a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. Eligible projects include safety improvements for all roadway users.

- http://www.fhwa.dot.gov/map21/hsip.cfm

The Missouri Department of Transportation oversees the distribution of HSIP funds, with an emphasis on proactive, system wide improvements. Projects should align with Missouri's Blueprint to Arrive Alive (Strategic Highway Safety Plan). In 2014, MoDOT worked with St. Louis County to create a County-level Strategic Highway Safety Plan. The final document will include pedestrian safety improvements that align with MoDOT's overall Strategic Highway Safety Plan.

- http://epg.modot.org/index.php?title=907.1_Safety_Program_Guidelines

State and Community Highway Safety Grant Program (Section 402)

Section 402 funds are used to support State and community programs to reduce deaths and injuries. Pedestrian safety has been identified as a national priority. Section 402 funds can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. The funds must be consistent with the State Highway Safety Plan

- http://safety.fhwa.dot.gov/policy/section402/

- http://epg.modot.mo.gov/index.php?title=132.4_Highway_Safety_Plan_and_Performance_Plan

Recreational Trails Program (RTP)

The RTP is a program incorporated into the MAP-21, Transportation Alternatives Program. However, funding for this program is administered by the Missouri Department of Natural Resources, a division of the State Parks. Grants are available for trail development and renovation. Projects require a minimum of a 20% local match.

- http://www.fhwa.dot.gov/environment/recreational_trails/

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

Environmental Protection Agency

The Environmental Protection Agency offers a variety of grants that address community health. Grants may help fund green infrastructure that can also be used enhance walkability and bikeability. These broad-based community grants require significant collaboration with local coalitions. Trailnet is available to partner and help with community engagement on this type of grant. As grants opportunities are always evolving, the EPA website should be checked regularly.

- http://www.grants.gov/web/grants/view-opportunity.html?oppId=252553

Learn more about federal funding here:

- http://bikewalkalliance.org/resources/reports/advocacy-advance-reports/64-understanding-federal-funding-for-biking-and-walking-projects-and-programs

Local funding sources

Local funding for bicycle and pedestrian projects and programs is an important component when considering developing new facilities. Many federal programs require a local match, the funding sources below can be used to fund projects in full or to be used as a local match when using federal funds.

Local Option Economic Development Sales Taxes

Cities in the State of Missouri have the option to impose a local sales tax of no greater than one half per cent. This sales tax can be used to fund projects including pedestrian improvements related to stormwater management (sidewalks, curbs, gutters, etc.)

Capital Improvement Budget Set-Aside

Kirkwood could make a policy decision to set-aside a percentage of capital improvement budget to fund bicycle and pedestrian projects. These projects could be incorporated into other road work being done (complete streets) or stand-alone projects. These funds can be leveraged as a local match to secure federal funds.

Other Local Options

A few other local funding options including the creation of a Community Improvement or Neighborhood Improvement District or assessing development fees are also possible to fund improvements. Information on these funding options can be found at:

- http://www.missouridevelopment.org/community%20services/Local%20Finance%20Initiatives.html

Private funding sources

Several national and state foundations provide grants for pedestrian and bicycle projects. These grants can play a significant role in funding projects and providing match for federal funds.

Bikes Belong Grant Program

Bikes Belong is a national organization dedicated to putting more people on bikes. The organization funds multi-use trails with a strong desire to leverage federal funding.

- http://www.bikesbelong.org/grants/

Robert Wood Johnson Foundation (RWJF)

The RWFJ offers a wide range of funding opportunities to promote healthy and active living. The website offers details on various grants and calls for proposals.

- http://www.rwjf.org/applications/solicited/cfplist.jsp

Figure 31: Potentially eligible pedestrian and bicycle projects under federal highway programs

	TAP	CMAQ	STP	HSIP	RTP	SECTION 402
Bicycle lane	X	X	X	X		
Shared lane marking	X	X	X	X		
Signed bike route	X	X	X			
Shared use path	X	X	X	X		
Sidewalks	X	X	X	X		
Crosswalks	X	X	X	X		
Signals	X	X	X	X		
Trails	X		X	X	X	
Curb cuts and ramps	X	X	X	X		
Traffic calming	X		X	X		
Bike racks	X	X	X			
Educational safety brochure			X		X	
Training		X	X			X
Technical Assistance	X	X	X			X

Programs
TAP = Transportation Alternative Program
CMAQ = Congestion Mitigation and Air Quality Improvement
STP = Surface Transportation Program
HSIP = Highway Safety Improvement Program
RTP = Recreational Trails Program
NHPP = National Highway Performance Program
Section 402 = State and Community Highway Safety Grant Program

APPENDICIES

Figure A-1: Survey Summary

	How often do you walk?	How often do you bike?	How often do you take transit?	How often do you drive a car?	How often do you visit parks in Kirkwood?
Daily	**49%**	1%	2%	**83%**	3%
A few times a week	40%	15%	1%	12%	20%
A few times a month	6%	21%	5%	1%	33%
A few times a year	5%	20%	29%	1%	**42%**
Never	1%	**43%**	**63%**	2%	2%
Total respondents	166	165	168	169	168

Figure A-2: Transportation Preferences

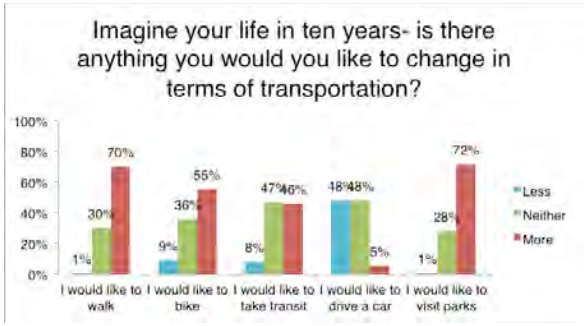


Figure A-3: Transportation Priorities

	Median	Mean	Max	Min	Standard Deviation
Making trips as safe as possible for everyone on the road	30%	36%	100	0	26.6
More walking options	20%	11%	85	0	10.9
More biking options	15%	22%	80	0	17.2
Maintaining the current transportation system	10%	16%	50	0	16.5
Keeping transportation costs in check	10%	14%	100	0	15.8
Making trips as fast as possible	5%	5%	70	0	9.6

Analysis of Surveys

Summary

Two community surveys were used in Kirkwood during the planning process, using different methodology in order to capture a greater variety of responses. Neither survey is representative of residents of Kirkwood. A one-page survey focused on transportation habits and community priorities was mailed with utility bills. Residents could mail in their responses, scan and email them, or hand them in directly. One hundred seventy residents responded to the mail survey.

The mail-in survey results suggested that walking and bicycling are already an integral part of transportation for Kirkwood residents responding to the survey based on these findings:

- Almost 9 out of 10 respondents reported walking at least a few times a week
- Over half of respondents would like to bike more, and 70% would like to walk more, while almost half would like to drive less.

Transportation habits

Driving was the most frequently used form of transportation, with 83% of respondents reporting that they drive daily. Walking was also common, with about half of respondents reporting walking daily, and another 40% reporting walking a few times a week. While only 1% of respondents bicycle daily, over one quarter of respondents report bicycling a few times a month or more. Transit was the least common form of transportation, with 63% of respondents reporting that they never use transit. The survey also asked about park usage. The majority of respondents did report visiting parks at least a few times a month, and 3% visit parks in Kirkwood daily.

Transportation preferences

Respondents were asked if they would like to change anything in their transportation habits looking forward 10 years. Almost half (48%) indicated they would like to drive a car less, while only 5% wanted to drive more. This is in strong contrast with other modes, where 70% of respondents wanted to walk more, 55% wanted to bicycle more, and 46% wanted to take transit more. Visiting parks was the most alluring option, with 72% of respondents expressing a desire to visit parks more often, and only 1% wanting to visit less. This suggests that respondents are eager for more transportation options, this in concert with our findings from the other survey and public engagement.

