Trail Facilities Nexus Study

City of Kansas City, Missouri

Planning Report | 2018

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This update to the Trail Facilities Nexus Study was prepared by Vireo Landscape Architecture & Planning and the City of Kansas City, Missouri City Planning & Development Department, in cooperation with the Mid-America Regional Council.

Sly James, Mayor

Scott Wagner, Mayor Pro Tem, Councilman, 1st District at-large

Heather Hall, Councilwoman, 1st District

Teresa Loar, Councilwoman, 2nd District at-large

Dan Fowler, Councilman, 2nd District

Quinton Lucas, Councilman, 3rd District at-large

Jermaine Reed, Councilman, 3rd District

Katheryn Shields, Councilwoman, 4th District at-large

Jolie Justus, Councilwoman, 4th District

Lee Barnes, Jr., Councilman, 5th District at-large

Alissia Canady, Councilwoman, 5th District

Scott Taylor, Councilman, 6th District at-large

Kevin McManus, Councilman, 6th District

Troy Schulte, City Manager

Jeffrey Williams, AICP, Director of City Planning & Development

Diane Binckley, AICP, Principal Assistant Department Head of City Planning & Development

Sherri McIntyre, Director of Public Works - Assistant City Manager

Terry Leeds, Director of Water Services

Mark McHenry, Director of Parks & Recreation

Technical assistance provided by:

Wes Minder, P.E. _____ City Manager's Office

Kyle Elliott, AICP _____ City Planning & Development

Brian Jackson _____ City Planning & Development

Chase Johnson _____ City Planning & Development

Joseph Blankenship _____ City Planning & Development

Richard Allen _____ Parks & Recreation

Jimmi Lossing, PLA _____ Parks & Recreation

Jeff Martin, P.E., ENV SP _____ Public Works

Thomas Kimes _____ Water Services

INTRODUCTION

BACKGROUND

PURPOSE & GOALS OF THIS STUDY

In 2017, The City of Kansas City, MO retained the services of Vireo Landscape Architecture & Planning to update the 2009 Trail Facilities Nexus Study, which focused on establishing a methodology to determine the demand for trail facilities generated by new development and the resultant impact fee requirement. In addition to updating the factors and figures used to calculate the impact of a given development, Vireo sought to create a more user-friendly and forward-thinking planning report to guide future examination of trail funding efforts.

This study specifically investigates funding sources for off-street trail construction. For the purposes of this study, trails are defined as 8' width minimum, paved, shared-use, non-motorized paths.

WHAT ARE IMPACT FEES?

Impact fees, parkland dedications, and in-lieu fees can be imposed by a City on a broad category of property owners during the development process. These fees are generally collected during permitting processes to subsidize new public infrastructure needed by the development.

HOW ARE IMPACT FEES DETERMINED?

The formula to determine impact fees is based on the amount of growth a new development will bring. Several standard factors measure this additional demand on trail systems. Each of these factors is explained further in this study. See Page 11.

- Density Factor
- Employee Weighting Factor
- Trail Facility Standard / Level of Service Guideline
- Gross Square Footage of the Development

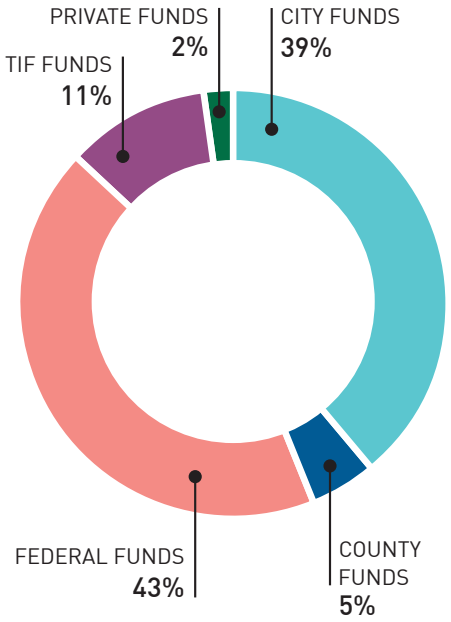
HOW ARE TRAILS CURRENTLY FUNDED?

Often, there is not just one source of funding for trail construction. This holds true in Kansas City, where the lack of a dedicated funding source means that trails are built using a "funding quilt" comprised of funds from various sources:

- Federal or state grants
- Public Improvements Advisory Committee (PIAC) funds from local sales tax
- Public-private partnerships
- Developer land donations

LOCAL TRAIL FUNDING EXAMPLES

Below are a few examples of local trails that have been constructed using a variety of funding sources. These examples reinforce that it is typically a combination of city, county, state, and federal funds, as well as local non-profit or neighborhood partners that contribute to the success of a trail project. In many cases, contributions may take the form of land easements, added trail amenities, or long-term maintenance agreements.



Kansas City currently employs a "funding quilt" comprised of various sources to build trails.

3-Trails Corridor was funded through PIAC, 3-Trails West (non-profit), National Park Service cost-share, CID, KC Tourism funds, school district easements, public-private partnerships, and federal STP grants.

Line Creek Trail was primarily funded with local PIAC dollars. The northern section near Barry Rd was completed with federal dollars and a local match.

Blue River Trail was funded through City, federal STP, and MoDOT matching funds.

152 Trail was largely possible thanks to developer land donations, and was funded with local PIAC dollars and federal grants.

Trail System Comparisons

	Square Miles	Population (2016)	Existing Trail Miles* (2016)	Mileage Goal	Trail Miles Per 1,000 People	Trail Miles Per Sq. Mile
Kansas City, MO	319	481,420	100	230	0.100	0.31
Bentonville, AR	32	47,093	28	45	0.028	0.88
Cincinnati, OH	78	298,800	21	120	0.021	0.27
Charlotte, NC	298	842,051	47	208	0.047	0.16
Colorado Springs, CO	195	465,101	144	325	0.144	0.74
Dallas, TX	341	1,318,000	150	305	0.150	0.44
Denver, CO	155	693,060	85	99	0.085	0.55
Fayetteville, AR	55	83,826	43	143	0.043	0.78
Great Rivers Greenway-St. Louis County, MO	508	998,581	112	600	0.112	0.22
Jefferson County, CO	774	571,837	236	252	0.236	0.30
Johnson County, KS	480	584,451	255	614	0.255	0.53
Lee's Summit, MO	63	96,076	76	159	0.076	1.21
Liberty, MO	29	30,614	18	80	0.018	0.62
Nashville, TN	528	684,410	102	155	0.102	0.19
Memphis, TN	324	652,717	23	91	0.023	0.07
Milwaukee, WI	96	595,047	7	17	0.007	0.07
Oklahoma City, OK	606	638,367	80	208	0.080	0.13
Olathe, KS	60	135,473	29	36	0.029	0.48
Ozark Greenway-Springfield-Greene County, MO	375	167,319	70	200	0.070	0.19
Raleigh, NC	143	458,880	40	160	0.040	0.28
Richmond, VA	60	223,170	4	0	0.004	0.07
Salt Lake City, UT	111	193,744	30	69	0.030	0.27
Tulsa, OK	187	403,090	122	569	0.122	0.65

Kansas City, MO ranks...

- 9th Largest in Geography
- 11th Largest in Population
- 8th in Existing Trail Miles
- 7th in Mileage Goal
- 8th in Trail Miles Per 1,000 People
- 11th Largest in Trail Miles/Sq. Mile

*Trails are defined here as 8' min., paved, shared, non-motorized paths.

KANSAS CITY'S TRAIL SYSTEM

PREVIOUS PLANNING EFFORTS

Kansas City has a long history of trail planning efforts and has achieved varying degrees of success in the implementation of those plans. One of the more recent planning efforts is the Trails KC Plan, adopted in 2008.

Additionally, a Strategic Business Plan was completed for the Parks and Recreation Department in 2015, which measured the total miles of "exercise, shared use, mountain bike, hiking, and on-street bikeway trails" (KCMO Strategic Business Plan, 2015 p93). This analysis was further broken down into three geographic areas of the city:

Mileage of Various Types of Trails within the City

Trail Types	Mileage*	Area
Existing Shared Use, Mountain Bike, Hiking Trials, & On-Street Bikeways	50 Miles	North KC
	53 Miles	Central KC
	70 Miles	South KC
	173 Total Miles	Citywide

*from the KCMO Parks & Recreation Strategic Business Plan, 2015

Although this inventory may be accurate, the total miles are not broken down into the trail categories by which each type of trail is typically funded or planned. Therefore, this study will focus on mileage of off-street, paved, shared use trails, as these facilities are the focus of the 2008 Trails KC Plan. New shared use paths are built each year as a part of the build-out of that plan, and the following mileages were inventoried within city limits in 2018.

Mileage of Shared Use Trails within the City

Trail Types	Mileage*	Area
Existing Shared Use Trails	101.5 Miles	Citywide
Proposed Shared Use Trails	164 Miles	Citywide
Completed Shared Use Trails Since the 2009 Trails KC Plan	65 Miles	Citywide

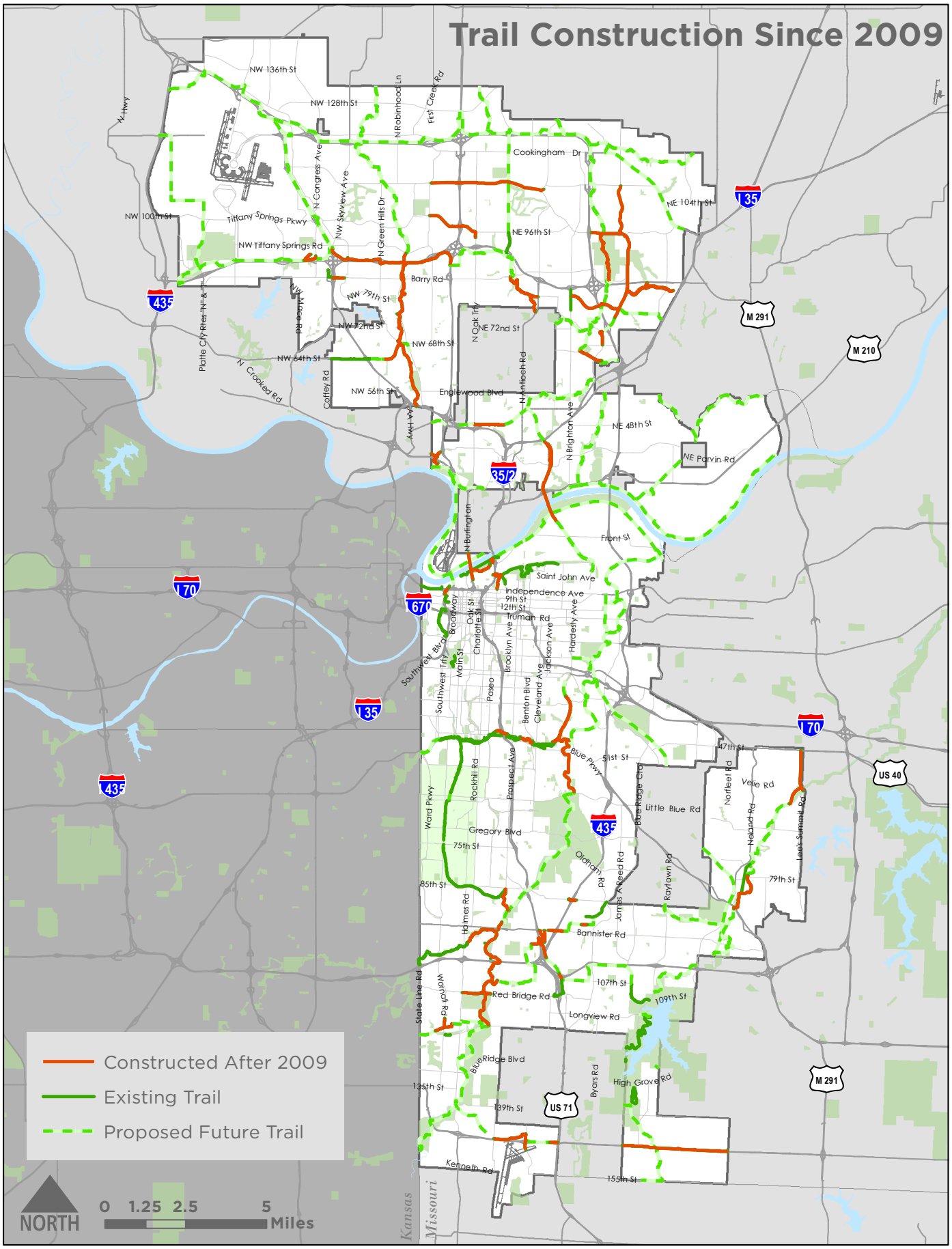
*Significant portions constructed as part of roadway improvements, particularly in the Northland.

