



2019



**CUYAHOGA
greenways**

A TRANSPORTATION
FOR LIVABLE COMMUNITIES INITIATIVE
PLANNING STUDY

VISION PLAN



Sponsored by:  County Planning

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NOTE: Images, diagrams, and illustrations without an image credit in this report were provided by the planning consultant team.



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REGIONAL AGENCIES CONTRIBUTING TO THE PROJECT TEAM,
TECHNICAL TEAM, AND PUBLIC MEETINGS

- Big Creek Connects
- Bike Cleveland
- Bike Lakewood
- Burton, Bell, Carr Development Incorporation
- Campus District
- Canalway Partners
- Chagrin River Watershed Partners
- City of Cleveland Office of Sustainability
- City of Cleveland Planning Department
- Cleveland Foundation
- Cleveland Hiking Club
- Cleveland Neighborhood Progress
- Cleveland State University
- Cuyahoga Community College
- Cuyahoga County Board of Health
- Cuyahoga County Land Bank
- Cuyahoga County Office of Sustainability
- Cuyahoga County Public Works
- Cuyahoga Metropolitan Housing Authority
- Cuyahoga Soil and Water Conservation District
- Doan Brook Partnership
- Downtown Cleveland Alliance
- Flats Forward
- Greater Cleveland Partnership
- Greater Cleveland Regional Transit Authority (RTA)
- Green Ribbon Coalition
- Historic Gateway Neighborhood
- LAND Studio
- Midtown Cleveland
- National Park Service
- Northeast Ohio Regional Sewer District (NEORSB)
- Ohio Department of Transportation
- Rails to Trail Conservancy
- Redline Greenway
- Slavic Village Development Corporation
- The Port of Cleveland
- The Trust for Public Land
- UH Bikes
- Union Miles Development Corporation
- University Circle Incorporated (UCI)
- University Hospitals
- US Army Corps of Engineers
- West Creek Conservancy
- West Creek Conservancy
- Western Reserve Land Conservancy
- Western Reserve Land Conservancy
- YMCA of Greater Cleveland

CONSULTANT TEAM

SMITHGROUP



COMMUNITIES PARTICIPATING AND SUPPORTING THE GREENWAYS VISION

- Bay Village
- Beachwood
- Bedford
- Bedford Heights
- Bentleyville
- Berea
- Bratenahl
- Brecksville
- Broadview Heights
- Brook Park
- Brooklyn
- Brooklyn Heights
- Chagrin Falls
- Chagrin Falls Township
- Cleveland
- Cleveland Heights
- Cuyahoga Heights
- East Cleveland
- Euclid
- Fairview Park
- Garfield Heights
- Gates Mills
- Glenwillow
- Highland Heights
- Highland Hills
- Hunting Valley
- Independence
- Lakewood
- Linndale
- Lyndhurst
- Maple Heights
- Mayfield
- Mayfield Heights
- Middleburg Heights
- Moreland Hills
- Newburgh Heights
- North Olmsted
- North Randall
- North Royalton
- Oakwood
- Olmsted Falls
- Olmsted Township
- Orange
- Parma
- Parma Heights
- Pepper Pike
- Richmond Heights
- Rocky River
- Seven Hills
- Shaker Heights
- Solon
- South Euclid
- Strongsville
- University Heights
- Valley View
- Walton Hills
- Warrensville Heights
- Westlake
- Woodmere