Transportation priorities

Survey respondents were asked to rank six transportation priorities for Kirkwood, using percentages. Safety was the number one priority by far, with a median score of 30%. Walking options (20%) and biking options (15%) were next the two most popular. The top three priorities are complementary in many ways, as well designed pedestrian and bicycle

infrastructure can reduce injury and fatal crashes across all modes by calming traffic speeds and increasing driver attentiveness. The least important priority was speed (5%), suggesting the respondents would trade a reduction in speeds for increased safety and transportation options.

Park priorities

Finally, the survey asked about priorities for walking and biking in and near parks. Trails were by far the highest priority, with paved trails and nature trails being equally weighted with a median score of 25%. Walking routes to parks were the third highest priority, with a median value of 15%. Bike routes (10%), accessible ramps (10%), and bike racks (5%) were the least highly ranked. Each of these features are important, but generally appeal to certain groups of the population, as opposed to a trail that serves people of all ages and abilities.

Online survey

An online survey was made available on the Kirkwood website and Trailnet website. Paper copies were also available during public outreach events. The questions focused on transportation preferences. Overall, 387 responses were received. Due to the collection method, the survey is not representative of Kirkwood residents.

Walking environment

Overwhelmingly, respondents felt that walking in Kirkwood is safe, easy, and enjoyable. The responses in the online survey echo the sentiment that the planning team has heard throughout the outreach process- Kirkwood residents enjoy walking and they appreciate the walking opportunities in their town.

When the respondents were asked why they walk, the top three answers were recreational. At the same time, going to school, transit, and work were the least common reasons for walking. This suggests that for the respondents, walking is currently a form of recreation, rather than transportation for meeting daily needs. However, 180 of the 379 respondents reported walking to local stores, indicating that for some residents, walking is a way of getting to local destinations.

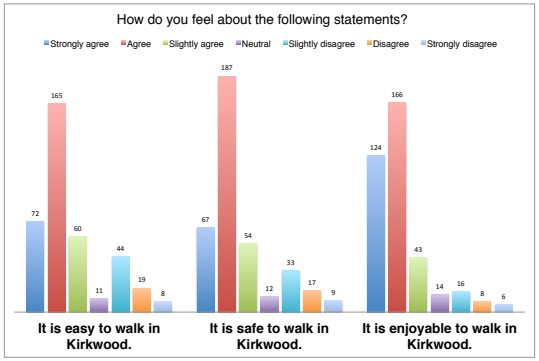
Encouraging Walking

When asked what their barriers were to walking lack of sidewalks, uneven sidewalks, and crossing busy roads were the in the top five reasons. Lack of time and weather were also common barriers to walking. While the City of Kirkwood cannot address weather and time, improving sidewalk connectivity and crossing opportunities is feasible. When asked what changes could help them to walk more, 72% of respondents indicated more walking and biking paths, and 52% indicated more sidewalks.

Figure A-4: Park Priorities

	Median	Mean	Max	Min	Standard Deviation
Paved trails for biking and walking	25%	29.72916667	100	0	21.12766824
Nature trails for walking	25%	28.23778555	100	0	21.29257356
Walking routes to the parks	15%	17.75234742	100	0	6.42240006
Biking routes to the parks	10%	14.36374696	60	0	11.69594393
Accessible ramps	10%	10.29037879	70	0	17.69273842
Bike racks	5%	6.970149254	30	0	13.35100268

Figure A-5: Walking Environment



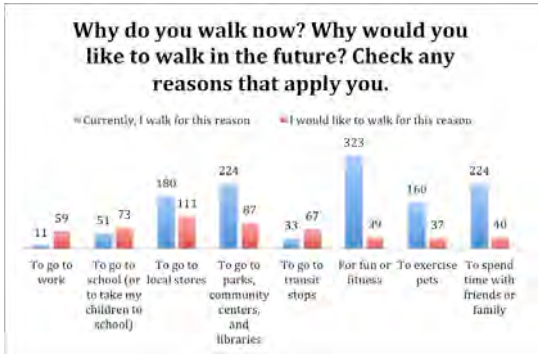


Figure A-6: Encouraging Walking

What prevents you from walking more?	
Lack of sidewalks	153
Uneven and poorly maintained sidewalks	150
Lack of time	137
Crossing busy roads	134
Weather	128
Fast cars	91
Not enough street lighting	72
Rude drivers	52
Trash and debris on the sidewalk and shoulder	32
Lack of sidewalk ramps	29
Physical ability	19
Hills	12
Crime	8

What changes would help you walk more often?	
More biking and walking paths	238
More sidewalks	173
More direct routes and pedestrians cut-throughs	165
Sidewalks in better condition	150
Safer ways to cross the street	143
More signs marking walking routes and destinations	85
Slower traffic	67
More sidewalk ramps	37

Figure A-7: Walking Accessories

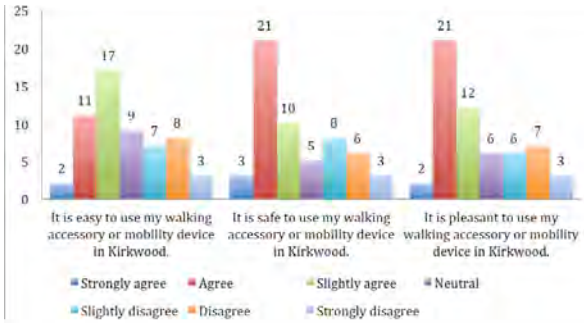
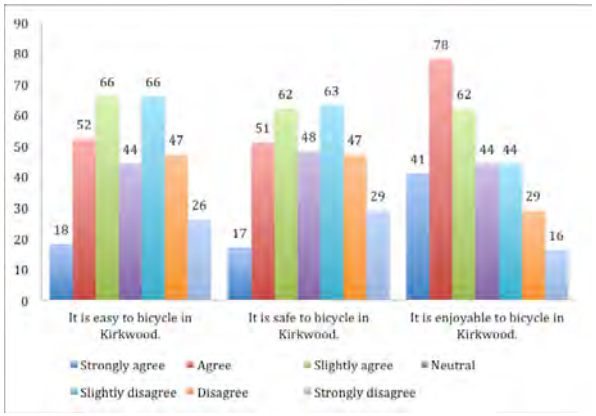
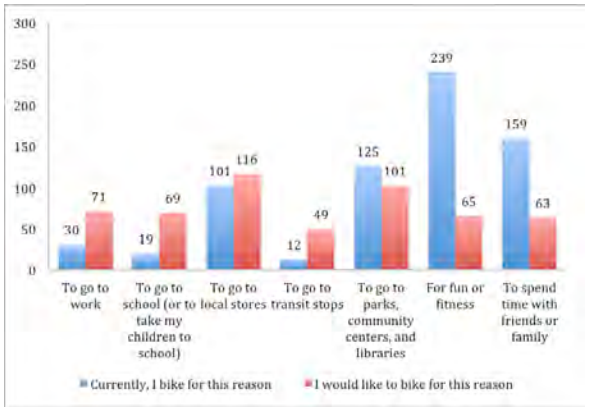


Figure A-8: Bicycling





Respondents were also asked what events and programs would be good for walking in their community. The most popular response was programs that encourage people to walk to local businesses (205 respondents) followed by community walks and fun runs (175) and programs encouraging children to walk to school (169). Each of these types of programs has been successful in similar communities, and can be considered during the planning process and beyond.

Walking Accessories

Respondents were asked whether they used canes, wheelchairs, strollers, or other walking accessories and their experience using such devices. People using such devices are often a vulnerable population, including those who cannot walk without some form of assistance. Of respondents, 64 indicated using a device, and strollers were the most common accessory. Overall, the respondents slightly agreed or were neutral, that it was easy to use their walking accessories in Webster Groves. Respondents were more likely to agree that it was safe and pleasant to use their walking accessory or mobility device. Sidewalk ramps and busy roads were highlighted as problems in the open-ended questions.

Bicycling

Compared to walking, respondents were much less likely to view bicycling as easy, safe, or enjoyable in Kirkwood. Many of Kirkwood's streets were built when walking was a primary

mode of transportation, and feature sidewalks. However, there is only one street with infrastructure where bicycles are separated from traffic.