The map on the following page shows which trails have been constructed since the 2009 Trail Facilities Nexus Study. It also shows proposed future trails, which follow the recommendations outlined in the 2008 Trails KC Plan and connect to other areas that have since seen growth.

TRAIL TYPE COMPARISONS

The City of Kansas City has defined its trail facility standards specifically for all off-street, paved, multi-use trails within city limits. However, because the National Recreation and Park Association recommends that each city define facility standards to meet local needs, the mileage listed for each municipality or county on the previous page may not necessarily reflect comparable types of trails. It does however show that communities are setting various goals to improve their trail systems, and that there is no one-size-fits-all solution for building a successful system.

For example, Richmond, VA has set a broader goal for increasing trails of all types. Richmond has only four miles of off-street, paved, multi-use paths, yet they have a 30-mile single-track trail, a 52-mile regional trail, and 15 miles of other paths. The Northwest Arkansas Regional Planning Commission (NWARPC), a Metropolitan Planning Organization, similarly sets goals using a broader definition of trails. They aim to provide 215 trail miles, including both paved and natural surface trails.


Trail Construction Since 2009
Constructed After 2009
Existing Trail
Proposed Future Trail
NORTH
0 1.25 2.5 5
Miles
Kansas
Missouri

SUPPLEMENTAL RESEARCH

BEST PRACTICES REVIEW

The project team completed an investigation of best practices by other municipalities and agencies to better understand: (a) possible approaches to trail corridor dedication throughout the planning process, (b) provisions for payments in lieu of trail construction, and (c) impact fee programs to fund land acquisition and construction of new public trail facilities.

Although no city appeared to cover the same range of issues as in Kansas City, several examples were reviewed to provide a basis for the Trails Nexus Study. Kansas City's distinct Midwestern culture, geography, history, and current political climate are key factors in providing successful trails in terms of both land acquisition and funding strategies.

Three cities without impact fee or dedication requirements were explored, including Indianapolis, Charlotte, and Bentonville. Denver, Minneapolis, and Portland were also reviewed as examples of municipalities with trail impact ordinances. Finally, three regional trail funding and planning models were investigated to understand how Kansas City might be able to team with regional partners in the future to provide trail linkages beyond city limits.

CITIES USING PUBLIC-PRIVATE PARTNERSHIPS TO FUND TRAILS

BENTONVILLE, AK

Trail Funding: Bentonville's main funding sources for trails include private donations, federal and state grants, sponsorships, and general city funds.

Trail Project Planning: Bentonville's Bicycle & Pedestrian Master Plan selects roadways and greenways for trail projects, prioritizes them in a timeline, and lists possible funding sources, as well as key contributors, such as private sponsors, local agencies, and city departments.

Partnerships for Success: Strong agency partnerships assist with planning and funding and include the Walton Family Foundation and Walmart. The Northwest Arkansas Regional Planning Commission also contributes to the writing and allocation of regional trail grants.

Takeaways: The effort to make trail financing information publicly known through long-range planning documents can demonstrate the level of coordination by the City and local advocacy groups. A clear organization of trail priorities allows the public to gain insight where future trail efforts align with development goals.

Application to KC: Given Kansas City's expansive geography and dichotomous north/south nature, effort should be made to balance trail funding across the City. If benefit districts are used, they should be designed to link rural neighborhoods to suburbs and urban nodes along growing corridors of development.

INDIANAPOLIS, IN

Trail Funding: In Indianapolis, private donations and general city funds are the main financial resources for trails.

Trail Project Planning: Indy Greenways Full Circle Master Plan selects trail project corridors, prioritizes them in a timeline, and lists funding sources for each project. The plan also analyzes property value impacts and trail benefits for new developments.

Partnerships for Success: Indy Parks Foundation coordinates programming, volunteer groups, fundraising campaigns, and park events. The Indianapolis Greenway Development Committee, a volunteer advisory group, provides critical feedback for trail planning to the City.

Takeaways: Analyses within the trail planning documents make a case for why trails are not simply an ordinance requirement, but how they provide a backbone for growth similar to other transit-oriented development. Trails through residential areas provide health benefits for a community, while trails in commercial areas spur activity and provide easier access. Trails are frequnetly seen as an amenity, increasing property values.

Application to KC: Strong community partnerships and promoting the benefits of Kansas City's trails could provide consensus for how trails should be funded.

CHARLOTTE, NC

Trail Funding: General obligation bonds are applied to projects, submitted by neighborhood groups through the Comprehensive Neighborhood Improvement Program (CNIP), which can often include trails. Voter-approved bonds are currently funding the Cross Charlotte Trail, planned to cross the City.

Trail Project Planning: The CNIP provides strategic investment for infrastructure in growing areas, but it is funded by citywide property taxes. Projects are selected from the City's Capital Budget or Capital Investment Plan and can include trails.

Partnerships for Success: Partners for Parks, a non-profit entity within the county, provides additional financial support.

Takeaways: Focusing on funding trails primarily in growing neighborhoods, rather than on a network of citywide corridors, can result in unconnected trail segments. However, one could argue that areas of increasing density should benefit most from development fees.

Application to KC: It may be as important to fund linkages between communities as it is to fund new trails in growing neighborhoods. Effort should be made to accompany new development with trails that connect to existing adjacent neighborhoods.

CITIES PARTLY USING IMPACT FEES TO FUND TRAILS

DENVER, CO

Trail Funding: Impact fees are spent on citywide trail or park improvements. Capital Improvement Program contributions and federal and state grants have also contributed to trail projects.

Trail Project Planning: Denver Moves employs a scoring system for proposed bicycle and pedestrian improvements to prioritize them. Total costs for all projects are broken down into three phases for long-range planning and to understand the value of a comprehensive trail and bikeway network.

Partnerships for Success: Over a dozen partners are listed on the Parks department website, including the Denver Moves Pedestrians & Trails Task Force, Denver Mountain Parks Foundation, Friends of Denver Parks, WalkDenver, and Mile High Connects. The Department also allows for corporate sponsorships.

Takeaways: Although the project selection process doesn't necessarily lead to trail funding near new development, a citywide focus on walkable and bikeable connections ensures widespread access to a dispersed population.

Application to KC: KCMO has been successfully working for several decades to build an extensive trail network that connects not only across the City, but across the Metro. Connecting neighborhood trails to that spine will continue to be vitally important.

MINNEAPOLIS, MN

Trail Funding: The City relies primarily on federal grants and bonds in addition to impact fees. Impact fees are reinvested in the neighborhoods from which they are collected or within a half mile. Affordable housing developments are exempt from impact fees.

Trail Project Planning: Money is spent on projects categorized as near-term opportunities in the City's master plan. An interactive online map tracks where land dedication or impact fees are collected and where park or trail projects are built as a result.

Partnerships for Success: Minneapolis Parks Foundation, Loppet Foundation, and People for the Parks are examples of non-profits undertaking trail building and programming. Many initiatives are led by these groups or local businesses and neighborhoods.

Takeaways: Minneapolis' parkland dedication ordinance is transparent. The purpose, fee collection process, and new trail locations are clearly communicated on the Parks website. However, critics say that because spending only occurs within a closely defined boundary, neighborhoods with less new development often lose out on trails.

Application to KC: The roll-out of any trail funding plan should be a teaming effort with local businesses and residents. Clear communication of the purpose, methods, and goals is key for long-term success of a citywide trail network.

PORTLAND, OR

Trail Funding: Portland's parks and trails are generally funded from the same sources, including development impact fees, tax increment financing, general city funds, and private donations. Development impact fees, referred to as Systems Development Charges, pay for new infrastructure. Some areas of the City have overlay districts, similar to benefit districts, that collect and allocate fees within the same individual benefit districts.

Trail Project Planning: Only projects that are part of the master plan can be funded by development fees, and trails that connect benefit districts are prioritized. This ensures that trail networks are connected, rather than segmented.

Partnerships for Success: Portland Parks Foundation, a non-profit arm of the city, provides additional financial support.

Takeaways: Opponents argue that park and trail fees are unreasonably higher than other development impact fees, and high fees could make housing unaffordable. The City subsequently updated the policy to make affordable housing projects exempt from impact fees.

Application to KC: Updating policies on a regular basis ensures that goals are met or policies are updated to better meet those goals.

REGIONAL ENTITIES WORKING TO FUND TRAILS

NORTHWEST ARKANSAS REGIONAL PLANNING COMMISSION, AR (NWARPC)

Trail Funding: A Metropolitan Planning Organization (MPO), the NWARPC seeks trail funding, such as state and federal grants, then distributes it among local agencies. Non-profits, including the Endeavor Foundation and Walton Family Foundation, also contribute to work planned by the MPO.

Trail Project Planning: The NWARPC coordinates the Metro's transportation, bicycle, and pedestrian plans to craft a regional vision and set design standards.

Partnerships for Success: Volunteer committees and project partnerships among local cities, counties, development agencies, neighborhoods, and business organizations are made possible through the MPO.

Takeaways: The NWARPC provides a collaborative framework for trail planning, funding, and implementation, in which regional agencies are invited to take part.

Application to KC: Rather than focusing exclusively on trails within city limits, strategies to team with regional partners could expand possibilities for larger trail networks and greater funding sources.

GREAT RIVERS GREENWAY DISTRICT IN ST. LOUIS COUNTY METRO, MO

Trail Funding: Approved by a metro-wide vote, the District supports new trails and maintenance through sales taxes, annually generating about $30 million.

Trail Project Planning: Over a dozen full time employees manage park and trail finances and improvements within the City of St. Louis, St. Louis County, and St. Charles County.

Partnerships for Success: To meet the needs of the Metro, the District partners with regional entities, counties, non-profits, and development agencies to plan and build trails.

Takeaways: Cities within the District are able to rely on the agency to provide, manage, and maintain parks and trails, freeing up resources for other capital improvements.

Application to KC: An appropriate budget to implement and maintain regionally-connected trails should be matched by the appropriate means to support the budget. Although Kansas City is investigating development fees within city limits, rather than a regional sales tax, an awareness of potential resources made possible in other areas can provide a basis of understanding when funding solutions are ultimately selected.

OZARK GREENWAY IN SPRINGFIELD-GREEN COUNTY, MO

Trail Funding: This non-profit is primarily supported by membership dues, matching contributions, grants, donations, and endowments. Membership dues start at $40 for individuals and are recommended to all local trail users.

Trail Project Planning: Three full-time employees and a board of directors focus on trail planning, fundraising, advocacy, easement acquisition, promotion, and urban forestry.

Partnerships for Success: Public-private partnerships with cities, state and county departments, national historic sites, community foundations, neighborhoods, and businesses lead to greater public support and fundraising. The biggest challenge is securing trail easements on privately-owned land.

Takeaways: Because Ozark Greenways is a non-profit, it has no eminent domain power. Rather, the agency works directly with landowners to designate real estate available for public trails.

Application to KC: Existing neighborhoods with no trails will likely be more difficult to plan for than larger undeveloped tracts of land with one landowner. For long-term trail goals to be achieved, land dedication or streamway trail easements will be extremely important before land is developed.

TRAIL IMPROVEMENT & LAND ACQUISITION COSTS - LOCAL

LOCAL LAND ACQUISITION COSTS

In addition to the hard costs associated with paving an 8-ft wide section of concrete or asphalt, there is the added cost of land acquisition to consider when planning for local trail facilities.

Utilizing a methodology developed in the 2009 Trail Facilities Nexus Study, staff calculated the median value per square foot of land located along future trail corridors identified in the 2008 Trails KC Plan to approximate land acquisition costs. The median value was used in this calculation because it is not as affected by outliers as the mean can be.