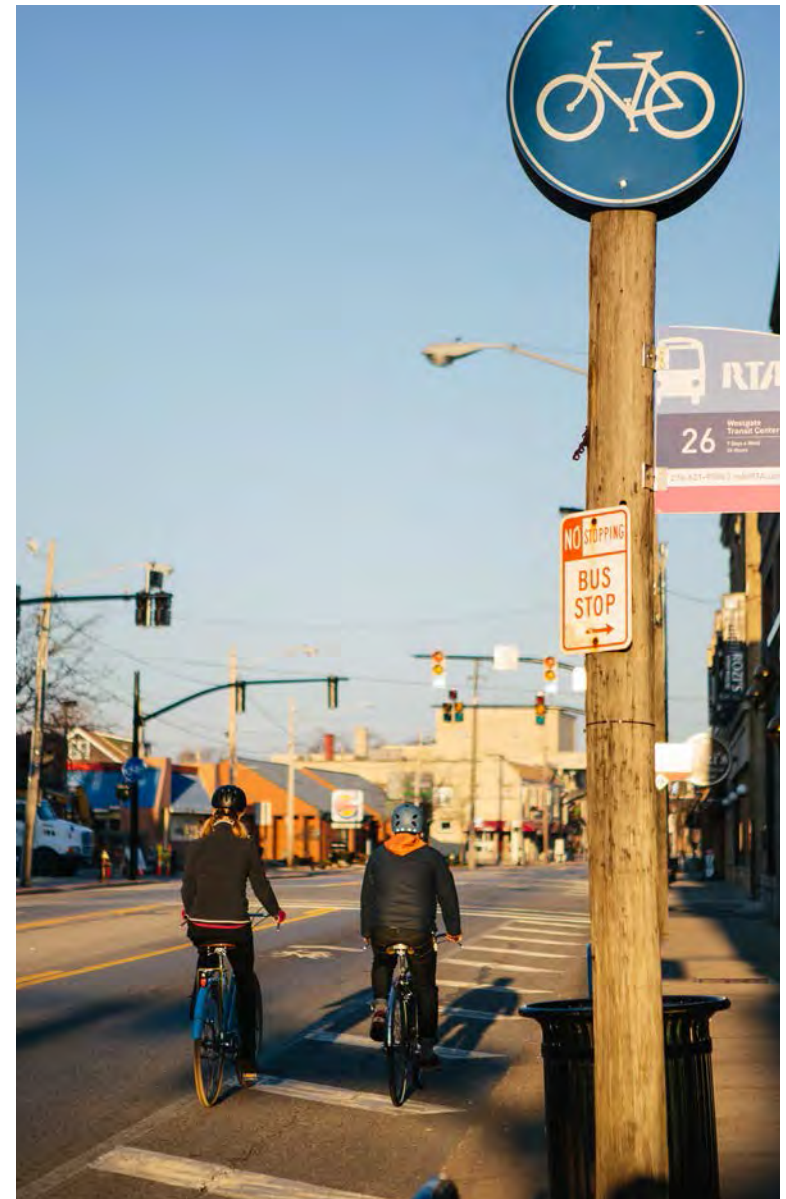


Image Credit: The City of Lakewood

EXECUTIVE SUMMARY

PURPOSE

Cuyahoga Greenways is a county wide initiative to envision, plan, and implement greenways and urban trails throughout Cuyahoga County. Facilities will connect public transportation and parks to offer recreational opportunities and options for getting around the county, improving the community’s mobility options, health, well-being, and economic vitality. Cuyahoga Greenways seeks to build an interconnected network that is safe and welcoming for people of all ages, abilities, and demographics, changing the way people think about and move around the county.

CONTEXT

Cuyahoga County encompasses 458 square miles. The 59 municipalities in the county vary in terms of size, demographics, job base, and access to commercial and recreational resources. Transit services are provided by the Greater Cleveland Regional Transit Authority (GCRTA), which faces budget challenges. Automobiles dominate transportation, particularly given development now covers twice as much of the county as in 1950. Providing safe alternative means of transportation to access jobs, schools, commercial destinations, and recreation opportunities in

a sprawling region is essential and can have a positive impact on the overall quality of life for residents.

Cuyahoga County is fortunate to contain a large network of existing trails, bike lanes, and sidewalks. One hundred miles of regional trails lie within Cleveland Metroparks “Emerald Necklace” of parks, providing access to natural space and recreational opportunities through the county’s riparian corridors. In addition, there are approximately 165 miles of trails plus bicycle lanes built by local municipalities.

PROJECT PARTNERS



CONSULTANT TEAM

SMITHGROUP



Image Credit: Slavic Village Development Corporation



As an urbanized and nearly built-out county, opportunities for setting aside natural areas are limited. The focus for new routes will be on retrofitting existing vacant or underutilized spaces. Looking forward, three important needs exist within the community:

- Extending greenway benefits and urban trail access into portions of the county that currently have little to no access today
- Repurpose portions of roadways with excess capacity to enhance safety, mobility, and access for all users;

- Build facilities that are more inviting for people of all ages and abilities, and that overcome perceived safety risks, or Levels of Stress, that can accompany non-motorized travel within an auto-focused corridor.

Cuyahoga Greenways is one step towards addressing the fluctuating conditions and residual challenges to improving mobility, spatial disparities, and geographic inequalities in the region. If residents can have greater connectivity to parks, open space, schools, and jobs centers, all future growth may become more inclusive, sustainable, and will lead to healthier and more equitable outcomes for larger segments of the community.



KEY TERMS

GREENWAYS are dedicated, linear spaces that provide opportunities for recreation, non-motorized transportation, and natural features. Greenway corridors are typically off-street and in a park-like or natural setting.

URBAN TRAILS are dedicated, linear infrastructure that provide non-motorized connections through and between communities for recreation and access to jobs and community assets. Urban Trails can be off-street or on-street.

Both Greenways and Urban Trails are intended to serve all ages and all abilities.

PROCESS

The plan was funded through the Northeast Ohio Areawide Coordinating Agency's (NOACA) Transportation for Livable Communities Initiative (TLCI) and powered by collaboration from the Cuyahoga County Planning Commission (CCPC), Cleveland Metroparks, and NOACA. The planning process was community-driven and data-enriched, empowering local leaders and stakeholders with the knowledge necessary to make informed decisions. Cuyahoga Greenways relied on technical geographic information system (GIS) analysis, expert input, stakeholder observations, and community engagement. Decisions had to be grounded, appropriate for the local context, and supported by the community.

Expert input was provided by a Project Team consisting of 29 local organizations. All 59 communities in the county were contacted to participate in the project Steering Committee to provide local guidance for the alignment of proposed greenways. This engagement helped increase understanding of the physical and

socioeconomic context and to recognize local community needs. Eleven Steering Committee meetings were held throughout the county, with leadership from 43 different communities participating in these small group workshops and mapping sessions. In total, over 20 community-wide events were held, with 10 of these meetings specifically dedicated to public comment and feedback, in person or through various online programs and surveys.