Similar to walking, the most often cited reasons were recreational, including for fun or fitness. Again, going to local stores was a popular destinations, an indication of Kirkwood's strong downtown retail sector.

Encouraging bicycling

When asked what prevents them bicycling more now, respondents identified physical barriers, similar to the walking responses. Lack of bicycle infrastructure was the top barrier, with 193 respondents saying it prevented them from bicycling more. Lack of time and weather did not make it into the top five barriers, suggesting that physical changes would help respondents to bicycle more.

Finally, when asked where bicycle racks could help encourage bicycling, over half of respondents (104) indicated stores. Parks, community centers, and schools were all indicated by more than 30% of the respondents. Having a secure place to lock a bicycle is essential for bicycling for transportation. The survey suggests that Webster Groves does not have enough bike parking to meet demand near businesses.

These answers were echoed when respondents were asked what changes would help them to bicycle more. More biking and walking paths, and more bike lanes, were the most popular answers in the survey.

Finally, respondents were asked what events and programs would be good for bicycling in their community. Similar to walking, respondents identified community bike rides, programs that encourage people to bike to stores, and programs that encourage children to bike to school. Frequently, walking and bicycling encouragement programs are combined in schools. Bicycling encouragement programs at local stores are often times easier to administer than walking programs, as helmets offer "proof" that customers arrived by bike.

Figure A-9: Encouraging Bicycling

What prevents you from bicycling more?	
Lack of bike infrastructure	193
Crossing busy roads	164
Fast cars	155
Uneven and poorly maintained pavement	112
Rude drivers	112
Lack of time	103
Weather	103
Not sure how to bicycle on streets	46
Not enough street lighting	36
Trash and debris on the sidewalk and shoulder	33
Hills	29
Lack of ramps	26
Physical ability	12
Crime	7

What changes would help you to bicycle more often?	
More biking and walking paths	242
More bike lanes	213
More direct routes and cut-throughs for people biking and walking	186
More signs that show people on bikes can use the street	144
More signs showing biking routes and destinations	142
Safer ways to cross the street	119
Slower traffic	81
Education on how to bicycle on streets	68

Tell us about walking and bicycling in Kirkwood!

The City of Kirkwood is partnering with Trailnet to create a Pedestrian and Bicycle Master Plan. The plan will look at how Kirkwood can improve walking and bicycling opportunities in Kirkwood over the next 10 years. You can help us make a plan that suits the community by answering this five-minute survey and returning it with your utility bill, dropping it off at City Hall (139 S. Kirkwood Rd.) or emailing your answers or a scanned copy to info@kirkwoodmo.org. All results will be recorded and reported anonymously.

In this survey, "walking" refers to any kind of traveling that is usually done on a sidewalk, including using a walker, a wheelchair, or any mobility device. "Biking" refers to using a bicycle, handcycle, tricycle, or recumbent.

	Daily	A few times a week	A few times a month	A few times a year	Never
How often do you walk?	☐	☐	☐	☐	☐
How often do you bike?	☐	☐	☐	☐	☐
How often do you take transit?	☐	☐	☐	☐	☐
How often do you drive a car?	☐	☐	☐	☐	☐
How often do you visit parks in Kirkwood?	☐	☐	☐	☐	☐

Imagine your life in ten years- is there anything you would you like to change in terms of transportation?

	Less	Neither more nor less	More
I would like to walk	☐	☐	☐
I would like to bike	☐	☐	☐
I would like to transit	☐	☐	☐
I would like to drive a car	☐	☐	☐
I would like to visit parks	☐	☐	☐

When it comes to transportation decisions in Kirkwood over the next ten years, what should be the highest priorities? Please use a percentage to indicate the importance of each of the following priorities. Together, the importance for all six priorities should add up to 100%.

Priority	**Importance**
Making trips as safe as possible for everyone on the road	%
Maintaining the current transportation system	%
More walking options	%
More biking options	%
Keeping transportation costs in check	%
Making trips as fast as possible	%

When it comes to biking and walking in Kirkwood's parks, what would you like to see more of in the next ten years? Please use a percentage to indicate the importance of each of the following priorities. Together, the importance for all six priorities should add up to 100%.

Priority	**Importance**
Nature trails for walking	%
Paved trails for biking and walking	%
Bike racks	%
Accessible ramps	%
Walking routes to the parks	%
Biking routes to the parks	%

What is your gender? _____ What is your age? _____

Survey Overview

This anonymous survey will take 10 minutes. Your answers will help Trailnet and Kirkwood understand what the community needs in the Kirkwood Pedestrian and Bicycle Master Plan.

In this survey, "walking" refers to any kind of traveling that is usually done on a sidewalk, including using a walker, a wheelchair, or any mobility device.

"Biking" refers to using a bicycle, handcycle, tricycle, or recumbent.

You will have a chance to tell us more about what "walking" and "biking" mean for you.

Walking

1. How do you feel about the following statements?

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is easy to walk in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is safe to walk in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is enjoyable to walk in Kirkwood.	◯	◯	◯	◯	◯	◯	◯

2. Why do you walk now? Why would you like to walk in the future? Check any reasons that apply you.

	Currently, I walk for this reason	I would like to walk for this reason
To go to work	◯	◯
To go to school (or to take my children to school)	◯	◯
To go to local stores	◯	◯
To go to parks, community centers, and libraries	◯	◯
To go to transit stops	◯	◯
For fun or fitness	◯	◯
To exercise pets	◯	◯
To spend time with friends or family	◯	◯

Other (please specify)

Page 1

3. What prevents you from walking more?

- ☐ Lack of time
- ☐ Hills
- ☐ Weather
- ☐ Crossing busy roads
- ☐ Uneven and poorly maintained sidewalks
- ☐ Rude drivers
- ☐ Physical ability
- ☐ Fast cars
- ☐ Lack of sidewalk ramps
- ☐ Lack of sidewalks
- ☐ Not enough street lighting
- ☐ Crime
- ☐ Trash and debris on the sidewalk and shoulder

Other (please specify)

4. What changes would help you to walk more often?

- ☐ More sidewalks
- ☐ More sidewalk ramps
- ☐ Slower traffic
- ☐ More signs marking walking routes and destinations
- ☐ Sidewalks in better condition
- ☐ Safer ways to cross the street
- ☐ More biking and walking paths
- ☐ More direct routes and pedestrians cut-throughs

Other (please specify)

5. Please share any streets that are particularly difficult to walk on.

6. Please check the events and programs that would be good for walking in your community.

- ☐ Community walks and fun runs
- ☐ Neighborhood walking groups
- ☐ Greater police enforcement of transportation laws
- ☐ Programs that encourage children to walk to school
- ☐ Programs that encourage people to walk to local businesses

Other (please specify)

Page 2

***7. When you are walking, do you use any accessories or mobility devices, such as a stroller, a cane, a wheeled cart, a walker, a wheelchair, or an electronic mobility cart?**

◯ Yes ◯ No

Walking Accessories

***8. Please tell us what kind of accessories you use, and whether you use them everyday, or just sometimes.**

9.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is easy to use my walking accessory or mobility device in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is safe to use my walking accessory or mobility device in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is pleasant to use my walking accessory or mobility device in Kirkwood.	◯	◯	◯	◯	◯	◯	◯

10. If you use multiple walking accessories or mobility devices, please tell us about your experience using the accessories in Kirkwood.

Bicycling

***11. When it comes to bicycling, how would you describe yourself?**

◯ Strong and fearless-- I feel comfortable riding my bicycle on ANY road, even in heavy traffic.

◯ Enthused and confident-- I feel comfortable riding my bicycle in most situations, but I avoid roads with lots of fast cars.

◯ Interested but concerned-- If I ride, it is mostly on trails or very quiet streets. I would like to ride more, but it feels dangerous.

◯ No way, no how-- I have no interest in riding a bicycle.