Staff calculated a median value per square foot of $0.18 which represents a 25% decrease from the 2009 Trail Facilities Nexus Study. While the median value decreased, the average value increased from $3.25 in 2009, to $3.83 in 2018. This decrease in the median value can partially be attributed to the greater number of parcels valued at $0.01 or less per square foot as a percentage of the total parcels analyzed.

TRAIL IMPROVEMENT COSTS

Based on local data collected during the course of this study from each of the City departments involved in trail construction, the average as-built cost-per-mile for new trail construction since 2009 is $894,243.22.

Land Value for Trail Acquisition

	2018	2009
Median Value per Sq. Ft	$0.18	$0.24
Mean Value per Sq. Ft.	$3.83	$3.25

TRAIL IMPROVEMENT COSTS & FUNDING SOURCES - NATIONAL

TRAIL IMPROVEMENT COSTS

The cost of trail facilities can vary greatly depending on the geographic location, construction timing, construction techniques, surfacing and subsurface materials used, the width and spatial requirements of the trail, special circumstances, and the overall quality of construction.

Below are several reported trail costs within the last five years nationally. Generally speaking, one may assume (on average) $650,000 per mile for concrete trail construction and $7,000 per mile for maintenance annually. Construction costs can increase quickly in areas of challenging grade, areas with limited construction access, or in areas that require a large number of bridges and/or low water crossings.

- Construction of a 10-12' wide paved trail is $481,000 per mile.
- Construction of an unpaved/natural surface trail is $121,000 per mile.
  - As reported from the UNC Highway Safety Research Center's 2013 report, "Costs for Pedestrian and Bicyclist Infrastructure Improvements."

- Construction of a concrete trail costs $575,000-$2,600,000 per mile or $800,000 on average.
- Maintenance of a concrete trail costs $3,000-$8,500 per mile or $5,000 per mile on average.
  - As reported from Salt Lake City's 2015 "Pedestrian & Bicycle Master Plan."

TRAIL FUNDING SOURCES - NATIONAL

The following list of potential funding sources includes both funding mechanisms currently employed within Kansas City and mechanisms employed by other, comparable communities, identified through best practices research.

Citywide property taxes – Annual taxes collected from property owners in the City.

Community Improvement Districts (CIDs) – A CID is an association of property owners in a defined area that voluntarily tax themselves in order to fund improvements within the district's boundaries. CIDs are designed to help improve the community by bettering conditions for existing businesses, and attracting new growth.

Federal or State bonds – Bonds are a type of loan. The holder of the bond is the lender. The issuer of the bond is the borrower. The borrower pays the lender the principal plus periodic interest. Bonds are typically paid back over time through the collection of taxes.

Federal or State grants – Financial assistance from a federal or state agency to carry out a task or program that will support a public purpose.

General Fund – Financial accounts in the City are organized based on funds. The General Fund is the City's largest fund. General Fund revenues include property taxes, earnings and profit taxes, utility taxes, and franchise fees. The revenues fund the majority of basic services provided by the City, including police and fire, trash collection, and property maintenance. Additionally, the majority of City administrative activities are funded including legislative, financial, legal, information technology, and human resources activities.

Local development fees (impact fees or cash/in-lieu fees) – Local government requirement imposed on building applications, mandating the payment of fees to support expanded public infrastructure.

Multi-County Regional Trail Tax – A sales tax collected from a multi-jurisdictional taxing district to fund the operations, management, and construction of trail facilities.

Neighborhood Improvement Districts (NIDs) – NIDs are created by property owners in an area with defined limits and boundaries by vote or by petition in order to provide funding for public improvements.

Non-profit agencies, with individual and corporate membership dues, donations, and endowments – An agency whose sole purpose is to support a goal using funds from patrons, volunteers, and invested financial assets meant to yield an annual income.

Public Improvements Advisory Committee (PIAC) funds - The Committee solicits resident input and makes recommendations regarding both the citywide and neighborhood portions of the capital budget. It consists of 13 people, two from each city council district and a chairperson, appointed by the mayor and City Council. Each year the Committee submits its balanced five-year capital improvements program and neighborhood recommendations to City Council for approval.

Public-private partnerships - Partnership between a government agency and a private sector company used to finance, build, or operate projects.

Tax increment financing (TIF) districts – An economic development program to encourage commercial and real estate development and redevelopment. TIF provides financial incentives to spur private investment that otherwise would not occur.

Transportation Development Districts (TDDs) – TDDs are special-purpose districts created by vote for the purpose of collecting annual sales taxes of up to 1% to coordinate and finance the construction of transportation-related facilities.

DEVELOPMENT FEE METHODOLOGY

HOW ARE IMPACT FEES DETERMINED?

As the original 2009 Trail Facilities Nexus Study established, the formula to determine what impact fee a development should be required to pay is based on an understanding of how much growth (demand) a given development will bring to an area. As stated at the beginning of this report, a major goal of this study was to update the five factors used to measure the additional demand on Kansas City's trail systems generated by new development:

- Service Populations
  - Resident and employee populations
  - Employee weighting factor
- Level of Service Guideline / Facility Standard
- Density Factors
- Residential Density
- Non-Residential Density
- Facility Needs to Serve Growth / Dedication Requirements
- In-Lieu-of Fee Calculations

SERVICE POPULATIONS

RESIDENT & EMPLOYEE POPULATIONS

The population and employment projections used in this study are based on the Mid-America Regional Council's (MARC) 2030 population and employment change forecasts and the 2010 U.S. Census data. The following projections were used in the formula:

- 2030 Residential Population: 515,449
- 2030 Employee Population: 324,772

EMPLOYEE WEIGHTING FACTORS

The total number of employees that work in the City are also included in the service population. Although there is overlap in the individuals that both live and work within City limits, other nexus studies argue that infrastructure is in demand at both one's place of work and at one's residence. See below for an excerpt from San Francisco's nexus study:

> *"The city's total service population is calculated as one times the resident population plus 0.19 times the employment population (1:0.19 ratio) for recreation and open space… This approach evaluates infrastructure demand based on both place of residence and place of work. Under this model, resident-employees (i.e. persons that both live and work in San Francisco) are counted twice, once for their home location, and once for where they work. This methodology accounts for the infrastructure need generated both at their place of work and at their place of residence (e.g. required parks and sidewalks near their homes and near their offices)."*
>
> *- San Francisco, 2014, p 8-9*

19% EMPLOYEE WEIGHTING FACTOR

A study from 2008 states that approximately 19% of all employees in any given area use nearby park facilities (Hausrath 2008). When this factor is applied to Kansas City's 2030 projected population, this equates to a total service population of about 577,155 people.

Residents + Employees (0.19) = Service Population

515,449 + 324,772 (0.19) = 577,155

50% EMPLOYEE WEIGHTING FACTOR

Another industry standard for employee usage rates of pedestrian and streetscapes is 0.50, yet this also includes improvements such as curb ramps and sidewalks. Therefore, a usage factor of 0.19 is recommended for this study, since trails are typically associated more with parks and open space facilities than with streetscapes.

LEVEL OF SERVICE GUIDELINE / FACILITY STANDARD

A community's demand for trails is expressed as a level of service (LOS) or facility standard ratio, measured in miles per 1,000 people. That ratio, or LOS, represents the minimum trail miles needed to meet the demand of the service population (NRPA 1996).

The following pages outline the method for calculating the facility standard that correlates with trail demand in Kansas City, MO. Using facility standards in combination with the density factor ensures new development pays for increased service demands created by said new development.

The National Recreation and Park Association (NRPA) outlined national facility standards in 1983, and the Parks Department later adopted the national standard of 1/2 mile of trail per 1,000 people. However, the NRPA altered this philosophy in 1996 to suggest facility standards be defined locally to meet the specific needs of each community (NRPA 1996). The City therefore sought to establish local standards in the 2008 Trails KC Plan based on the implementation of its proposed 230 miles of shared-use trails within a fifteen year build-out period and the projected population at full build-out. This facility standard equates to 0.4 miles per 1,000 people.

Level of Service / Facility Standard Factors

Total Planned Trail System (Trails KC Plan)	230 Miles
Projected Service Population (2030)	577,155
Facility Standard (Trails KC Plan)	0.4 Miles/1,000 People in Service Population
Facility Standard Goal (Service Population / 1,000 People)	230 Miles

A GOAL FOR LOCAL TRAILS

As of 2018, Kansas City has constructed a total of 101.5 trail miles. As stated at the beginning of this report, trails are defined as 8' minimum, paved, shared use, non-motorized paths. If the goal is 230 miles of this type of trail by the year 2030, the City will need to build 128.5 additional miles to accommodate future demand based on the projected service population.

Facility Standard Goal	-	Constructed Trail Miles	=	Additional Trail Miles Needed for Adequate Service by 2030
$0.4 \left(\frac{577,155}{1,000} \right)$	-	101.5	=	128.5 Miles Needed by 2030

WHERE THE FACILITY STANDARD FALLS SHORT

There is an inherent flaw in the reasoning behind each of these facility standards: they are not based on geography. Rather, they assume that the service population is evenly distributed around the trail network, when the reality may be very different. At the end of this report, we will explore some alternatives to the facility standard that are driven by geographic access to trails. See Page 22.

DENSITY FACTORS

The additional demand for trail facilities generated by each new development is a factor of the facility standard and the number of potential new trail users. The number of residents and/or employees is in turn a factor of the size and type of the development and can be calculated using a "density factor." Utilizing a density factor ensures a "reasonable relationship" or "nexus" between the calculated demand for trail facilities and the size of the development project. The following outlines the approach and summarizes the data used to calculate density factors in this study.

RESIDENTIAL DENSITY FACTOR

Density of residents in an area can be extrapolated from the number of people occupying a particular type of housing unit. These densities are categorized by type and then grouped into three primary density measurements, as shown below. To calculate the average density per housing unit, the number of people living in a type of housing unit is divided by the total number of occupied housing units (U.S. Census Bureau 2015). See the following table for the results. For more information about this calculation, see Appendix A: Residential Density Calculations.

Summary Table: Residential Density

Housing Category	Residential Density Factor (People/Unit)
Owner Occupied, Single Unit Structure (Attached or Detached)	2.6
Renter Occupied, Single Unit Structure (Attached or Detached)	
Owner Occupied, Mobile Home Structure	
Renter Occupied, Mobile Home Structure	
Owner Occupied, 2 to 4 Units	2.0
Renter Occupied, 2 to 4 Units	
Owner Occupied, 5 or More Units	1.7
Renter Occupied, 5 or More Units	

NON-RESIDENTIAL DENSITY FACTOR

Non-residential density is based on the number of people expected to occupy a building according to its land use type. Industry standards are derived from traffic engineering manuals and federal energy consumption reports that indicate the expected number of employees per square foot within a building type. These industry standards can be found in the Institute for Transportation Engineers Trip Generation Handbook (ITE 2017) and the Energy Information Administration's Commercial Buildings Energy Consumption Survey (EIA 2012).

A combination of these industry standards was used in this study. This method has also been used for several City initiatives, including the Arterial Street Impact Fee Study – Phase I and Phase II. The EIA's survey has been used by the Finance and City Planning and Development Departments for several studies and models. Both sources are widely used nationally as source data, and therefore afford consistency and reliability. For more information about this calculation, see Appendix B: Non-Residential Density Calculations.

Summary Table: Non-Residential Density

Land Use Type	Non-Residential Density Factor (Employees/1,000 Gross Sq Ft)
Hotel/Motel	0.4064
Retail/ Commercial	1.8893
Office	3.2780
Institutional	1.2958
Industrial	1.7283
Warehouse	0.2521

WHEN DENSITY FACTORS DIFFER FROM THIS STUDY

If an applicant has density calculations for a development that differ from those in this study, the City may consider establishing a process by which the applicant's density calculations can be considered as a substitute for those here when calculating the trails dedication/improvement and impact fee requirements. Including such an option however, should be evaluated with the following considerations:

- Additional time needed to administer the option will increase the administrative cost of the program.
- Future use of the development may change (with increases or decreases in employee or resident numbers) and therefore using a standard density factor can be the best alternative.

FACILITY NEEDS TO SERVE GROWTH

The following outlines the calculations used to quantify the demand for trail facilities created by new development.