After all data was collected and presented, the team used this information and stakeholder input to pinpoint the best locations for active transportation choices and improved regional mobility. Leveraging both traditional and digital tools, a rigorous spatial analysis of over 300 corridor opportunities was completed, with three main technical tasks performed over the course of this process:

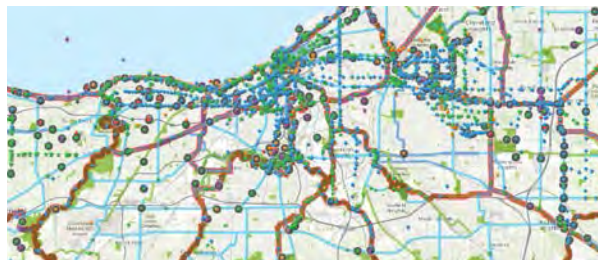


11 STEERING COMMITTEE MEETINGS, WITH 43 COMMUNITIES PARTICIPATING



29 REGIONAL GROUPS & ORGANIZATIONS PARTICIPATED IN THE PLANNING PROCESS

OVER 20 COMMUNITY WIDE EVENTS & WORKSHOPS FOR RESIDENT FEEDBACK



STEP 1: CANDIDATE ROUTE IDENTIFICATION & HIERARCHY

The candidate route network identified over 800 miles of potential trails. Alignments were separated into a hierarchy of Regional Routes and Supporting Routes. Regional Routes - designed for all ages and all abilities to the highest extent possible - are the “backbones” of the greenway system connecting and expanding the existing network of trails across the entire county and linking to adjacent counties.

Supporting Routes provide localized connections to the overall regional system. These include connections to transit, commercial districts, job centers, neighborhoods, parks, schools, and other concentrations of local activity. If individual communities can connect residents and businesses via the Supporting Routes, the Supporting Routes can in turn provide their community access to the regional network.

STEP 2: ROUTE EVALUATION

The next step was evaluation of each route to identify and prioritize a focused list of projects for implementation. The Project Team, Steering Committee, and other stakeholders identified eight “Core Factors” that reflected the opportunities and benefits future greenway routes might provide:

- Regional Trails Access
- Park & Recreation Access
- Habitat Factor
- Socioeconomic Factor
- Personal Mobility Factor
- Transit Factor
- Job Centers Factor
- Commercial/Civic Factor

Dozens of data sets were reviewed to determine which corridors best aligned with project goals. Route evaluation developed further into a series of Hybrid “Connection” Analyses to distinguish correlations between Core Factors and routes providing the greatest benefits to these trip origin and destination points. The hybrid analysis included: People to Jobs, Jobs to Transit, People to Trails, and Parks to Habitat

REGIONAL NETWORK

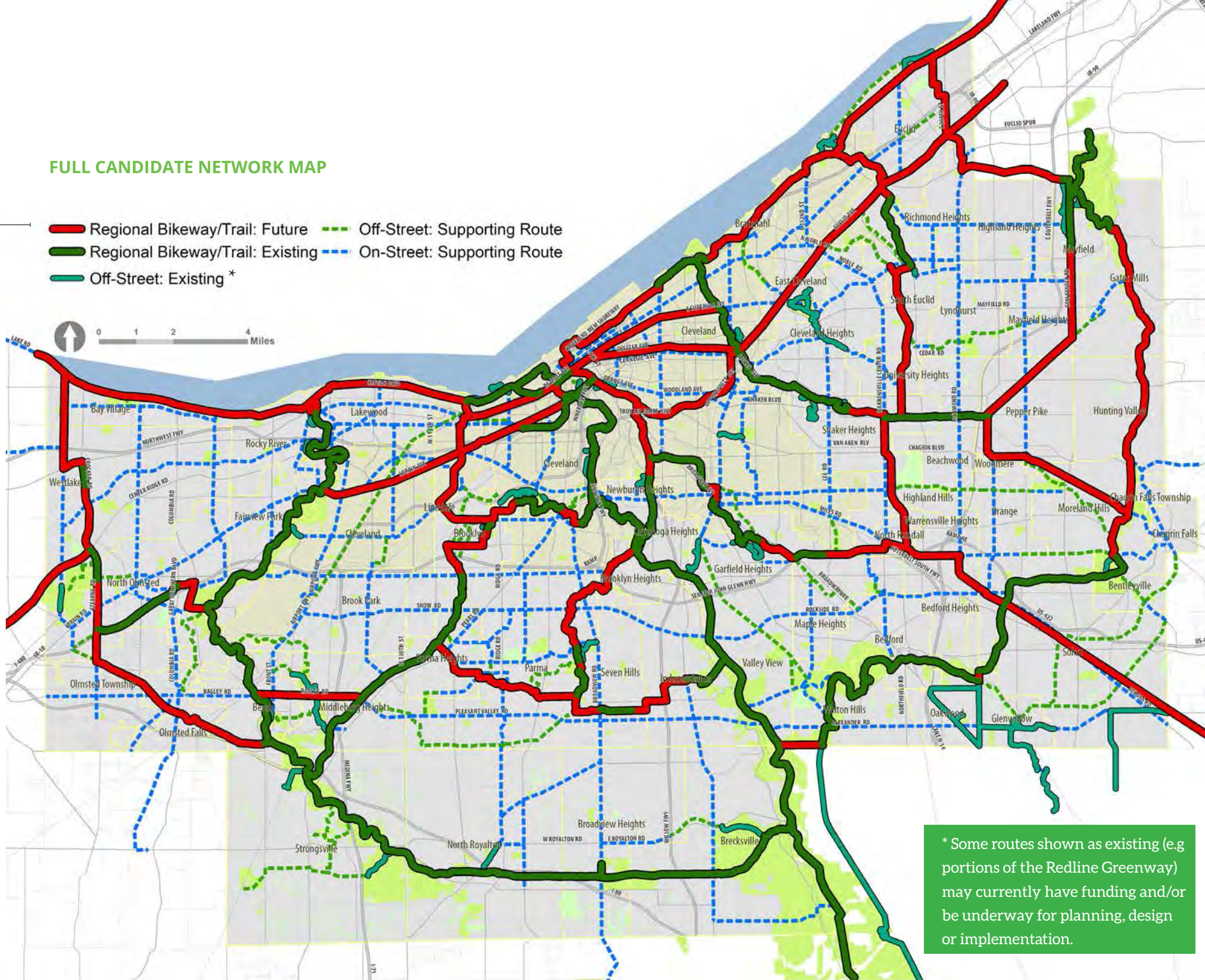
- 122 miles of existing off-street trail
- 47 miles of future off-street trail
- 121 miles of future on-street routes