Bicycling

12. How do you feel about the following statements?

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It is easy to bicycle in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is safe to bicycle in Kirkwood.	◯	◯	◯	◯	◯	◯	◯
It is enjoyable to bicycle in Kirkwood.	◯	◯	◯	◯	◯	◯	◯

13. What kinds of bicycles do you and your family ride?

☐ Adult bicycles ☐ Child bicycles or tricycles

☐ Recumbents or handcycles ☐ Adult tricycles

Other (please specify)

14. Why do you bicycle now? Why would you like to bike in the future? Check any reasons that apply you.

	Currently, I bike for this reason	I would like to bike for this reason
To go to work	◯	◯
To go to school (or to take my children to school)	◯	◯
To go to local stores	◯	◯
To go to transit stops	◯	◯
To go to parks, community centers, and libraries	◯	◯
For fun or fitness	◯	◯
To spend time with friends or family	◯	◯

Other (please specify)

15. What prevents you from bicycling more?

☐ Lack of time ☐ Physical ability

☐ Hills ☐ Fast cars

☐ Weather ☐ Lack of ramps

☐ Not sure how to bicycle on streets ☐ Lack of bike infrastructure

☐ Crossing busy roads ☐ Not enough street lighting

☐ Uneven and poorly maintained pavement ☐ Crime

☐ Rude drivers ☐ Trash and debris on the sidewalk and shoulder

Other (please specify)

Page 3

Page 4

16. What changes would help you to bicycle more often?

- [ ] More bike lanes
- [ ] More biking and walking paths
- [ ] Slower traffic
- [ ] More signs that show people on bikes can use the street
- [ ] More signs showing biking routes and destinations
- [ ] Safer ways to cross the street
- [ ] More direct routes and cut-throughs for people biking and walking
- [ ] Education on how to bicycle on streets

Other (please specify)

17. Please share any streets that are particularly difficult to bicycle on.

18. Please check the events and programs that would be good for bicycling in your community.

- [ ] Bicycle classes for adults
- [ ] Bicycle classes for children
- [ ] Community bike rides
- [ ] Greater police enforcement of transportation laws
- [ ] Programs that encourage children to bike to school
- [ ] Programs that encourage people to bike to local businesses

Other (please specify)

19. Where in your community could bicycle racks help people to bicycle more?

- [ ] Schools
- [ ] Stores
- [ ] Transit stops
- [ ] Community centers
- [ ] Parks

Other (please specify)

20. What is your age?

- ◯ Under 18
- ◯ 19 - 34
- ◯ 35 - 49
- ◯ 50 - 64
- ◯ 65 and older

21. What is your gender?

22. What is your ethnicity?

23. If you would like to receive updates about the Pedestrian and Bicycle master planning process, including upcoming events and activities, please provide your contact information below. All survey answers will be confidential.

Name:
Address:
Address 2:
City/Town:
State:
ZIP:
Country:
Email Address:

***24. Would you like to be included in future email updates about bicycling and walking in the region?**

- ◯ Yes
- ◯ No

Planning Advisory Committee
Meeting #1: April 28, 2014
Draft Summary Notes

Location: Kirkwood Recreation Center

Attendees:

Name	Affiliation
Steve Coates	Kirkwood Park Board
David Eagleton	Kirkwood Resident
Alan Hopefl	Kirkwood Park Board
Nancy Luetzow	Kirkwood Council
Madt Mallinckrodt	Kirkwood Planning and Zoning Commission
Donna Muellner	Kirkwood Resident
Ryan Moore	Kirkwood Resident
James Myers	Kirkwood resident/ Board of Adjustment
Robert Trottmann	Kirkwood Resident
Frank Wentz	Kirkwood Resident
Bill Bensing	City of Kirkwood Public Services
Murray Pounds	City of Kirkwood Parks and Recreation
Ryan Spencer	City of Kirkwood Zoning
Carey Bundy	Great Rivers Greenway
Kim Fitzgerald	St. Louis Community College – Meramec
Tobi Moriarty	St. Louis County Highways and Traffic
Michelle Voegele	MoDOT Area Engineer
Marielle Brown	Trailnet
Cindy Mense	Trailnet

Summary:

The Honorable Art McDonnell, Mayor of Kirkwood, opened the meeting and welcomed the committee members. After introductions from the committee members, Marielle Brown, Trailnet Transportation Planning Manager, led a presentation on the planning process and the public engagement strategy.

The presentation began with a discussion on what makes a place walkable and bikeable. The committee mentioned the following:

Walkability

- Sidewalks- existing, safe
- Downtown- destinations
- Street grids
- Parks
- Destinations
- Accessibility
- Wayfinding and signs

Bikeability

- Grant's Trailnet Trail from Creve Coeur
- Bike Lanes on Wydown

The presentation continued with an overview of how the planning process could help enhance walking and biking in Kirkwood. The need for being aware of costs and balancing them with the vision was also discussed.

The public engagement strategy will focus on tabling at community events in order to inform residents, get their input, and build enthusiasm for walking and biking. When discussing public outreach, the committee raised the following questions and suggestions:

Public outreach

- How to reach out to schools?
- Kirkwood School District Facebook page?
- Before and after pictures for infrastructure
- Posts on Kirkwood's Facebook page
- Information on infrastructure changes at planning events

The planning team will work to address these suggestions. Ryan Spencer will look into posting on the Kirkwood Facebook page. Marielle Brown will develop additional literature for the public outreach events.

The committee also discussed existing conditions in Kirkwood, including popular destinations and barriers. Committee members and the planning team wrote and drew on a map of Kirkwood to help create the existing conditions maps and report, with the following notes:

Map Comments: Destinations

- Regional attraction: Powder Valley Conservation Center
- Nice Trail: Greentree Park
- Bread Co moving next to Schnuck's on Manchester, increasing ped demand
- Business district
- Keysor Elementary
- Ballas and Dougherty Ferry: Popular route for joggers and bikers
- Connect Kirkwood park to Meramec Greenway
- Adams to Webster Groves
- Robinson Elementary
- Kirkwood Park

Map Comments: Barriers

- Steep Hill: Marshall under 270
- Intersection of Craig and Old Big Bend
- Intersection and RR crossing Geyer and Big Bend
- Milwaukee and RR- no crossing
- Kirkwood and Woodbine
- Kirkwood and Argonne- Dark crossing, no lights on street
- Holmes Ave
- Scott Ave
- Bad drain at Manchester and Kirkwood
- Dougherty Ferry and Kirkwood
- Overall, LOTS of interest in Grant's Trail access
- Manchester and Kirkwood
- Manchester and Dickson

Overall, the committee members were enthusiastic about the possibilities for improvement in Kirkwood. Trail access is a major concern for walking and biking, and especially for families. The numerous railroad crossings in Kirkwood are a special challenge for walking and biking access. During and after the mapping exercise, the following concerns were also mentioned in conversation:

- Connections from Meacham to Nipher Middle School (and the rest of town)
- Kirkwood road connecting to Meacham lacks sidewalks
- RR Crossing at Argonne
- Kirkwood is a rail road Quiet Zone, and pushing the railroad too hard could endanger the quiet zone
- Big Bend and South Geyer intersection difficult for walking and biking
- Create a strong connection between downtown Kirkwood and downtown Webster
- There is a bike unfriendly drain at the southwest corner of Geyer and Manchester. Bicyclists are trying to ride to the right, and they are confronted with a fore/aft slotted drain.
- Cut thru from Pamela lane (north Kirkwood) to the walking path would be a great improvement. There was an unofficial cut thru for years, but a new owner shut it down. This allowed kids to get to both North middle school and Westchester grade school
- Encouraging walking and biking through incentive programs at local businesses for people arriving on foot and on bike

The meeting ended with a brief discussion of early action projects. Marielle Brown will share additional information about potential early action projects with the committee in order to discuss the project at the next meeting. As the meeting was closing, members emphasized the importance of prioritizing school and trail access, reaching out to children, and ensuring improvements are family friendly.