Demand For Trail Facilities Generated By Residential Development

Residential Land Use	Density Factor x Trail Facility Standard x No. of Units = Trail Miles Needed to Support Additional Demand
Single Family	2.6 x 0.4 / 1,000 x No. of Units = Trail Miles Needed
Duplex - Quadplex	2.0 x 0.4 / 1,000 x No. of Units = Trail Miles Needed
Multifamily (5 or more units)	2.0 x 0.4 / 1,000 x No. of Units = Trail Miles Needed

Example 1: Demand for Trail Facilities Generated by a 200-Unit Single Family Development

2.6 Residents / Unit (0.4 Miles) / 1,000 Service Population x 200 Units = .21 Miles or 1,098 Ft

Demand for Trail Facilities Generated by Non-Residential Development

Non-Residential Land Use	Density Factor x Employee Weighting Factor x Trail Facility Standard x Gross Square Footage = Trail Miles Needed to Support Additional Demand
Hotel / Motel	0.4 (0.19) 0.4 / 1,000 No. of Rooms = Trail Miles Needed
Retail / Commercial	1.9 / 1,000 (0.19) 0.4 / 1,000 x Gross Sq Ft = Trail Miles Needed
Office	3.3 / 1,000 (0.19) 0.4 / 1,000 x Gross Sq Ft = Trail Miles Needed
Institutional	1.3 / 1,000 (0.19) 0.4 / 1,000 x Gross Sq Ft = Trail Miles Needed
Industrial	1.7 / 1,000 (0.19) 0.4 / 1,000 x Gross Sq Ft = Trail Miles Needed
Warehouse	0.3 / 1,000 (0.19) 0.4 / 1,000 x Gross Sq Ft = Trail Miles Needed

Example 2: Demand for Trail Facilities Generated by a 50,000 Sq. Ft Commercial Development

1.9 Employees / 1,000 Sq. Ft. (0.19 Employee Weighting Factor) 0.4 Miles / 1,000 Service Population x 50,000 Sq. Ft. = .007 Miles or 37 Ft

IMPACT FEE CALCULATIONS

The following aims to provide a simple method for landowners, developers, and the public to calculate the trails facility fee for individual development projects. Cost factors include land acquisition and construction costs per the trail standards set forth in the Trails KC Plan. For a breakdown of each factor used in the formulas, see the previous sections of this report.

Demand for Trail Facilities Generated by Non-Residential Development

	Land Acquisition	Trail Improvement	Total
Cost per Linear Mile*	$0.18/SF or $28,512 per Linear Mile**	$894,243.22	$922,755.22
Facility Standard	0.4	0.4	0.4
Cost per 1,000	$11,404.80	$357,697.29	$369,102.09
Cost per Capita	$11.40	$357.70	$369.10
Cost per Resident	$11.40	$357.70	$369.10
Employee Weighting	0.19	0.19	0.19
Cost per Employee	$2.17	$67.96	$70.13

The fee for a project is based on its size. For residential developments, this is measured by the number and type of dwelling units. For non-residential developments, this is measured by the building square footage and land use type. The proposed fee schedule shown below converts these estimates into a fee, based on the project's size and type. It uses the cost per resident or employee and density factors to assign facility fees to each land use.

*Based on local built construction costs and land values near future trails

**Assumes a standard 30' wide permanent easement per the Trails KC plan

Demand for Trail Facilities Generated by Non-Residential Development

Land Use			Cost per Individual (Resident/Employee)	Resident/Employee Density	Subtotal	Admin Cost	Total Fee
Residential	Single-Family Attached / Detached	Trail Land Acquisition	$11.40	2.6	$29.64	10%	$32.60
		Trail Improvements	$357.70	2.6	$930.02	10%	$1,023.02
		Total (per dwelling unit)	$369.10	2.6	$959.66	10%	$1,055.62
	Multi-Family (2-4 units)	Trail Land Acquisition	$11.40	2.0	$22.80	10%	$25.08
		Trail Improvements	$357.70	2.0	$715.40	10%	$786.94
		Total (per dwelling unit)	$369.10	2.0	$738.20	10%	$812.02
	Multi-Family (5 or more units)	Trail Land Acquisition	$11.40	1.7	$19.38	10%	$21.32
		Trail Improvements	$357.70	1.7	$608.09	10%	$668.90
		Total (per dwelling unit)	$369.10	1.7	$627.47	10%	$690.22
Non-Residential	Hotel/Motel	Trail Land Acquisition	$2.17	0.4064	$0.88	10%	$0.97
		Trail Improvements	$67.96	0.4064	$27.62	10%	$30.38
		Total (per room)	$70.13	0.4064	$28.50	10%	$31.35
	Retail / Commercial	Trail Land Acquisition	$2.17	1.8893	$4.10	10%	$4.51
		Trail Improvements	$67.96	1.8893	$128.40	10%	$141.24
		Total (per building KSF)	$70.13	1.8893	$132.50	10%	$145.75
	Office	Trail Land Acquisition	$2.17	3.2780	$7.11	10%	$7.82
		Trail Improvements	$67.96	3.2780	$222.77	10%	$245.05
		Total (per building KSF)	$70.13	3.2780	$229.88	10%	$252.87
	Institutional	Trail Land Acquisition	$2.17	1.2958	$2.81	10%	$3.09
		Trail Improvements	$67.96	1.2958	$88.06	10%	$96.87
		Total (per building KSF)	$70.13	1.2958	$90.87	10%	$99.96
	Industrial	Trail Land Acquisition	$2.17	1.7283	$3.75	10%	$4.13
		Trail Improvements	$67.96	1.7283	$117.46	10%	$129.20
		Total (per building KSF)	$70.13	1.7283	$121.21	10%	$133.33
	Warehouse	Trail Land Acquisition	$2.17	0.2521	$0.55	10%	$0.61
		Trail Improvements	$67.96	0.2521	$17.13	10%	$18.85
		Total (per building KSF)	$70.13	0.2521	$17.68	10%	$19.46

POSSIBLE DEDICATION / IMPROVEMENT REQUIREMENTS

Where the Trails KC Plan's citywide trails system falls within the boundaries of new development or redevelopment, the dedication of such land or an appropriate easement over such land could be required as a condition of plat, site development plan, or building permit approval. Development which provides trail dedication in accordance with this section could then receive a comparable credit against the impact fee. If the value of the dedicated land does not fulfill the development's impact fee obligation, the Director of City Planning & Development could make a determination as to whether the development is obligated to make an impact fee payment or to construct a segment of the trail at a value equal to the remaining impact fee obligation.

If the City had the authority to review the location of an applicant's proposed alignment for trail dedication and improvements, then the City could also determine whether the proposal would sufficiently support the Trails KC system. This review would likely include a grading plan and other pertinent information to ensure the trail corridor has been integrated into the development plan and could be constructed at a future date without undue or unnecessary costs.

For example, it can be extremely costly to relocate utilities, parking lots, crosswalks, landscaping, and other site features to make room for a new trail adjacent to an existing building. If a new development can be initially designed to accommodate future trail possibilities, then costly relocation services can be avoided. A review process by the City for proposed developments can check for connections to the Trails KC system and make helpful recommendations that can help a property owner avoid these added future trail expenses.

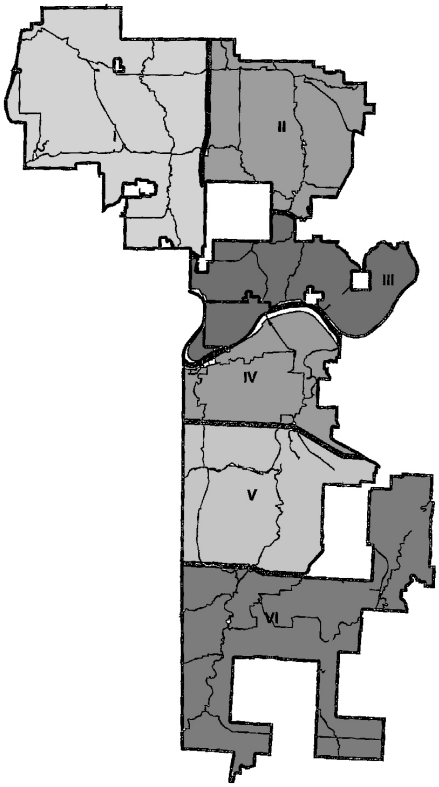
BENEFIT DISTRICTS

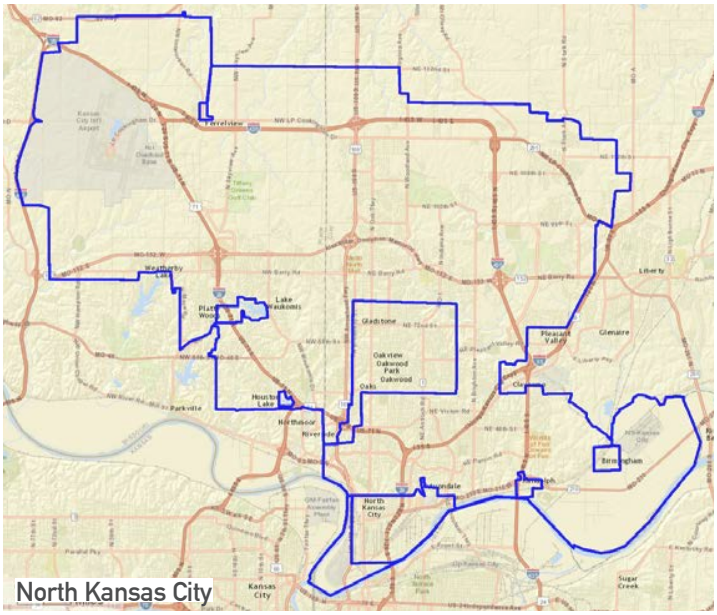
Several methods can be used to ensure that impact fees collected from new development serve the demand for trail facilities created by that development. In the case of the City's parkland dedication program, the City requires funds to be used within three miles of the neighborhood for which they were paid. For the arterial street impact fee program, the City has established seven benefit districts, or areas within which fees collected are earmarked to be spent.

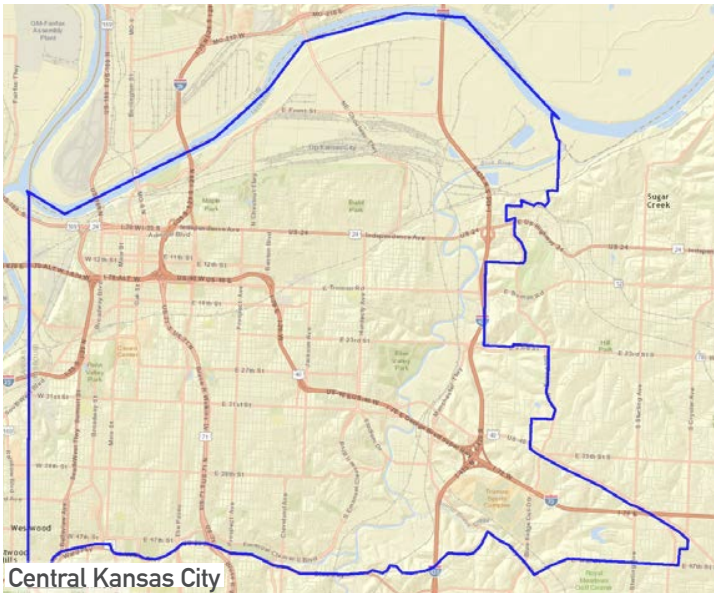
While the dedication program for parkland is widely used by other cities, it is not recommended for trail facility impact fees. Trails are by nature linear corridors, much like roadways that move people within the City. They are ineffective when built in an unconnected or ad hoc way. Trails offer the most benefits when they are well-connected, allowing access across the City and providing transportation corridors and recreational amenities to most of the population. It is therefore recommended that if the City establishes benefit districts, that they be based on a systems approach that prioritizes connectivity and continuity.