SUPPORTING NETWORK

- 63 miles of existing off-street trail
- 102 miles of future off-street trail
- 360 miles of future on-street routes

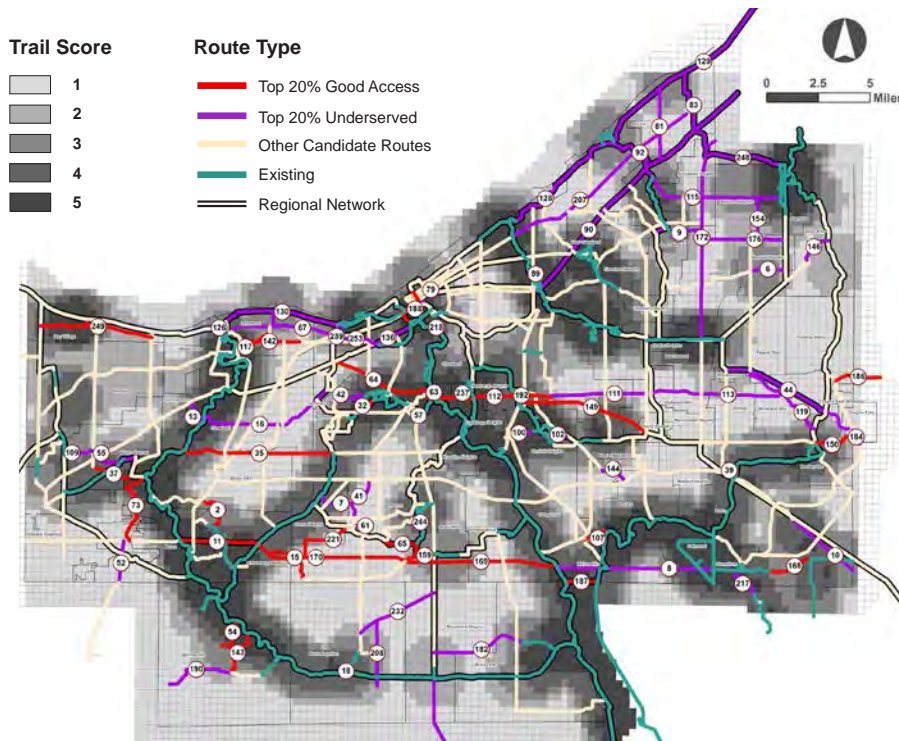
FULL CANDIDATE NETWORK MAP

- Regional Bikeway/Trail: Future
- Regional Bikeway/Trail: Existing
- - - Off-Street: Supporting Route
- - - On-Street: Supporting Route
- Off-Street: Existing *



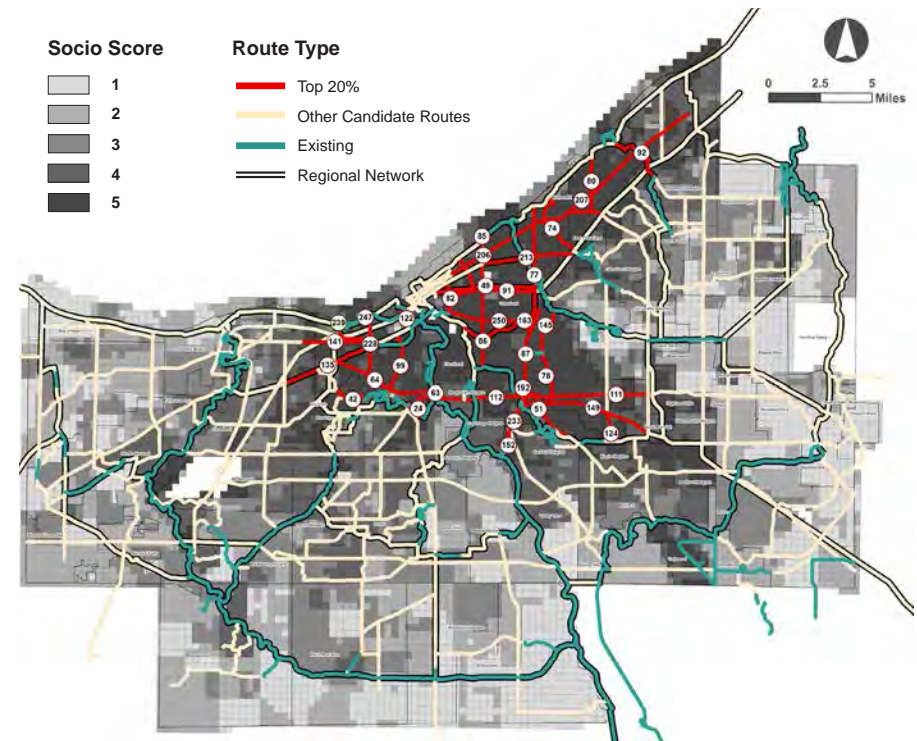
* Some routes shown as existing (e.g. portions of the Redline Greenway) may currently have funding and/or be underway for planning, design or implementation.