Kirkwood Planning Advisory Committee
Meeting #2: June 23, 2014
Summary

Attendance:
Community members:
Steve Coates
David Eagleton
Alan Hopefl
Nancy Luetzow
Marcia Marden
Ryan Moore
James Myers
Robert Trottman

Technical members:
Michelle Voegele, MoDOT
Tobi Moriarty, St. Louis County Highways & Traffic
Carey Bundy, Great Rivers Greenway
John Wagner, Metro Transit (Bi-State Development Agency)

City of Kirkwood:
Bill Bensing, Public Services
Murray Pounds, Parks & Recreation
Ryan Spencer, Engineering/ Planning & Zoning

Trailnet:
Marielle Brown
Melissa Chapnick

Meeting summary
The meeting started with speakers: Donna Poe, of the Kirkwood Small Business District., and the Reilly family, speaking about walking and biking to school in Kirkwood. Donna Poe spoke about the importance of walking and biking for a vibrant business district. Bicycle parking racks have recently been installed in downtown, and she believes that there may still be demand for more racks. Committee members asked questions about high priority intersections and planning for bicycle parking. Following the meeting, Donna Poe submitted the following additional comments:

1. We are very interested in some sort of bike sharing program. We have talked about testing it with reclaimed bikes and possibly having a corporate sponsor as some other cities have done. We think there are good opportunities for circulation between Kirkwood Park and downtown Kirkwood in addition to around the business district.

2. There is a limit to the amount of funding we have for bike racks and appropriate places for them—but we don't believe we have exhausted the supply of appropriate locations.

3. The SBD has a significant investment in the plantings and street furniture that make our district pedestrian friendly. We believe there are significant opportunities for improvement on the north end of the SBD. Sidewalk maintenance/tree roots are issues along with the some dangerous places as discussed last night.

4. From a resident's perspective, there are several neighborhoods in Kirkwood that have walking paths already through them and leading to schools and other neighborhoods. Some of these paths need maintenance and rehabilitation. It would be a good thing to find out where all of these existing paths are located and work on marking them to increase use. Several in the Greenbriar/Osage Hills neighborhood are not marked or maintained.

Jan Reilly and her two sons spoke about getting to school on foot and on bicycle. The family chose to live in Kirkwood in part because of the active lifestyle. Currently, her sons are able to walk to school as they live a few blocks away. However, in the fall the oldest son will be starting at North Kirkwood Middle School, which is 1.4 miles from their house. The family does not feel safe crossing Kirkwood Road. Crossing Manchester can also be difficult.

After the guest speakers, Marielle Brown presented the results of the public outreach. The main objective of the meeting was to identify

community priorities for the plan. The priorities are meant to guide decisions made during the planning process and beyond. Committee members were asked to create a set of up to 5 community priorities based on the input from the public outreach and surveys, in addition to their experiences and knowledge of Kirkwood. Committee members were asked to write down priorities on sticky notes during the discussion of public outreach results.

The presentation focused on the poster poll, the online survey, and the mail-in survey. Committee members questioned the reliability of the surveys. None of the surveys used a random sample. It was possible for non-residents to take the online poll, or for someone to take the survey multiple times by clearing their internet browser, or using a different computer. Due to the weaknesses with online surveys, including self-selection, the planning team also sent out a survey with utility bills and performed public outreach at community events to get a wider group of responses. When looking at the results, the results can not be extended to all Kirkwood residents.

Respondents across all three surveys tended to favor safety over speed and convenience for driving. Respondents were interested in walking and bicycling, and many expressed the desire to increase their walking and bicycling. A full summary of the survey results will be made available to the public as part of the planning process.

After the presentation, the committee members were given several minutes to write notes on priorities. They were then broken into two smaller groups to discuss their priorities and come to a consensus on up to five priorities. Finally, the two groups shared their priorities, and combined them into one list. Throughout the process there were several recurring themes, including safety, connecting popular destinations, and promoting Kirkwood's reputation for being walkable and bikeable. Technical members and Kirkwood staff participated in the conversation as well.

Priorities:

The first group to present was facilitated by Melissa Chapnick, and the members were
David Eagleton, Alan Hopefl, Nancy Luetzow, Robert Trottman, Ryan Moore, James Myers Tobi Moriarty, and Carey Bundy. The priorities they reported out were:

- Traffic calming, especially along major intersections and major roads
- Share the Road education
- Connectivity between trails, schools, downtown, and other cities
- Infrastructure, including sidewalks and crosswalks
- Normalization of walking and bicycling
- Kirkwood should be promoted as a bicycle friendly destination
- Responsible funding for implementation

The second group, facilitated by Marielle Brown, included Steve Coates, Marcia Marden, Ryan Moore, Michelle Voegele, John Wagner, Bill Bensing, and Murray Pounds. The group had similar priorities, with the additions of:

- Accessibility for people of all ages and abilities
- Showcasing Kirkwood's greenspace

The group focused on concepts, rather than refining the language. Combining the two lists, the draft priorities were:

1. Safely connecting schools, businesses, and parks
2. Traffic calming infrastructure that supports walking, biking and accessibility for people of all ages and abilities
3. Education and promotion of walking, biking, and greenspace in Kirkwood
4. Financial responsibility and consideration of multiple funding sources

The committee was supposed to brainstorm Early Action Projects, but ran out of time. The Early Action Project brainstorm will take place on line.

The next meeting will take place in September. Once the date is scheduled, the information will be available online.

Kirkwood Planning Advisory Committee
Meeting #3: July 16, 2014
Summary

Attendance:
Community members:
David Eagleton
Kim Fitzgerald
Carol Gilster, via phone
Nancy Luetzow
Ryan Moore
James Myers
Donna Poe
Robert Trottman

Technical members:
Tobi Moriarty, St. Louis County Highways & Traffic
Carey Bundy, Great Rivers Greenway

City of Kirkwood:
Bill Bensing, Public Services
Todd Rehg, Engineering
Ryan Spencer, Engineering/ Planning & Zoning

Trailnet:
Marielle Brown
Melissa Chapnick

Meeting Summary
The meeting focused on determining a feasible Early Action Project. Marielle Brown reviewed the reasons for an Early Action Project- mainly to demonstrate a walkable and bikeable place, and to create enthusiasm for improved walking and biking in Kirkwood. The group then set about brainstorming ideas for an Early Action Project, along with possible locations and times.

Marielle Brown reviewed the previously described the previously mentioned ideas: intersection repair or painting, Open Streets, and Park(ing) Day. The committee agreed the project should reflect the themes of the plan, including safety.
Carol Gilster noted the importance of focusing on fixing existing infrastructure, especially sidewalks and sidewalk ramps that cause problems for people using mobility devices or pushing strollers. The committee agreed to the high priority of addressing infrastructure during the implementation phase.

The possibility of a bike lane along Scott Avenue, to connect to Grant's Trail, was brought up by David Eagleton. He supplied supporting documents, including an email from Ryan Moore, another committee member. The committee agreed that finding a safe connection to Grant's Trail should be a high priority for the implementation phase.

Open Streets with model infrastructure would allow the bike lane to be piloted for the day without the need to pass an ordinance before the event. The committee expressed support for an Open Streets event that would incorporate education by displaying temporary pilots of bicycle infrastructure. The two locations discussed were either near Scott Avenue, or near Keysor Elementary School to coincide with an annual bike event hosted by the school. The committee ultimately decided Scott Avenue was a better choice, as it would appeal to the larger community, and would help demonstrate safe access to Grant's Trail.

Pedestrian audits were discussed, as well as ways to educate people at the event about inadequate curb cuts. Melissa Chapnick circulated a sample pedestrian audit form that could be made available to residents if they would like to perform pedestrian audits independently. Educational flyers could also be created for the Open Streets event.

The last weekend in September and the first weekend in October were considered. Donna Poe noted there would be events in Downtown Kirkwood both weekends if we would like to cross-promote. Marielle Brown will meet with the City of Kirkwood staff to figure out the exact location and date that is the most feasible.

The meeting adjourned at 7:00 pm.