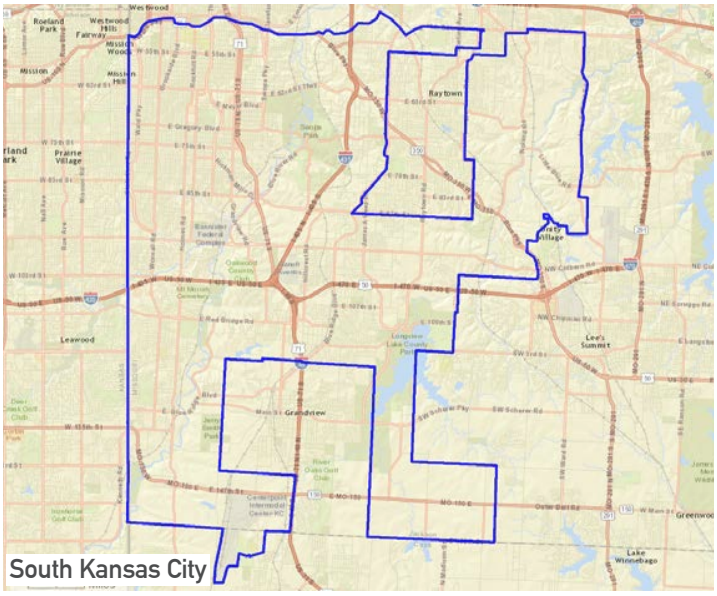
Six possible benefit districts were conceptualized in 2009, as shown below, based upon areas of reasonable development potential from permit activity at the time.

Benefit district boundaries can be drawn in a way that encompass areas of both increased building development and decreased building development. In this way, money generated in one area spreads to surrounding areas to spur further reinvestment.









These three geographic areas were used in a level of service study for Kansas City's trails in 2015 (KCMO Parks & Recreation Strategic Business Plan, 2015 p94-96). These three areas could be an alternative to the original six benefit districts proposed in the 2009 study.

Another alternative for future benefit districts could align with the three geographical areas, outlined by Kansas City's Strategic Business Plan inventory. The inventory separates trail mileage into North, Central, and South Kansas City (KCMO Strategic Business Plan, 2015 p93). See the maps at left that define these three areas. Assuming that future trail facilities are prioritized according to the Trails KC Plan and localized access points are provided, then investments in the larger trail network should provide benefits to any new development, even if it is several miles away.

It should be noted that, generally speaking, larger benefit districts should be able to fund larger projects. Although larger projects may not as equally distribute investments across the City geographically, strategically-planned transportation projects are in theory able to accommodate higher volumes of traffic and should therefore satisfy more demand overall.

PUBLIC ENGAGEMENT

ADVISORY COMMITTEE

Throughout the course of this project, Vireo representatives and KCMO Planning staff have conducted Advisory Committee meetings with a core group of representatives from various City departments involved in trail construction, including Parks & Recreation, Public Works, Water Services, and the City Manager's office. The Advisory Committee provided feedback at critical junctures during the process, weighing in on a number of key aspects of the study, including recent trail improvement costs and employee weighting factors, thereby helping shape the final outcome of this report.

STAKEHOLDER SURVEY

An online survey, open to the public, was conducted to gauge local support for trails and collect input on various funding options, including the possibility of outside partnerships. The survey was pushed to a core stakeholder group and advertised on the City's social media account. The survey was also meant to identify priority areas for trail projects and strategies for defining possible benefit districts.

SURVEY RESULTS

See Appendix C for the full survey results from the 111 respondents.

Over half of those surveyed responded that they are somewhat familiar with the trails in Kansas City, MO, live in the City, consider themselves to be trail users, and/or support trails. Nearly half of respondents were also either a business owner or employee within the City.

More than 75% of the survey respondents agreed that the City should determine where trails are funded according to a citywide and/or regional plan. Nearly 30% of respondents also indicated that funding should be prioritized from a pool of project submissions and/or within districts that encompass both new development and decreased building development. Another 20% of respondents recommended that trail funding be prioritized in areas of increased building development. Only 10% of respondents suggested funding be used within the same benefit district as arterial street impact fee districts, while 5% suggested some other method for trail prioritization be used.

Respondents overwhelmingly indicated that the City should provide or seek financial support for the construction of trail facilities within city limits. The reasons for supporting trails varied greatly, yet the reasons most often mentioned focused on supporting recreational public amenities that promote healthy lifestyles, transportation, and increased private development or property values. Connections to green space and nature were also strong reasons for many to support trails.

What should the City consider when determining where trail funds are spent? *The survey's open response answers generally focused on the themes listed in this word cloud.*

What should the City's focus be when determining where trail funds are spent? *The survey's open response answers generally focused on the themes listed in this word cloud.*

Respondents generally estimated that 35% of trail funding should come from the City, while the rest should be privately funded in some way. When asked which tools the City should use to fund trails, over 75% of respondents recommended seeking federal or state grants.

PUBLIC OPEN HOUSES

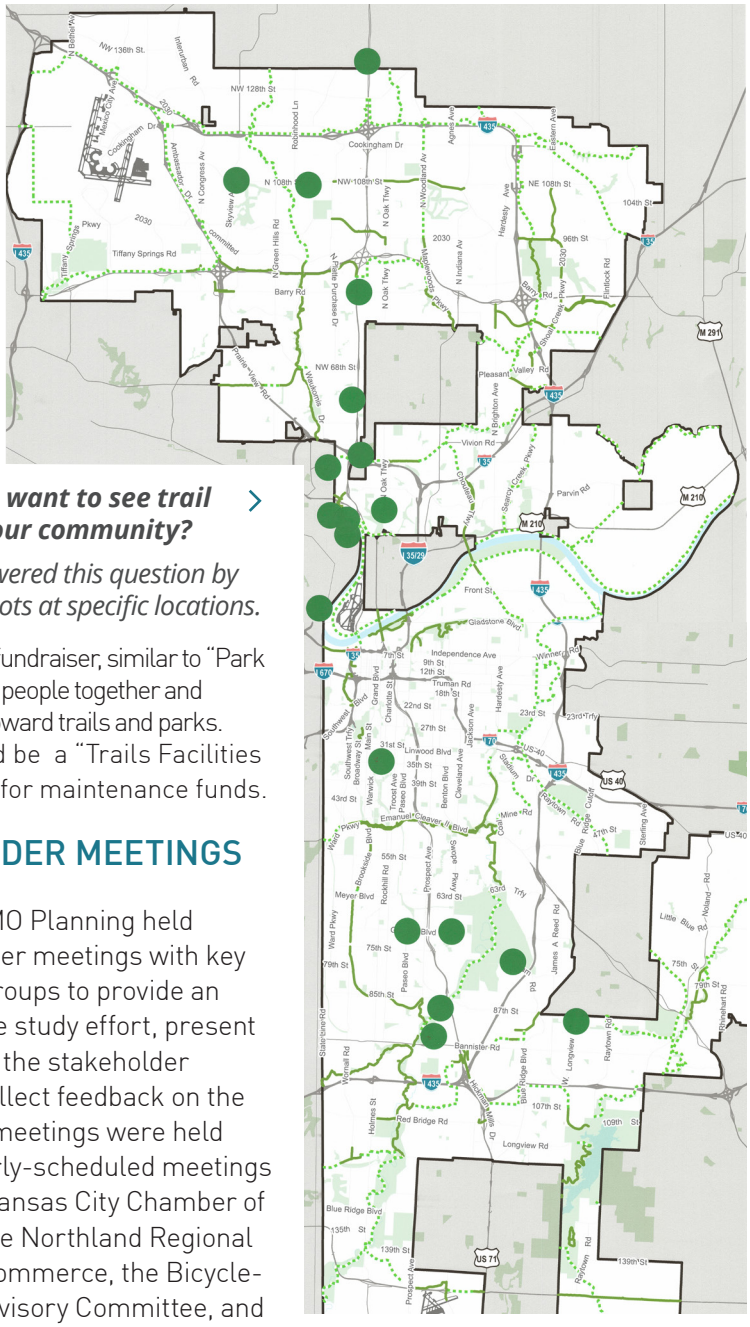
Three public open houses were held to collect additional feedback in each primary area of the City: north, central, and south. Two open-ended questions were posed to attendees, which appeared below a graphic summary of the survey results. Below is a summary of the responses.

What other thoughts do you have about where trail funds are spent?

- Provide signs that lead people to trails.
- Example at English Landing Park
- Need to be able to find trailheads
- Provide more than one sign, especially near commercial businesses.
- Promote robust public conversation and input for future trail alignments.
- Create a trail system that connects established destinations.
- More inter-community trails to connect smaller areas and destinations like schools, parks, and community centers
- Build within city limits, not so much outside them
- Use trails for K-5 education opportunities (opens additional funding source when using trails as an educational tool)
- Better trailheads in parks that provide water fountains and bathrooms
- We need trails in the Northland.
- The only N-S route is North Oak and it is difficult. Heart of America is also difficult.
- There is steep topography in east side of Northland, and many trails are not complete.
- Line Creek Trail is challenging.

What other funding opportunities would you suggest the City consider?

- A dedicated funding source is important.



Where do you want to see trail facilities in your community?

The public answered this question by placing green dots at specific locations.

- A community fundraiser, similar to "Park Days," can get people together and money goes toward trails and parks.
- There should be a "Trails Facilities Foundation" for maintenance funds.

STAKEHOLDER MEETINGS

Vireo and KCMO Planning held four stakeholder meetings with key stakeholder groups to provide an overview of the study effort, present the findings of the stakeholder survey, and collect feedback on the process. The meetings were held during regularly-scheduled meetings of the South Kansas City Chamber of Commerce, the Northland Regional Chamber of Commerce, the Bicycle-Pedestrian Advisory Committee, and the Downtown Council.

FINDINGS

RUNNING THE NUMBERS (WHAT IF?)

To determine the amount of funding the City would have had for trail construction if a trails impact fee had been passed in 2009, staff applied the proposed fee schedule outlined in the 2009 Trails Facilities Nexus Study to the building permits that were issued for new construction or for expansions to existing buildings since 2009. The total fee for a specific project is based on its size, measured by the number and type of dwelling units for residential developments, or the building square footage and land use type of non-residential development. A total fee amount of approximately $8.6 million was calculated.

On average, 40% of all trail funding has come from the City on previous trail projects, meaning the remaining 60% was likely leveraged using the available City funds. If one assumes that City funds will make up the same 40% of trail funding in the future, and given a total potential fee amount of $8,632,500, based on development that has occurred since 2009, one could theoretically project that this could have been leveraged into a total of $21,581,200. At an average as-built cost-per-mile of $894,243 since 2009, this equates to an additional 24 miles of trail that could theoretically have been built since 2009 had a trails impact fee been adopted at that time.

WHAT HAVE WE LEARNED?

Beyond updating the 2009 Trail Facilities Nexus Study, the City of Kansas City and the consultant, Vireo Landscape Architecture and Planning, sought to summarize key points discovered through this investigation. The following summarizes the most important takeaways from the case studies of national trail systems and what was gleaned from conversations with local property owners, developers, residents, trail advocates, and City staff. Many of the recommendations that follow are things the City is already doing, should continue doing, or should strengthen. Conversations with stakeholders during the engagement process also shaped the recommendations that appear on the following pages.

PRIORITIZE TRAILS THAT ARE IN DEMAND OR ARE EXPECTED TO BE

Trail funding should continue to be prioritized along developing corridors, such as in the Northland, to guide and accommodate local investments. Nationally and locally, residential developments have recently been focused on connecting to larger park and trail amenities, as a new wave of residents seek recreational amenities near their homes. This model for transit-oriented development along trails also applies to commercial and mixed use development and was echoed by multiple survey respondents (see Appendix C, page 33 and 35).

See the Indianapolis and Bentonville case studies on Page 6 for similar scenarios.

SUPPORT NEIGHBORHOOD TRAILS THAT CONNECT TO THE LARGER SYSTEM

The City has been successfully working for decades to build a trail network that connects across the City and links to other regional trails. Connecting neighborhood trails to the regional network will continue to be important moving forward. Rather than continuing to pursue an ever-increasing mileage goal (despite the good intentions inherent in that goal), a focus on improved access and offshoot connectors to the overall system will eventually be a greater priority in areas with fully-developed regional trail connections.

See the Denver case study on Page 7 for a similar scenario.