TRAIL ACCESS FACTOR



Date Source: ACS 2018 - Greenways Partner Data Set

SOCIOECONOMIC FACTOR



Date Source: ACS 2018

STEP 3: FRAMEWORK PLAN & PROJECT PRIORITIZATION

The decisive step in the process was to identify a smaller list of priority routes for implementation. With input from the technical evaluation, Project Team, Steering Committee, and public, the results of these hybrid analyses were aggregated to see which routes show up multiple times. Highlighted routes reflect those with the greatest opportunity to design safe, accessible corridors that address connectivity needs, geographic inequality, and utilize excess roadway capacity to accommodate active transportation and best reflect the project's goals.

DATA ANALYSIS WAS USED TO INFORM DECISIONS & DRAW ATTENTION TO AREAS OF NEED & AREAS OF OPPORTUNITY

OUTCOME

The Cuyahoga Greenways Plan is the culmination of regional collaboration, route identification, technical evaluation, and community engagement. The resulting Priority Projects Map takes 800 miles of candidate routes identified in the overall framework and distills them into 69 projects, (242.5 miles) divided into three categories:

- Critical Gaps: 13.5 miles
- Regional Links: 122 miles
- Key Supporting Routes: 107 miles

These high impact projects were determined based a combination of technical input and stakeholder feedback. The projects are prioritized due to their functional role within the network, the potential benefits they afford to the county, community needs that are addressed, and local support for implementation.

The routes themselves are conceptual. While the plan identifies priority routes, all routes identified in the candidate network remain part of the final framework. The Greenways Plan is a guide; all routes should be considered whenever an opportunity for implementation arises. Realizing the full greenway network will require flexibility. Continuing to consider alternatives is important for addressing evolving priorities and for taking advantage of opportunities as they arise.

CLOSING

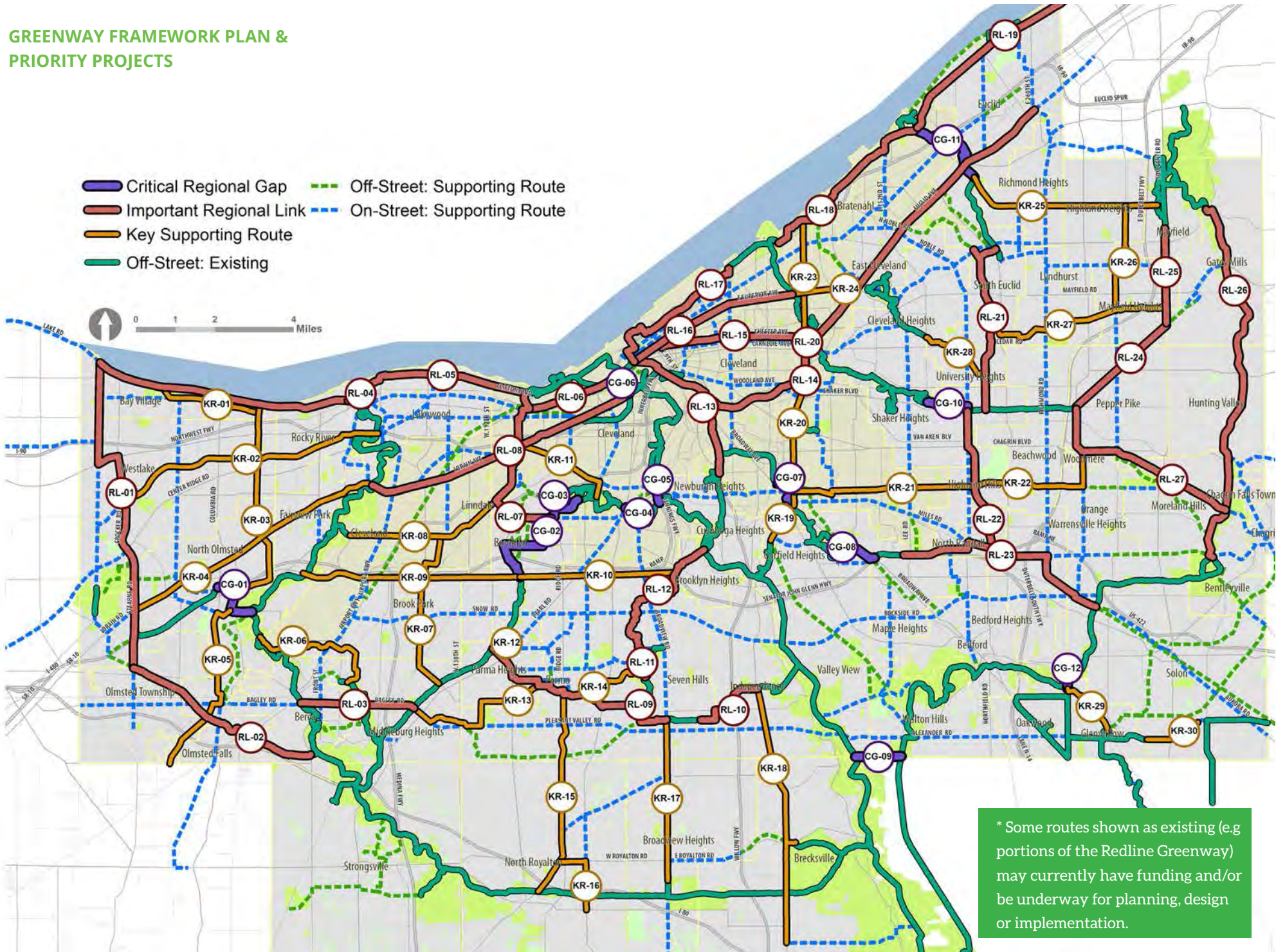
The Cuyahoga Greenways plan will create a healthier and more sustainable future by closing 'critical gaps' in the active transportation network, and will connect people to jobs, parks, transit, and trails through increased transportation options. Implementing the Cuyahoga Greenways plan will require a long-term commitment to regional coordination and collaboration. The value of this Framework Plan is that regional and local governments, agencies, non-profit groups, and other organizations now have a shared blueprint to align projects across municipalities, apply for grant funding, integrate routes into local master plans, and engage project partners and sponsors for implementation.