Kirkwood Planning Advisory Committee
Meeting #4: August 28, 2014
Summary

Attendance:

Community members:
David Eagleton
Alan Hopefl
Madt Mallinckrodt
Donna Muellner
Donna Poe

Technical members:
Carey Bundy, Great Rivers Greenway
Tobi Moriarty, St. Louis County Highways & Traffic
John Wagner, Metro Transit (Bi-State Development Agency)

City of Kirkwood:
Bill Bensing, Public Services
Ryan Spencer, Engineering/ Planning & Zoning

Trailnet:
Marielle Brown
Cindy Mense

Meeting Summary
The meeting focused on promoting the upcoming public review opportunities and reviewing the Draft Plan and its presentation.

Marielle Brown started the meeting by reviewing the location and activities planned for Bike Walk Play Kirkwood! and soliciting volunteers from the Committee. She also asked the committee members to help promote the plan review at the Greentree festival and at Bike Walk Play Kirkwood! The committee brainstormed multiple ways to promote the activities, and potential partners. The committee also discussed handing out bicycle safety equipment such as mirrors at the event. David Eagleton will work with Marielle to find partners and to promote Bike Walk Play Kirkwood!

The second part of the meeting was devoted to discussion of the draft plan. The committee agreed that the maps were confusing, and did not give a clear picture of the proposals, especially the pedestrian maps. Marielle and Cindy will work to improve and revise the map presentation before the first public review event. Bill Bensing suggested adding the classification of roads, to help distinguish those that are eligible for federal funding. The committee would also like to see sample pictures of crosswalks that could be considered in Kirkwood.

In terms of the proposed bicycle route alternatives, the following issues were raised:

- Taylor should be included in the plan, as should Clinton between Fillmore and Leffingwell
- Adams and Ballas are an important route and need safe infrastructure
- Kirkwood Road is unpleasant to bike on and almost never used; however extending the current road diet could improve walking and commerce along Kirkwood Road

The pedestrian map needed lots of clarification, and the committee agreed that the current color scheme was not useful. Committee members identified the following areas as high priority:

- Ballas and Adams in Sugar Creek Valley
- Dougherty Ferry from Essex to Geyer, and Essex from Dougherty Ferry to Geyer
- Kirkwood Road south of Big Bend
- The railroad tracks at Fillmore where students cross to get to school

The following intersections were also considered high priority:

- Manchester at the following intersections: Woodlawn, Kirkwood, Geyer, and the crossing in front of North Kirkwood Middle School
- Kirkwood at Manchester, Essex, and Big Bend
- Geyer at Manchester, Peeke/Dougherty Ferry, Essex, Adams, Jefferson, and Big Bend
- Taylor at Argonne, Adams, and Quan

In terms of overall priorities, the committee discussed the need for the downtown grid to be walkable, and for streets near schools to have sidewalks on both sides. The committee also discussed the need for prioritization of key north/south and east/west corridors.

Kirkwood Planning Advisory Committee
Meeting #5: November 18, 2014
Summary notes

Attendees:

Steve Coates	Park Board
David Eagleton	Resident
Alan Hopefl	Former Park Board Member
Nancy Luetzow	City Council
Madt Mallinckrodt	Planning and Zoning
James Meyers	Board of Adjustment
Tobi Moriarty	St. Louis County Traffic and Highways
Donna Muellner	Resident
Donna Poe	Downtown Kirkwood
Robert Trottman	Resident
Michelle Voegele	MoDOT
Denise Whitworth	Resident
Bill Bensing	Kirkwood Public Services
Murray Pounds	Kirkwood Parks and Recreation
Ryan Spencer	Kirkwood Planning
Marielle Brown	Trailnet
Cindy Mense	Trailnet

The Planning Advisory Committee met to review public comments and the proposed changes to that will be included in the final version of the Pedestrian and Bicycle Master Plan.

The meeting started with a review of the Early Action Project and the public comment received at the event. The pop-up crosswalk was generally well received by the public and there is interest in a permanent crosswalk being installed on Argonne. The planning team and volunteers talked to dozens of people at the event. The feedback largely supported earlier outreach efforts, with general support for the plan and increased walkability and bikeability.

The planning team did not collect demographic information at the event, and the public outreach has not included a statistically valid sample. There is concern that the public outreach does not accurately reflect the residents of Kirkwood. While a statistically valid sample was not feasible for the budget of this project, the planning team sought public outreach opportunities where they could talk to a larger group of people than those that might already be involved in walking or biking issues.

Both at the event and through emails, some residents expressed concern over the shared use paths that were included as alternatives for Marshall Road and Adams Road. The planning team proposed the final recommendation for access to Meramec Greenway to be along Timberbrook Drive, rather than Marshall Road. There is the potential to connect the existing greenway to the intersection of Timberbrook Drive and Marshall via the land owned by the City of Kirkwood Utilities.

The proposed final recommendation for Adams will be to reduce the width of the lanes, based on engineering judgment and St. Louis County Highways and Traffic Policy, when the road is repaved next. This will increase space for walking and biking, without adding any additional pavement. There is a potential that a "lane diet" (narrowing the lanes), will reduce traffic speeds slightly. At this time, there are no plans to repave this section of Adams, but it is conceivable that it will happen within the next 15 years.

The alternatives that were listed as neighborhood greenways were largely unpopular, and will not be in the final plan, with the exception of the Timberbrook Drive route. There is no clear alternative to the Manchester route because of lack of connectivity along neighborhood streets.

Michelle Voegele of MoDOT spoke to the sections of MO 100 (Manchester Rd) and Lindbergh/Kirkwood Rd under MoDOT jurisdiction. MoDOT does support the Gateway Bike Plan. Kirkwood Rd/Lindbergh is identified as a "share the road" facility not road diet on the draft map. MO 100 is shown as 'bike lane' on the Gateway Bike Plan but that does not mean that it will be a road diet as the draft plan and map incorrectly identified, but rather that it would be reserved through redevelopment with right of way dedications where applicable. Any reduction in the number of existing through lanes must be documented with further analysis and supported in a traffic impact study.

The final version of the plan will correct these mistakes, and it will reflect the Gateway Bike Plan, without reference to a road diet.

The final plan will include prioritization based on the principles identified by the committee, along with cost estimates. The planning team will also include a recommendation for Kirkwood to consider a Complete Streets policy and an ongoing Pedestrian and Bicycle Committee.

The Committee suggested several things should be added to the plan, including:

- Crossing improvements Manchester and Woodlawn
- Library crosswalk
- Examples of crosswalks
- Argonne crossings
- Railroad crossings
- Definitions/ glossary
- Graphics
- Details on potential Grant's Trail connections

The final Planning Advisory Committee Meeting will take place on December 10th. Prior to the meeting, the Committee will receive the final content for the plan, though the layout will not be finished until January. At that meeting, the Committee will discuss next steps for walking and biking in Kirkwood.

The planning team will present the plan during a Council Work Session in January or February. The plan will be made available to the public before it is presented to City Council.

Kirkwood Pedestrian and Bicycle Master Plan
Planning Advisory Committee
December 10, 2014
Meeting Summary

Committee members in attendance:

Carey Bundy	Great Rivers Greenway
David Eagleton	Resident
Alan Hopefl	Former Park Board Member
Nancy Luetzow	City Council
Madt Mallinckrodt	Planning and Zoning
Tobi Moriarty	St. Louis County Highways and Traffic
Donna Muellner	Resident
Robert Trottmann	Resident
Michelle Voegele	MoDOT
John Wagner	Metro
Frank Wentz	Resident
Bill Bensing	City of Kirkwood
Murray Pounds	City of Kirkwood
Ryan Spencer	City of Kirkwood
Marielle Brown	Trailnet
Cindy Mense	Trailnet

Community members in attendance:

Ed Bovier	Resident
John Klinger	Resident
Wes Ridgeway	Missouri Bicycle and Pedestrian Federation

Summary:
The objectives of the meeting were to review the final recommendation based on committee and public feedback and to discuss next steps for implementation. Marielle Brown presented the final recommendations, which can be reviewed in the accompanying presentation.