CONTINUE REGIONAL PARTNERSHIPS

The City of Kansas City, Clay County, and Liberty have all been collaborating to connect trails across jurisdictions north of the Missouri River. Over time, regional transit demands shift and investments are made to specific corridors across the Metro, such as the Buck O'Neil Bridge. Strong partnerships between regional agencies will continue to be key as opportunities for pedestrian-accessible linkages across major barriers become available.

Several initiatives are also underway to connect to the Rock Island Corridor by KCMO, Jackson County, the Rock Island Rail Corridor Authority, and other surrounding municipalities. Continued conversations and open data sharing makes planning these connections more feasible and allows for continued public support as projects make headway.

See the Great Rivers Greenway, Ozark Greenway, and Northwest Arkansas Regional Planning Commission case studies on Page 8 for similar scenarios.

PUBLICIZE INFORMATION AS STRIDES ARE MADE

Getting the word out about new trails and funding opportunities allows the greater community to appreciate and share in the City's successes. One way this can be done is through an interactive online map that tracks all new trail projects and lists the funding sources. Additional media coverage of new trails that highlights their positive impact can also bolster support.

See the Minneapolis case study on Page 7 for a similar scenario.

SEEK COLLABORATIVE OPPORTUNITIES FOR CONTINUED SUPPORT

Beyond providing trail infrastructure, many cities put substantial effort into trail maintenance, programming, wayfinding/branding, and education. Non-profit foundations are often the initiators of the public-private partnerships that bring together sponsors and volunteers for clean-ups, fundraising, and educational campaigns. In Kansas City, stakeholders specifically voiced the need for increasing public awareness of the trail system, how to locate trails, and how to use the navigational signs along them for emergency purposes. The City is addressing these needs by looking into opportunities with the Mid-America Regional Council and the Kansas City Area Transportation Authority to establish a trail signage system. This type of inter-agency partnership will continue to be key as the demand for trails grows, and other organizations step in to increase program support and environmental education in addition to what the City can provide alone.

See the Indianapolis case study on Page 6 for a similar scenario.

WHAT'S NEXT?

Moving forward, this study aims to set the stage for a broader discussion within Kansas City and regionally about strategic trail funding, of which impact fees may be an important part. Despite the lack of a dedicated funding source, the City of Kansas City has been successfully planning and building trails for several decades in hopes of making regional connections for pedestrians and bicyclists. When one compares Kansas City's trail system to that of other cities and metropolitan areas of comparable size and population, we fall squarely in the middle among our peers in terms of trails per square mile and trails per 1,000 people. For now, we are keeping pace - looking ahead, the City and the Metro will inevitably need to continue to find ways to build and sustain a trail network that can accommodate the growing population and increased demands for recreational and transit facilities.

If impact fees do come into play, consideration needs to be given to potential trade-offs with developers. One example of a potential trade-off with developers could be a corresponding reduction in the City's street width requirement if a developer builds a qualifying trail. In any case, the roll-out of any potential dedicated trail funding source should be a teaming effort with local businesses and residents.

This study serves as a baseline analysis of where we have been, where we are now, and where we can look moving forward as we strategize future trail improvements and explore trail funding alternatives.

Appendix A: Residential Density Calculations

2015 Data from American Community Survey				
Household Category Groupings	**Housing Categories**	**Number of Units**	**Number of People**	**Residential Density**
Group 1	Owner Occupied Units in Structure - 1 (Attached)	3,916	255,762	
	Owner Occupied Units in Structure - 1 (Detached)	96,846		
	Owner Occupied Units in Structure - Mobile Homes	1,134	2,690	
	Renter Occupied Units in Structure - 1 (Attached)	5,578	95,697	
	Renter Occupied Units in Structure - 1 (Detached)	28,390		
	Renter Occupied Units in Structure - Mobile Homes	483	1,500	
	Total	136,347	355,649	**2.6**
Group 2	Owner Occupied Units in Structure - 2	715	2,206	
	Owner Occupied Units in Structure - 3 to 4	607		
	Renter Occupied Units in Structure - 2	4,242	26,507	
	Renter Occupied Units in Structure - 3 to 4	8,457		
	Total	14,021	28,713	**2.0**
Group 3	Owner Occupied Units in Structure - 5 to 9	376	4,420	
	Owner Occupied Units in Structure - 10 to 19	285		
	Owner Occupied Units in Structure - 20 to 49	763		
	Owner Occupied Units in Structure - 50 or More	1,450		
	Renter Occupied Units in Structure - 5 to 9	11,442	69,779	
	Renter Occupied Units in Structure - 10 to 19	10,889		
	Renter Occupied Units in Structure - 20 to 49	7,470		
	Renter Occupied Units in Structure - 50 or More	11,808		
	Total	44,483	74,199	**1.7**

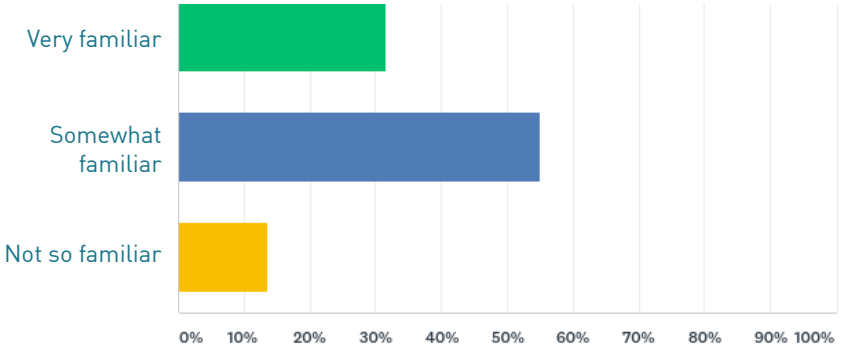
Appendix B: Non-Residential Density Calculations

Employees Per 1,000 Square Feet

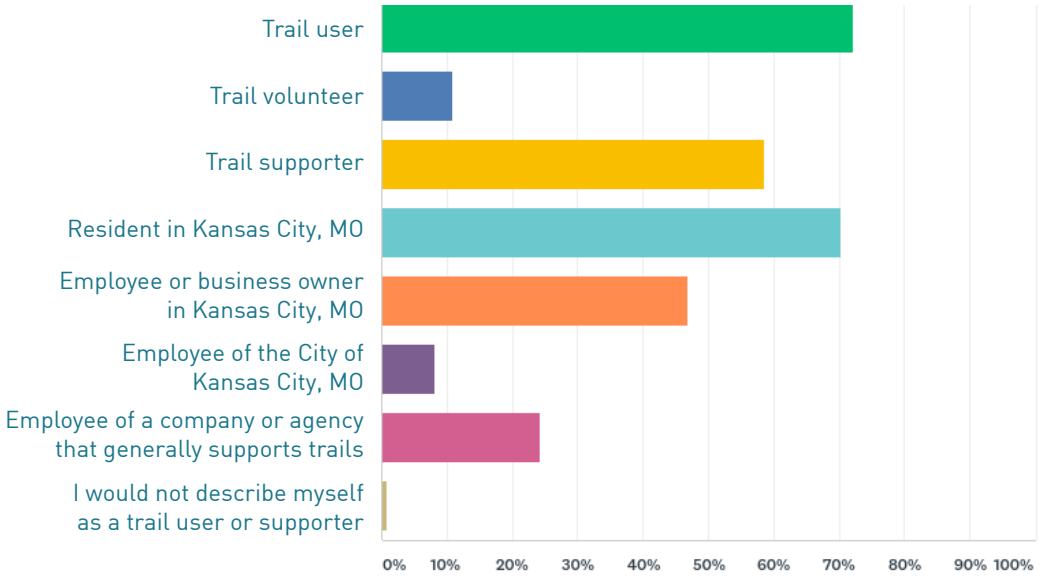
	ITE Trip Generation Input			Intermediate	Output	
Land Use	**Source of Input**	**Average Vehicle Trip Ends Per Employee**	**Average Vehicle Trip Ends Per 1,000 Sq. Ft. of Gross Floor Area**	**Average Employees Per Vehicle Trip End**	**Employees per 1,000 Sq. Ft. of Gross Floor Area**	**Sq. Ft. per Employee**
Single-Family Detached	Census 2010 Summary File					
Duplex	Census 2010 Summary File					
Multi-Family	Census 2010 Summary File					
Hotel (employees per room)	ITE Vol. 2 p.741	12.9843	7.7057	0.0770	0.5935	1685.0204
Motel (employees per room)	ITE Vol. 2 p.860	23.7343	5.2071	0.0421	0.2194	4558.0247
					Hotel/Motel Median:	0.4064
Retail/Commercial						
Bank, Drive-In	ITE Vol. 2 p.2705	31.7900	88.3700	0.0315	2.7798	359.7375
Bulding Material & Lumber	ITE Vol. 2 p.2044	25.2657	23.7671	0.0396	0.9407	1063.0522
Free-Standing Discount Store	ITE Vol. 2 p.2086	26.7486	56.6529	0.0374	2.1180	472.1487
Furniture Store	ITE Vol. 2 p.2623	11.6414	6.5043	0.0859	0.5587	1789.8089
New Car Sales	ITE Vol. 2 p.2210	11.2000	30.3100	0.0893	2.7063	369.5150
Nursery (Garden Center)	ITE Vol. 3 p.1503	20.9771	82.8586	0.0396	3.2793	304.9430
Food Service	EIA, June 2016				1.7637	567.0000
Food Sales	EIA, June 2016				0.9681	1033.0000
					Retail/Commercial Median:	1.8893
Office						
Business Park	ITE Vol. 2 p.2009	3.0386	9.6171	0.3291	3.1650	315.9537
Corporate Headquarters Building	ITE Vol. 2 p.1841	1.6771	5.6871	4.0400	22.9761	43.5236
Office, General	ITE Vol. 2 p.1731	2.4200	7.3729	0.4132	3.0466	328.2310
Office, Medical-Dental	ITE Vol. 2 p.1881	6.8800	26.2843	0.1453	3.8204	261.7534
Office Park	ITE Vol. 2 p.1962	2.6457	8.2500	0.3780	3.1183	320.6926
Research & Development Center	ITE Vol. 2 p.1982	2.4771	8.4729	0.4037	3.4204	292.3622
Single Tenant Office Building	ITE Vol. 2 p.1874	2.6929	11.2500	0.2653	2.9841	335.1111
					Office Median:	3.2780
Institutional						
Religious Worship	EIA, June 2016				0.3704	2700.0000
Education	EIA, June 2016				0.9681	1033.0000
Day Care Center	ITE Vol. 2 p.1488	15.9943	35.7371	0.0625	2.2344	447.5536
Hospital	ITE Vol. 2 p.1599	4.0329	9.7271	0.2480	2.4120	414.5983
Nursing Home	ITE Vol. 2 p.1639	2.6200	2.8614	0.3817	1.0921	915.6266
					Institutional Median:	1.2958
Industrial						
Industrial Park	ITE Vol. 2 p.80	2.3171	2.9471	0.4316	1.2719	786.2336
General Light Industrial	ITE Vol. 2 p.61	2.5571	4.5414	0.3911	1.7760	563.0701
Manufacturing	ITE Vol. 2 p.99	2.0829	4.4514	0.4801	2.1372	467.9076
					Industrial Median:	1.7283
Warehouse						
Warehouse	ITE Vol. 2 p.127	5.0500	1.2729	0.1980	0.2521	3967.4523
					Warehouse Median:	0.2521

Appendix C: Stakeholder Survey Results

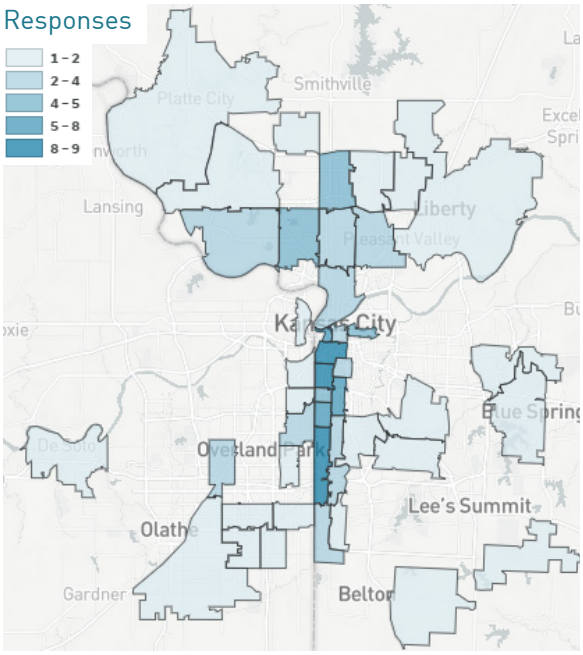
Q1. Generally, how familiar are you with trails in Kansas City , MO?