New trails and non-motorized facilities have the biggest impact when they increase access to desired destinations and coordinate with existing infrastructure. Building out the proposed regional trail system will have a substantial impact on county residents' access to trails. Currently, 280,000 residents live within a mile of the regional trail system; when built, the system will reach over 500,000 (over 40% of the county population). When it comes to access to jobs, 355,000 jobs are within one mile of an existing trail today, in the future over 525,000 jobs. Today, Cuyahoga County has 1.1 million jobs - which means that over 47.2%

of the jobs in the entire county would be within one mile of regional greenways and urban trails when the regional network is complete.

For the plan to be effective, groups and organizations at the regional and local levels must work together on systematic solutions. The Cuyahoga Greenways Plan is a working guide that can help align collective regional priorities with local resources to maximize efficiency, coordination, collaboration and partnerships among public, private, non-profit, and community led organizations. The Cuyahoga Greenways plan has developed routes with a regional approach that are beneficial to local neighborhoods, Cuyahoga County, and all who live and work here.

GREENWAY FRAMEWORK PLAN & PRIORITY PROJECTS



* Some routes shown as existing (e.g portions of the Redline Greenway) may currently have funding and/or be underway for planning, design or implementation.

CRITICAL GAPS

13.5 TOTAL MILES

RT#	MILEAGE	RT NAME
CG-01	1.8	ROCKY RIVER RESERVATION TO GREAT NORTHERN CONNECTOR
CG-02	2.5	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - SOUTH
CG-03	1.2	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - NORTH
CG-04	0.9	LOWER BIG CREEK GREENWAY - UPLAND TRAIL
CG-05	0.2	LOWER BIG CREEK GREENWAY - TOWPATH CONNECTOR
CG-06	0.5	CLEVELAND FOUNDATION CENTENNIAL LAKE LINK TRAIL - IRISHTOWN BEND
CG-07	0.8	MORGANA RUN TRAIL - BOOTH AVENUE EXTENSION
CG-08	1.2	MCCRACKEN TRAIL TO GARFIELD RESERVATION CONNECTOR
CG-09	1.2	BEDFORD RESERVATION TO TOWPATH CONNECTOR
CG-10	1.2	SHAKER MEDIAN TRAIL TO SHAKER LAKES CONNECTOR
CG-11	2.4	EUCLID CREEK GREENWAY
CG-12	0.3	SOUTH CHAGRIN RESERVATION TO BEDFORD RESERVATION

REGIONAL LINKS

122 TOTAL MILES

RT#	MILEAGE	RT NAME
RL-01	8.6	LAKEFRONT GREENWAY WEST TO NORTH OLMSTED 480 TRAIL
RL-02	5.3	NORTH OLMSTED 480 TRAIL TO MILL STREAM RUN RESERVATION
RL-03	2.9	BAGLEY ROAD CONNECTOR
RL-04	6.9	LAKEFRONT GREENWAY (WEST 2)
RL-05	5.5	LAKEFRONT GREENWAY (WEST 1)
RL-06	2.5	DETROIT AVENUE
RL-07	4.8	LAKEFRONT RESERVATION EDGEWATER PARK TO BROOKLYN MEMORIAL PARK
RL-08	7.1	LORAIN AVENUE CYCLETRACK
RL-09	5.9	WEST CREEK GREENWAY TO BIG CREEK RESERVATION
RL-10	2.2	WEST CREEK GREENWAY (SOUTH)
RL-11	0.3	WEST CREEK GREENWAY
RL-12	4.6	WEST CREEK GREENWAY (NORTH)
RL-13	4.4	SLAVIC VILLAGE DOWNTOWN CONNECTOR
RL-14	3.9	OPPORTUNITY CORRIDOR & IRON COURT CONNECTOR
RL-15	3.8	CHESTER AVENUE
RL-16	4.4	SUPERIOR AVENUE MIDWAY CYCLETRACK
RL-17	4.3	LAKEFRONT GREENWAY (EAST 1)
RL-18	5.0	LAKEFRONT GREENWAY (EAST 2)
RL-19	7.9	LAKEFRONT GREENWAY (EAST 3)
RL-20	8.4	EUCLID AVENUE
RL-21	4.7	S. BELVOIR BOULEVARD
RL-22	3.6	NORTHFIELD ROAD/WARRENSVILLE CENTER ROAD
RL-23	5.9	SOUTH CHAGRIN RESERVATION TO MCCRACKEN TRAIL CONNECTOR
RL-24	3.1	GATES MILLS BOULEVARD TRAIL
RL-25	2.4	SOM CENTER ROAD
RL-26	9.9	CHAGRIN RIVER ROAD
RL-27	5.2	CHAGRIN BOULEVARD/OLD BRAINARD ROAD