The final recommendations for walking and biking routes follow what was discussed in the previous meeting. Marshall Road will not have any recommended changes. The recommended route for accessing the Meramec Greenway will be Timberbrook Drive. In Sugar Creek Valley, W Adams and N Ballas are recommended for a "lane diet," or lane narrowing, the next time the road is repaved. The travel lanes may be able to be striped more narrowly, to create additional room in the shoulders without expanding the pavement. Ultimately, the width of the lanes should be determined by the St. Louis County Highways and Traffic engineering expertise.

The final recommendation for access to Grant's Trail comprises two phases- a first phase of Shared Lane Markings along Holmes and a Neighborhood Greenway on Scott. At the same time, the City should continue working with Great Rivers Greenway to collaborate on a separated trail along the old railroad spur.

The committee discussed bicycle signage for Kirkwood. Trailnet recommends that the signage be consistent, with wayfinding information for destinations and routes on all signs. Donna Muellner pointed out that Bike St. Louis in Kirkwood and the Kirkwood routes serve different functions. The City of Kirkwood will have to decide on the type of signage they will use to establish the wayfinding system, based on whether they want locally unique signs or standard signs that are eligible for federal grants.

The draft recommendations for encouragement, education, enforcement, and evaluation have been carried forward into the final plan recommendations. Several of the recommendations, including a bike audit for the staff, will be initiated as part of the planning process, in order to jump start implementation. The final plan recommends updating City Code to support walking and biking, including a Complete Streets Policy to assure that future street improvements accommodate all users.

The next steps in the planning process are two neighborhood walks and tours of planned improvements on Saturday, January 24, and a presentation of the recommendations to the City Council during a work session. The work session date will be announced when it is finalized.

First Round of Public Outreach

The first round of public outreach for the Kirkwood Pedestrian and Bicycle Master Plan took place from April 1, 2014 through June 14, 2014. The public outreach consisted of two surveys and four pop-up tabling events.

The first round of public outreach emphasized gathering comments and opinions from the public to better understand community values and priorities for transportation in Kirkwood. The pop-up tabling events captured public comments in the following ways:

- poster poll of six questions
- maps of Kirkwood, for residents to draw favorite routes and barriers on
- comment cards
- paper copies of the online surveys
- surveys designed for children 6 through 16

In addition to capturing public comments, the public was able to talk to the planning team about the process. We provided fliers on the process itself, and fliers with information about different forms of walking and biking infrastructure. Overall, we interacted with over 90 people, based on the number of stickers on the poster polls. The results from the process are summarized below.

Events

The pop-up tabling events were conceived as a chance to take the materials typically found in an Open House to public events, in order to get both a larger and wider audience for the public outreach. The tabling events were publicized online (on Trailnet's website and Kirkwood's website), as well as in the Webster-Kirkwood Times. The pop-up tabling events took place at popular social events in Kirkwood, which gave us the chance to talk with residents who may not have otherwise come to a traditional Open House. The events were:

- Kirkwood Chamber of Commerce Expo, April 1
- Kirkwood Mayfest, May 10
- Kirkwood Summer Concert, June 5
- Magic House Good To Grow Festival in Kirkwood, June 14

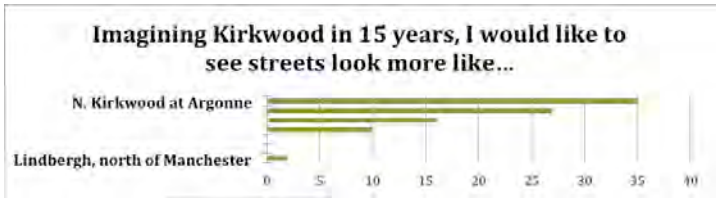
The Chamber Expo was an excellent opportunity to speak with retired residents. Mayfest and the Summer Concert Series both drew residents of all ages, and from all over Kirkwood. We chose to table at The Good To Grow Festival in the hopes of speaking to families with children in Kirkwood. While the festival was well attended by families with children, few of them were from Kirkwood, so very few responses were gathered.

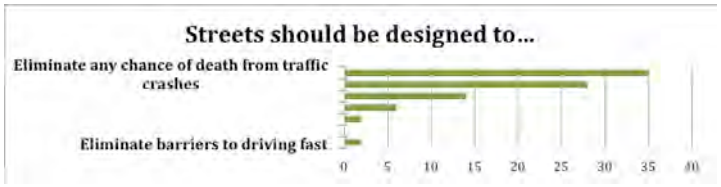
Poster poll

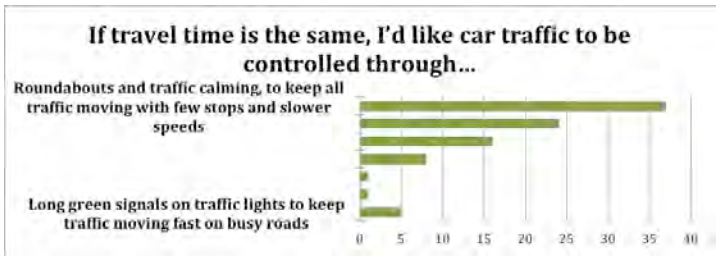
The informal poster poll asked residents to place stickers along a scale with 7 marks between two opposite choices. Each choice was illustrated with a photo. At the end of the event, the stickers were counted, and were assigned to the mark it was closest to. When the stickers were halfway between two marks, they were assigned to the mark to the right on the poster (lower on the scale on these graphs). Both the survey collection and counting methodology can only give a general impression of the opinions expressed. They do not represent a rigorous survey process.

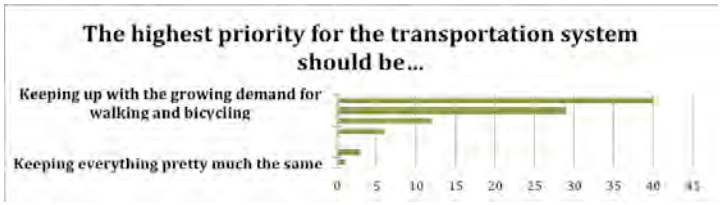
Mapping comments

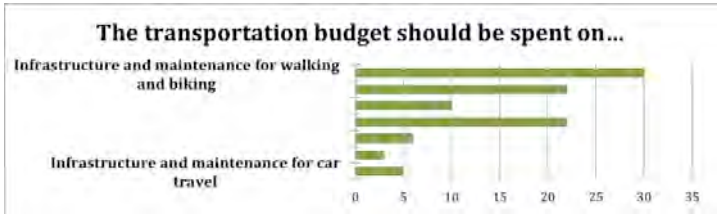
Residents were invited to give written comments through a map of Kirkwood and through comment cards. When residents were hesitant to draw on the maps, the planning team recorded the residents' comments on the maps. At the Chamber Expo, the table was narrow, which discouraged residents from drawing on the map. In order to improve clarity, residents were asked to use color-coded markers at the last two events.











Chamber Expo map comments

- Bridge over 270 at Big Bend is unpleasant and dangerous. The low railing makes it scary for riding a bike, and apparently attracts people trying to commit suicide.
- Sidewalk on Craig is not continuous.
- Is there a chance of paving trails in the Kirkwood City Park?
- Get bikes off of Geyer. They do not follow the rules of the road.
- I want bikes on Geyer! The shoulder is not clean and there are too many ruts, so it is unsafe for cycling.
- Taylor at Taylor Woods is a great place to walk.
- Mermod is an awkward intersection, and a place for a potential roundabout.