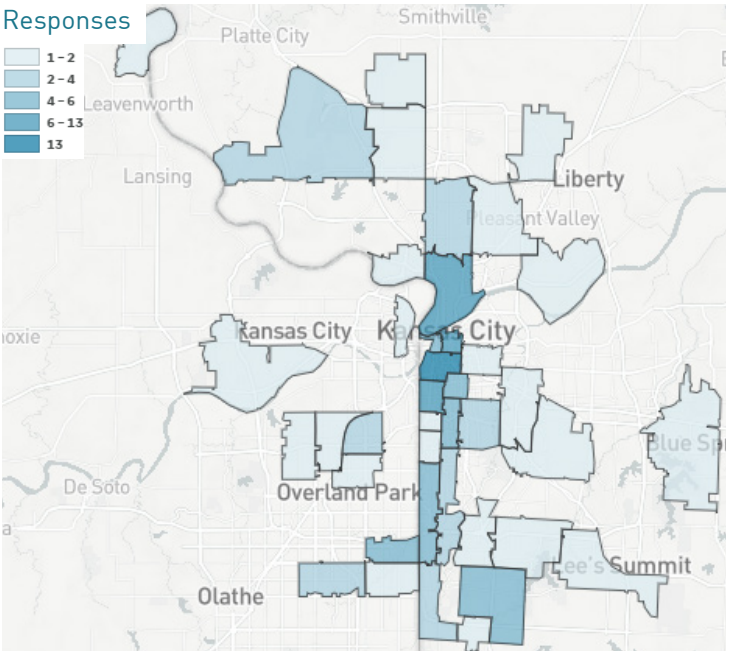
Q2. How would you describe yourself? Select all that apply.



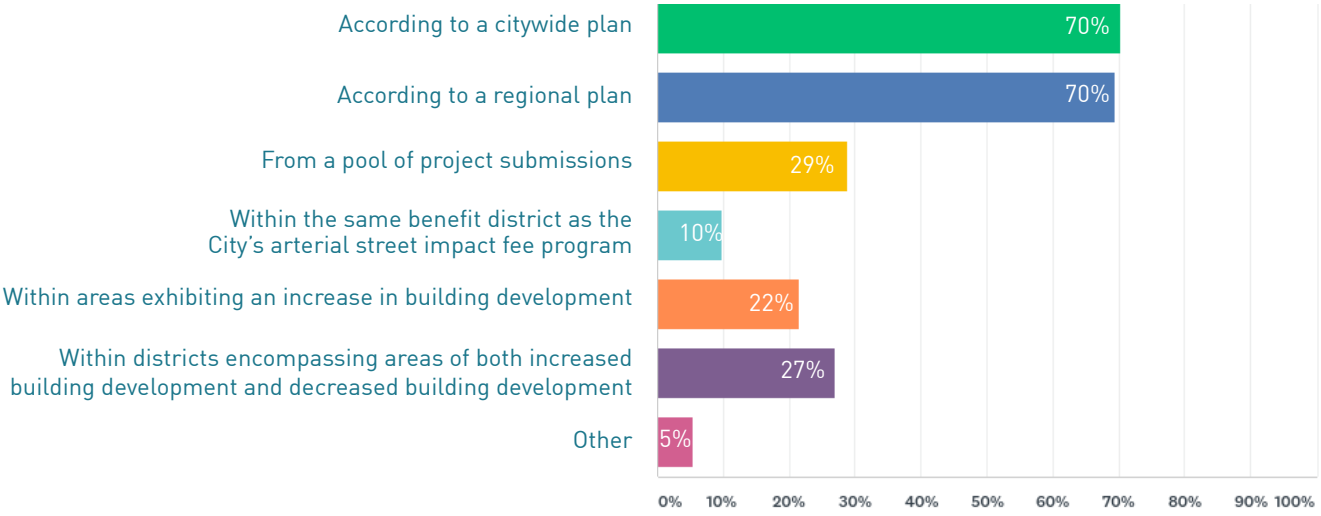
Q3. What is your home zip code?



Q4. What is your employment zip code?



Q5. How should the City determine where trail funds are spent? Select up to three (3) options below.



Q6. What other thoughts do you have about where trails funds are spent?

Look at connections to on-street bike lanes and infrastructure to aid ease of access without driving

Not equability

Where there are matching funds and where they provide connectivity

All trails should be maintained

Build where funding is available and per plan

Trails should promote integrated communities by linking areas where people work and shop, with an emphasis on linking existing trials.

Bi-State, metropolitan plans that integrate established Trails and include funds for maintenance. Funding for a consultant to develop a metropolisn wide coordinating trail board

Builds trails in safe areas where they will be used.

More connections. The longer trails the better.

In areas that they will be kept up and used, where people feel safe

In addition to recreation, trails should provide transportation that supports commerce, connecting users/customers to business.

Building more connections with communities in the area

trail development might help areas in decline

I would like downtown (between State Line, the river, Prospect, 39th) to connect to the trails outside downtown (e.g. Line Creek Trail). Many people won't bike on roads with vehicles.

Q6. (Continued)

Trails should be build with the intention of being used for transportation and not just recreation.

Bypass dangerous traffic pinch-points

Ensuring trails are available to those in the urban core.

Trail funds should be spent on all new and especially older neighborhoods where trails were not built to help residents enjoy nature, move safely through neighborhoods , and as an alternative type of moving via biking or walking to get to destinations.

It should be geared toward really thriving areas that have more potential to grow in addition to disinvested areas that could use support in attracting development.

Focus on trails that go places, ex: along Front Street from Chotou to downtown

Trails should be easy to access and placed in a well thought out regional plan.

All neighborhoods should connect to the network for the greater system, ignoring local complaints

youth initiatives, veteran and indigenous outreach

Trails should be equally nice in all parts of town

We need money spent on adequate lighting of trails.

Should eb developed to transport people, not just recreation

I think it's important to construct trails that connect residents and increase accessibility to schools, parks and building development.

CONNECTING trails is ideal so one can string together a trip, not wind up at a dead end.

Partnerships with other local agencies could help projects move forward more quickly and cross jurisdictional boundaries.

Need to increase connectivity between districts, and to natural resources/environments

Connectivity is paramount

If you build it they will come

Connecting existing trails

Seek to interconnect the KCMO network and connect with other nearby trail networks, such as Johnson County KS

They should be used to create greater connectivity in low-income communities and communities of color.

Connecting existing trail systems together and expanding access to trail systems should be top priorities.

We need a signature urban trail (similar to Indianapolis Cultural Trail) - perhaps on Broadway connecting from Mill Creek Park to the River

Connectivity to other trails making them more attractive for transportation, not just recreation

Q6. (Continued)

As a midtown resident I find myself having to bike a long distance or drive to encounter well maintained trails. I use trails to run and hike. I also looks for a shelter or clean outhouse. Gilham Park has a nice trail but no shelter or bathroom.

Forecasted demand, missing network links, existing neighborhoods

I have no clue.

Trail funds should be used to make trail space equally available to all City residents.

We need trails in the northland please. Its blowing up around here and there is nothing

Should connect existing trails and be a means of transportation

Developing a regional system can attract more users and provide increased traffic (pedestrian and cyclist) in the city.

I should be able to walk on a sidewalk to the closest trail. Specifically from Foutain Hills to the 152 trail

Study the success of other cities.

Trail funds should be spent to increase connectivity between key nexus points throughout the KC Metro.

Go North!

Don't forget about parking

Consideration for on-street connections where off street trails are difficult and demand/need is high.

The Katy Trail needs to cross the entire state. The trails in South Kansas City like Indian Creek and Blue River need to connect with City Trails downtown and North of the river.

Connect with existing trails and complete streets

Places where people won't get mugged

where matching private sponsorship funding can be sourced

priority regional corridors, such as trails along streams and rivers, and projects that make connections in between "missing links"

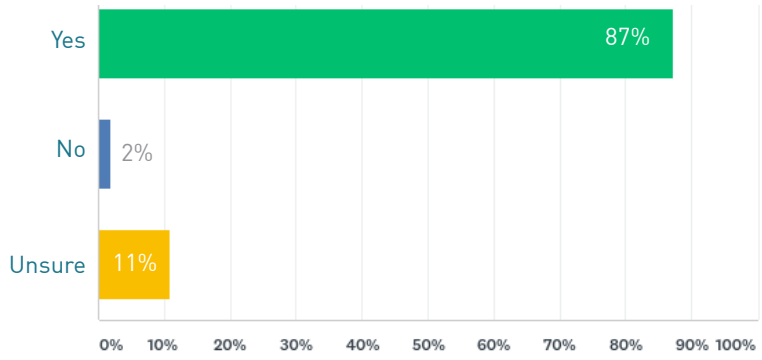
To coordinate recreational trail alignments with the KC regions historic frontier trails. Review with MARCs Retracement Trail plan.

Only build connected network of trails. Don't build anymore trails that don't connect to another trail

Definitely want to adequate funds for maintenance (near and long)

Via a participatory budgeting process (focusing on trails or/and all mobility projects)

Q7. Should the City provide or seek financial support for the construction of trail facilities within city limits? Why?



as part of development or redevelopment plans presented to P&D

People on bikes spend money the same as people in cars. It only makes sense to support them with access to areas of work and shopping.

Trail funds all require matching funds.

Going to be required more and more in the future.

if not in budget don't do it!

they won't be used and people won't be safe

Trails & green space are important to all communities

I assume there's some level of trail funding currently. My input should be considered opinion on how to utilize current funding.

Trails are transportation projects.

Trails are important to the development of our city.

Public amenity and a way to increase healthy living lifestyles and making people feel comfortable to use the trails.

It is a very cost effective way to encourage healthy lifestyles and decrease car dependence.

Leverage public private partnerships.

Trails are such a great benefit to communities. Get out and enjoy nature, stay healthy and active by using the trails. School age children grow up seeing first hand that trails are our connectors to other communities, schools, parks and businesses.

I'm not sure exactly what this is asking? Should the city give financial support (i.e. tax dollars) or look for grants? There are a number of ways to answer this question.

Trails encourage more outdoor activity

Q7. (Continued)

Trails get people active. The provide vehicle free space to exercise and enjoy the outdoors.

Trails are proven to raise the value of adjacent properties

To enhance public health efforts

Kansas City is way behind in connectivity via trails compared to other similar sized metropolitan cities. Trails not only promote connectivity throughout the city, but healthy, active lifestyles for residents and visitors.

Trails are part of the vitality of a community, particularly a regional community like the KC metro. If you value transportation and community vitality, support it financially!

Trails are a public health benefit, they increase access to nature, improve property values and help people move around our region.

Do they do this for other pieces of city infrastructure like roads and lights. If so then yes, if not then no.

There should always be more money for trails

Improves Safety, public health, region's appeal

The city has a real shot at becoming transitable on foot and bike in a meaningful way. This can lead to decrease in car trips, healthier living, etc.

Enjoyable amenities that all citizens can use for leisure and safe transportation.

Trails are another element of the city's overall transportation network. It is necessary for the city to invest in all modes of transportation and that means investing in all modes of infrastructure.

Trails are a good exercise alternative, but TRUE bicycle infrastructure would be great.

Collaboration and cooperation leads to greater buy on from the community and greater publicity about the efforts.

Use an 1/8 cent sales tax (or whatever allowed by law) to fund trails

Loose Park is popular because it has shelters AND toilets! Berkeley Riverfront Park is in desperate need of some bathrooms. I love that park but I can never stay long because of that reason. Does KCMO have something against toilets in parks? If you build toilets that aren't disgusting people will come and picnic and have a blast.

It depends. Some can be self supported, some may need fill city support

Trails are winning.

Trails are an important piece of transportation and recreation infrastructure.