KEY SUPPORTING ROUTES

107 TOTAL MILES

RT#	MILEAGE	RT NAME
KR-01	2.6	WOLF ROAD
KR-02	7.0	HILLIARD BOULEVARD
KR-03	5.5	CLAGUE ROAD
KR-04	6.8	LORAIN ROAD
KR-05	4.9	COLUMBIA ROAD/USHER ROAD
KR-06	3.8	ABRAM CREEK GREENWAY
KR-07	4.3	SMITH ROAD GREENWAY
KR-08	4.0	BELLAIRE ROAD/PURITAS ROAD
KR-09	5.6	BROOKPARK ROAD - WEST
KR-10	4.0	BROOKPARK ROAD - EAST
KR-11	2.6	FULTON ROAD/DENISON AVENUE
KR-12	0.7	PEARL ROAD - SOUTH
KR-13	4.1	WEST CREEK GREENWAY/SHOPPES AT PARMA TO BIG CREEK RESERVATION
KR-14	2.1	WEST CREEK RESERVATION - PARMADALE TO STERNS HOMESTEAD
KR-15	5.3	RIDGE ROAD/BENNETT ROAD
KR-16	1.9	ROYALTON ROAD/STATE ROAD
KR-17	4.1	BROADVIEW ROAD - CENTRAL
KR-18	6.8	BRECKSVILLE ROAD
KR-19	1.0	WARNER ROAD
KR-20	3.7	E. 93RD STREET
KR-21	4.7	HARVARD AVENUE (CENTRAL)
KR-22	3.7	HARVARD AVENUE (EAST)
KR-23	3.1	E. 105TH STREET
KR-24	1.7	SUPERIOR AVENUE (EAST)
KR-25	5.0	HIGHLAND ROAD
KR-26	2.9	MINER ROAD/LANDER ROAD
KR-27	5.0	ACACIA CONNECTOR
KR-28	1.9	WASHINGTON BOULEVARD
KR-29	1.6	TINKER'S CREEK TRAIL - NORTH
KR-30	1.4	PETTIBONE ROAD



Image Credit: Cleveland Metroparks

01.