Mayfest map comments

- Brownell, Glendower and Chelsea- people walking in street and cut-through traffic; headed to school in Glendale
- Swan and Kirkwood- stop sign needed: high speeds and children walking, visibility issues due to hill
- Streets like Bodley should be one-way traffic only as they are too narrow
- Bodley needs a sidewalk on both sides
- Longview and Bodley are highlighted with needs sidewalk
- Wilson, between Simmons and Kirkwood Ave, is dotted with needs sidewalk for loop
- Churchill, between Clay and Kirkwood, is highlighted with Needs Sidewalk in sidewalk gap
- The intersection of Woodlawn and Jefferson is highlighted as Needs 4-Way Stop
- The intersections of Geyer and Peeke and Geyer and Essex are also highlighted as places of concern
- Argonne- Connection from City Park to Grant's Trail; need ped/bike signage
- Ballas, from Ebsworth Park to Kirkwood City Park, is marked needs better shoulders
- An additional note adds, beautiful, but difficult to change
- The intersection of Lark and Couch is marked Dangerous Pedestrian

Crossing
- Marshall Road- Narrow, trucks
- Sidewalk in need of repair on Lee Ave, speed bump would be helpful- cut thru is too fast
- Need crosswalk on Big Bend and Geyer on east side over railroad tracks
- Sidewalks only one side of Geyer between City boundaries and Geyer Forest and no shoulders; there are no crosswalks on Geyer along the same stretch
- I want my child to bicycle to the park is also noted at this intersection
- Bike lanes along Rose Hill are so comfortable for riding
- Multiple blind spots along Geyer headed out of Kirkwood are noted
- The land between Greentree Park and Emmenegger Nature Park is highlighted as private property.
- Signage is important for proper entrance to Emennegger Park is noted along the north side of the park
- The area around Greentree park is noted Safe connection to Grant's Trail
- Big Bend between the city limits and 270 is noted needs better shoulders
- Big Bend, where it crosses 270, is noted as a dangerous intersection.
- An additional note says "Need a bridge here like on Clay and Argonnne for pedestrians"

Concert Series map

The following corridors are highlighted in red for danger:

- Geyer, between Rose Hill and 44
- Marshall from Greentree Park to Big Bend
- Big Bend from City limits to Marshall
- N Kirkwood Rd from Washington to Swan
- Taylor, from Adams to Nipher Middle School
- Fillmore from Adams to the train tracks, along with a note- need to make sidewalk connections
- Adams, north of Kirkwood park, with a sign that says Speed limit needed, people too fast.

The following intersections are highlighted in red for danger:
- Intersection of Old Big Bend and Craig is highlighted in red with the note "still dangerous for bicyclists."
- The intersection of Dougherty Ferry and 270
- The intersection of Dougherty Ferry and Ballas

Additional comments:

- A note on Ballas says "Neighborhood opposed to widening."
- The intersection of Argonne and Van Buren is highlighted with "Should be a stop sign." Also traffic is too fast on Argonne is noted.
- Dougherty Ferry, Peeke, and Essex were all highlighted in green by a man who wanted to mark where he saw cyclists.
- Geyer and Harrison are marked in blue with the note No Full Sidewalk

Good to Grow Festival Map
- Manchester is too busy for walking. It needs real crosswalks.
- Woodard and Geyer are marked "Feels safe going from Woodard to City Park."

Children's surveys

Children were asked to fill out a survey that consisted of one question, "How would you make Kirkwood a better place to walk and bike?" The survey provided several lines for text, in addition to a space for drawing a picture. Markers and crayons were provided for filling out the surveys. Children were asked to write down their age, and some did. Many also wrote down their names. To protect their anonymity, the names have not been included. No children filled out a survey at the Chamber Event.

Mayfest children's surveys

- I propose that we make a bike riding course to bike around the neighborhood.
- Hi. I'm L_ _ _ _. I am 8. I think flat spaces would make Kirkwood a

better place to walk and bike. (Drawing features picture of girl biking on a flat line with a tree in the background).
- I would like to see more trails and more bike paths. Also more plants and trees along all paths. (Drawing features trees and flowers with the words "Need" and "Flowers" repeated multiple times).
- My name is L_ _ _ _. I am 9. I think we should have trails and more roads. Thank you! (Drawing features several roads with the word roads).
- I think that it would be nice if there were more trails and places to ride. (Drawing features a bike on a flat line with a frowny face. A bike near a hill has a smiley face).
- I would like to see more trails in Kirkwood and bike routes. (Drawing has trail, bike rack, and tree, all labeled).
- I would like to see that there are more bikeriding and walking trails. (Drawing has boys, girls, and bikes along multiple trails).

Good to Grow Festival children's surveys

- Make lights for bikes so people can see us. Illustrated with a bicycle and lights.
- Birds. Illustrated with a bird.
- Illustration of flowers.
- I think a way people could make Kirkwood a better place to walk and bike is to make sure all of the sidewalks are even to build more parks and natures reserves. Thanks.

Comment cards

Comment cards were provided at all of the events. For the most part, residents preferred to note their comments on the maps. We received no comment cards at the Chamber Expo, nor at the Good To Grow Festival. Several residents at the Concert Series added bullet points and numbers within their comments, so the overall comments are lettered for clarity.

Mayfest comment cards

- Public awareness and encouragement to support "Good Neighbor" relationships with private landowner neighbors. Appreciate and respect each others rights. The "few" ruin for the majority. Self police and awareness to correct the few.
- Comments regarding sidewalks for pedestrians and w/c [wheelchair] users- uneven sidewalks ramps between Woodlawn and Walgreens to Finch.

Concert series

A.

- Kirkwood need to create a single lane of traffic from Essex South to Woodbine. Add street parking with added landscape also promote shops and restaurants to use the added space as street shopping and dining (outdoor).
- Kirkwood need to reduce the traffic (auto) speed through downtown- from Woodbine to Manchester to 20 mph. This would help reduce excess through traffic.
- Shops need to address the street front and parking needs to be behind shops and stores to help create a community experience.

B.

- I am passionately opposed to any bike/hike trail development through Emmenegger Nature Park, our legacy nature park deserves preservation and restoration, not recreational development, aka WRECK-REATION.
- The Sugar Creek Valley area of West Adams/ Ballas is a natural treasure and its ambience should not be destroyed by street widening or sidewalks. Respect the signs: "Entering Sugar Creek Valley. Preserve its beauty and wildlife."

C.

- Please provide dedicated bike lanes that will connect Grants Trail with Fenton trails
- Improve quality of roads. Kirkwood roads are full of potholes (much worse than Webster).

D.

- Good- excellent bike parking, locking, protection in downtown area as well as other strategic areas.
- Very safe obvious dedicated bike/walk connection from downtown (train station) to Grant's Trailhead with signage at the trail head and downtown to let people know what's available. (such as a list of amenities in downtown Kirkwood. Also makes Holmes safer for bikes (very sad that wasn't addressed during recent improvements).
- I personally think with handicaps and elderly people can ride their electric transportation. There are an increasing number and this would profoundly increase their ability to transport and enjoy the outdoors.
- I Getting annual weekends where Kirkwood partners with towns that Amtrak stops at near Katy Trail and connect with each other.

Figure D-1 :Sample Pedestrian Prioritization Table

Street Name:				
Recommended improvement:				
Length (miles):				
Estimated Cost:				
Existing sidewalk? (No = 0, One Side = 1, Two Sides = 2, Path = 3)				
	Prioritization Criteria	Score	Weight	Weighted Score
1.1	Number of Public and Private Schools (k-12 and Community College) near route		30	
1.2	Direct access to a transit stop (yes=1; no=0)		15	
1.3	Direct access to a commercial area (yes=1; no=0)		20	
1.4	Number of public facilities (city hall, library, etc.) near route		10	
1.5	Number of parks with direct access		25	
2.1	Connects existings sidewalks (yes=1; no=0)		25	
2.2	Access to a regional multi-use path (yes=1; no=0)		25	
2.3	Improves pedestrian access along or across a major road (yes=1; no=0)		25	
2.4	Crosses freeway or railroad tracks (yes=1; no=0)		25	
3.1	Recommended by community feedback (1 = maximum support; 0 = little to no support)		60	
3.2	Recommended by agency feedback (1 = maximum support; 0=little to no support)		60	
3.3	Multiple funding sources possible		15	
3.4	Cost (4 = under $80,000; 3 = $80,001 to $160,000; 2 = $160,001 to $320,000; 1 = $320,001 to $640,000; 0 = over $640,000)		30	

Total Score