I would not feel safe walking a my trail that is not open and visible to many people, which defeats the purpose for me off a walking trail—to enjoy nature. I can never find anyone to walk with me. I think in KCMO funds would be better spent tearing down condemned buildings and redeveloping east of Troost. I walk in my Raytown neighborhood or at Waterfall Park in Independence.

Because they're an important transportation option

Q7. (Continued)

The City should support trails because of the positive health benefit to users and improving the amenities of the City.

We have a 1% income tax- use that

Encourage walking/biking benefits the community in many ways

A good trail system attracts people, increasing business opportunities and the sales tax base. It also makes the city a more attractive place to live.

We need more trails in city limits! Especially, since so many cyclists use county roads at a danger.

Trails are a valuable asset for communities. Health, quality of life, job access, equity, etc. can all be improved with an interconnected trail system.

Kansas City needs to become more pedestrian and cyclist friendly. Funding trails will help with that.

Tax the building owners

Instead of handing out money to developers, use on trials

If it means more miles of trails, then those avenues should be pursued.

Trails can benefit both the mobility & safety of pedestrians and cyclists. They can also reduce vehicle use & traffic.

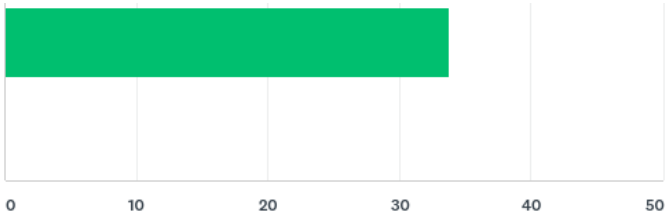
trail corridors protect open space, while providing health and wellness opportunities, that greatly improve quality of life in Kansas City

The urban/suburban development of the City tends to disconnect its people from the natural world primarily due to accessibility and mobility factors. In terms of 'trails', recreational trails allow for 'open air' exercise with hiking & biking. Trials likewise connect communities and peoples through interactions upon the trails. Some recreational trails in the KC region today have 'signage which denote historic events, sites, or activities which had occurred in that area. Thus the 'trail' provides an educational component to its value. The social fabric of a healthy community is sustained with its sidewalks and front porch socialization. Trails do the very same, except in a broader sense, where the 'front porch' along the trail is nature itself.

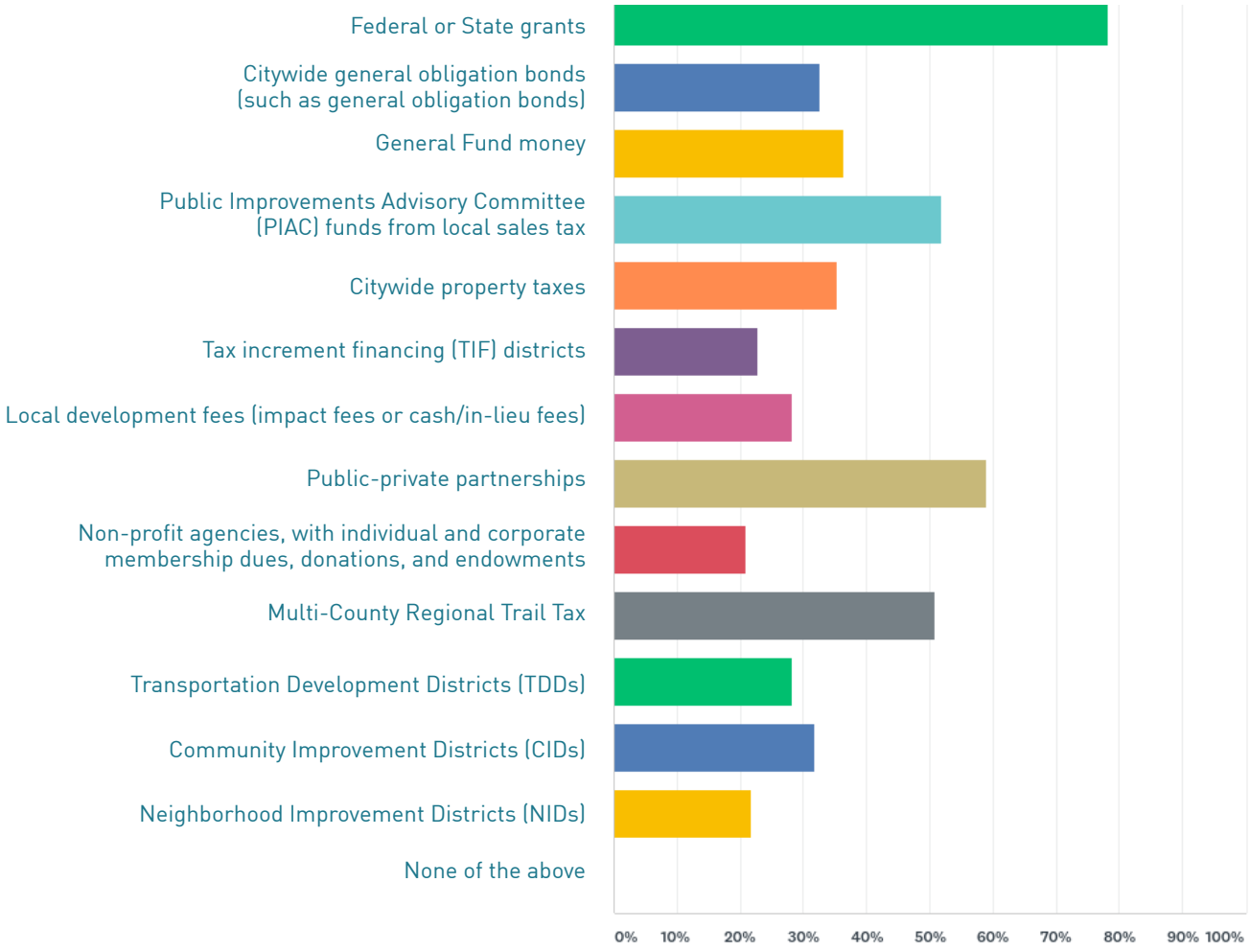
Public /private cost share and maintenance agreements could help stretch funds and accomplish more

Absolutely. The city should seek as much assistance for the development of trails. Trails and other bikeway/ multi-modal projects add economic value to the city, increase access to retaila and job centers, and can lead to KCMO being known as a bike friendly community - a trend other cities across the country are taking advantage of. Indianapolis's Cultural Trail has generated billions of economic impact and resulted in Indy being on Forbe's top 50 places in the world to visit a few years ago.

Q8. What ratio of public to private funds do you believe should be used for the construction of trails within Kansas City? Please indicate your response by moving the slider on the fund spectrum below:



Q9. Which tools should the City use to fund trail construction? Select up to five (5) tools below:



Q10. What other funding opportunities would you suggest the City consider?

Double impact fees

bikes need to help pay more money

Developers

Look to companies that might offer funding opportunities for recreational trails.

The trail program is growing in popularity and maturity. When fully mature it will be integrated into every city's general budget. These city wide Trail plans will naturally link all those who reside in these cities.residenc

depends on how much is needed.

Boulevard tax

Clay and Jackson county should consider a 1% trail tax like Platte county has to help with funding and maintenance of their trails.

I think it depends on where the projects are located. If it's support burgeoning development in hot areas of town, then CIDs, development fees, TDDs, NIDs, etc. But if it's in an area with a weaker tax base that needs more support, I would like to see more city-wide contributions.

Special tax on low-wage businesses. Pay the employees a living wage or pay the city.

Any that want to provide

None. Too much violent crime to walk trails in KC.

I would have selected more than 5 if you had have let me! I think PIAC, general fund, property taxes etc. should be considered but I think exploring new sources would be wise like multi-county taxing district and impact fees. We probably need to get more creative than we have in the past. Really any value capture from trail oriented development would be good.

Large corporation investments such as Cerner, Black and Veatch, Sprint etc to help promote trails and pay part of the bill.

Taco trucks on every corner

A volunteer 'user' fee payable with city property tax

Parking revenues as a funding mechanism to support bike infrastructure (not exclusively trails, but on-street bike infrastructure as well). The city should also consider the sale of unused/excess public assets to roll into a fund for bikeway projects - this was successful model for Indianapolis. Finally, the city should support an increase to the Health Levy to fund both on-street bikeways and off-street trails.

Q11. What additional thoughts, issues, or concerns would you like to share with the Trails Nexus study team?

The trails need to be improved and well maintained.

Continue to build along existing corridors.

The sooner that the all metropolitan organizations take responsibility the better. Until then loose associations between governments and public-private groups must continue the Trail plan. Kansas City River Trails is an effective such group.

Please don't build in unsafe areas...please develop a long range plan...please inform the citizens of the plan...and please don't over promise. Thank you.

It would be nice to know what needs done and how much will it cost.

Please concentrate trails in older neighborhoods asap. Many new, younger home buyers expect neighborhood amenities such as trails. Trails are included in almost every new housing development construction, but the older neighborhoods do not have these trails. keep these older neighborhoods, vital, connected and engaged by adding trails to them connecting their schools, parks and greenways to each other.

I think trails are one of the areas that KCMO can improve on. We have a lot of nature for a city and can utilize that to our advantage. Strategically placing these projects for development and neighborhood improvements is important to me. Often we just give projects to every district to say we distributed the money appropriately. Instead we should look at targeted, substantial private and public investment in some core projects. I live in Brookside/Waldo area, I'm okay with not getting a ton of funding. Put it where it needs it more. We'll be okay! We will survive!!!!!

Too many projects are stopped by NIMBYs. Need a plan that stresses the network over individual neighborhoods

Maps on the trails themselves.

Very excited to see this get underway! We need more trails in KC, especially in our older neighborhoods that lack in curbs and sidewalks. As a KCMO resident, an avid user of KC parks and trails, and employee of the Northland Chamber of Commerce, I would love to help promote and support this effort.

Federal funds for smaller projects are cumbersome and difficult, given the bid process and other barriers. Build them, maintain them, promote them, and the trails will be used and loved by the community and visitors!

We must connect our regional trail system.

Happy to see all the progress and improvements. I know it takes a lot of hard work for what has been done. Continuing to educate citizens of the benefits and plans are helpful. I hope one day to have a safe bike ride from the northland to downtown but need more connections for me to feel safe.

Make sure trails connect to form a comprehensive, functional transportation network. Recreation is important, but enabling people to get around without a car should be a top priority.

Only bike trails connecting regionally or across the state are viable in KC. I have spent decades providing social services and environmental projects in KCMO and am disappointed that the neglect of the residents of the urban core is still not resolved. Need to meet basic safety and economic development needs and then ask about trails.

My favorite cities have well-developed trail infrastructure that makes biking and walking more attractive to all residents, provides fitness opportunities, and gives people a chance to enjoy the natural environment. This includes places like Minneapolis, Tucson, Denver, and Reno.

Q11. (Continued)

Please make the 152 trail accessible to areas north of 152. My family should be able to ride from or home to the trails. I should not have to drive there. (Platte Purchase)

To really make this work, partnering on a regional level makes the most sense. I live two houses away from State Line Road. While I recognize that there are different governments and potential funding sources, ultimately we should be seeking the best plan for the entire KC metro. Improved connectivity will pay dividends for the entire community for years to come.

We are way behind other midwestern cities on trail network development. But we are getting there. Closing a few key gaps could go a long way. I'd also suggest looking at opportunities for Trail Oriented Development like along the Midtown Greenway in MPLS, The Atlanta Beltline, The Monon Trail and the Cultural Trail in Indianapolis are great examples to look to.

The city is separated by streets designed for automotive transportation. The city need more bike lanes and trails to make it accessible for all citizens.

Wish there were more trails to connect city. Glad they caught Indian creek murder man. Shameful how parks east of troost are neglected

stop wasting my tax money on doggie bag stations. owners can bring their own bags.

MARC is presently working with the National Park Service to develop 'retracement trails' in the KC area to: construct standardized recreational trail designs which will 'connect' the trail user with the valued historic trail alignments of the Santa Fe-Oregon-California trails which were vital to the early development of our Kansas City region. If you have not done so already , I suggest you contact MARC....

Please stop studying this thing for years and years, and just make a decision!

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