project introduction



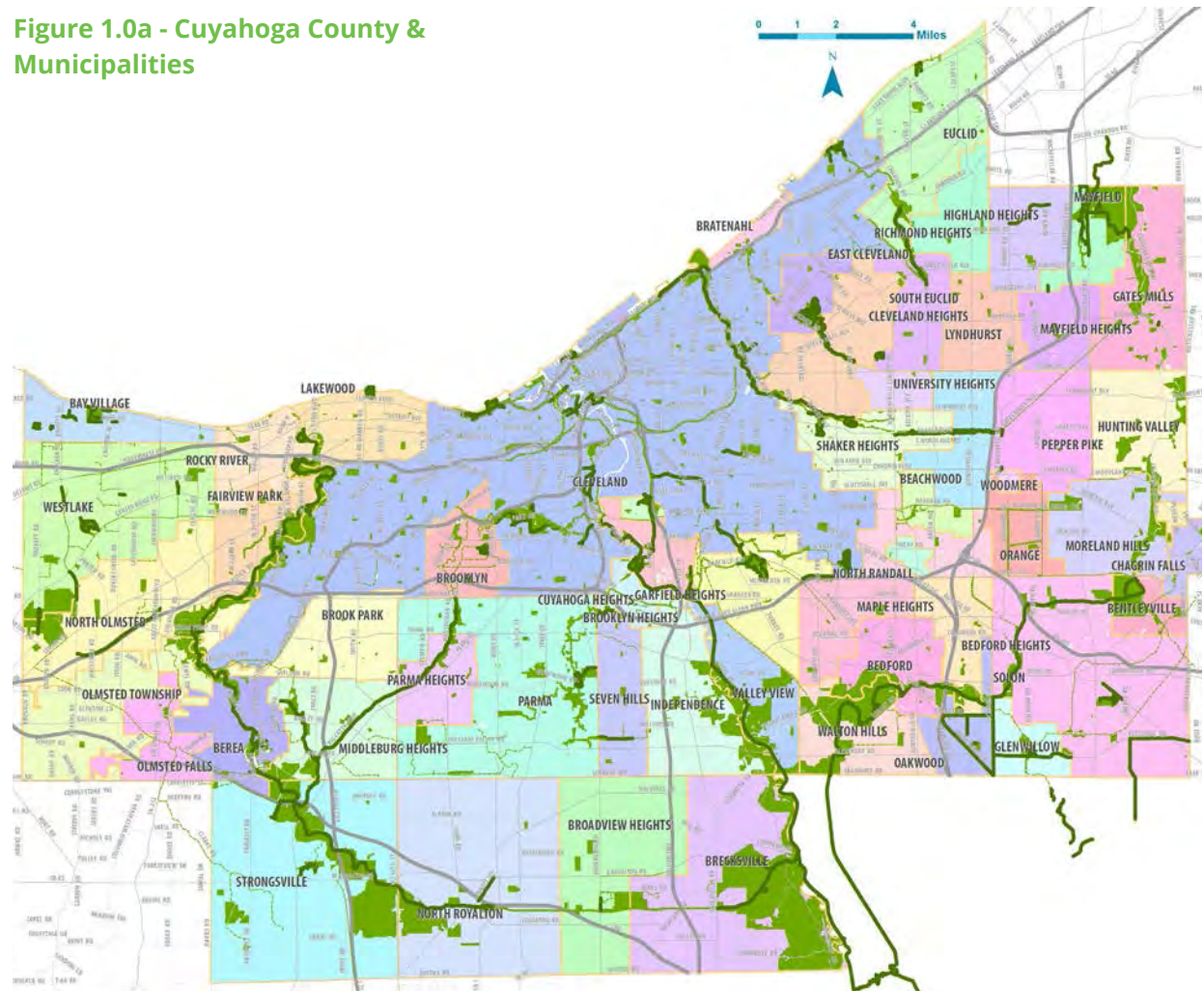
1.0 PROJECT OVERVIEW

PURPOSE

Cuyahoga Greenways is a county wide initiative to envision, plan, and implement over 800 miles of greenways and urban trails throughout the region. Facilities will connect public transportation and parks to offer recreational opportunities and options for getting around the county, improving the community's mobility options, health, well-being, and economic vitality. Cuyahoga Greenways seeks to build an interconnected network that is safe and welcoming for people of all ages, abilities, and demographics, changing the way people think about and move around the county. This means that wherever possible, the plan identifies off-road trails or, at the minimum, buffered bike lanes that provide separation from vehicular traffic.

Cuyahoga Greenways is one step towards addressing the fluctuating conditions and residual challenges to improving mobility, spatial disparities, and geographic inequalities in the region. If residents can have greater connectivity to parks, open space, schools, and jobs centers, future growth may become more inclusive, sustainable, and will lead to healthier and more equitable outcomes for larger segments of the community.

Figure 1.0a - Cuyahoga County & Municipalities





PROJECT AREA

Cuyahoga County encompasses 458 square miles and is a diverse region physically, socially, and economically. With the city of Cleveland at its center, the 59 municipalities in the county vary in terms of size, demographics, job base, and access to commercial and recreational resources. Transit services (bus and light rail) are provided by the Greater Cleveland Regional Transit Authority (GCRTA), which has unfortunately undergone service and route adjustments in response to funding challenges from declining sales tax revenues and a statewide funding contribution that consistently ranks near the bottom on a national scale. Auto-centered travel continues to dominate most residents' transportation experiences, as the same number of county residents consume twice as much land for transportation, home, and businesses as they did 70 years ago. Yet for many residents, access to a personal vehicle is not a given, and increasingly people are choosing to forgo car ownership. Providing safe alternative means of transportation to access jobs, schools, commercial destinations, and recreation opportunities in a sprawling region is essential.

CONTEXT

Cleveland and surrounding Cuyahoga County is undergoing a gradual transformation. A highly urbanized region in America's rust belt, like other Great Lakes legacy cities, its persistent population decline shows no signs of slowing as manufacturing jobs became consumed through advancements in automation or moved elsewhere. Transforming the region from a production-based economy to more service, medical, and/or technology-based sectors has been slow and not inclusive. In Northeast Ohio some economic sectors are growing rapidly, while others - such as motor vehicular parts and other fabricated metal production - are shrinking faster at the local level than nationally leaving meaningful portions of residents behind while the region struggles with income inequality, job access, and lack of physical as well as upward mobility.

More broadly, supplying better transportation options for all county neighborhoods can have a positive impact on the overall quality of life for residents. Despite having good access to recreational opportunities, one quarter of Cuyahoga County residents are considered physically inactive, and at risk for chronic conditions that could be prevented through better nutrition and increased physical activity. Building non-motorized facilities (trails, greenways, bicycle lanes, etc.) that provide recreational opportunities and promote active modes of transportation can

lead to health care cost savings, increased physical activity, and greater health outcomes.

While communities and employment centers in the area have continued to lose people and jobs, the total number of jobs in the area has remained constant. As development moved outward, the net results have become more land consumption and more citizens cut off from jobs and economic gains. Between 2000 and 2012, the number of jobs within a typical commute distance for residents within the Cleveland Metro Area declined 26%, placing it last out of 96 Metro Areas.

The increased distance between homes, jobs, schools, and parks has made it almost mandatory for citizens to own a vehicle. Increased distance between workers and jobs means longer stretches of unemployment, more jobs unfulfilled, and more earnings spent on travel due to longer distances and travel times to work. Better links to job hubs and commercial centers can help support the economic vitality of the county. Local jobs create more opportunities and unemployed individuals can find new work faster when they live closer or have better access to employment.

When substantial portions of a region's population are removed from economic gains or disconnected to jobs, the entire community suffers. Connecting the population to jobs is especially important for increasing upward mobility, attracting businesses, and cultivating talent in the region - as business

and workers are increasingly looking to live in communities where they are not dependent on automobiles for their transportation needs.

From a planning and implementation standpoint, the Cuyahoga Greenways Plan is a regional mobility vision aimed at improving transportation options while creating better connections to parks, amenities, services, and the workplace. Prioritizing strategic capital investments that align projects across municipal boundaries to make better use of existing job hubs, land uses, infrastructure, and resources will provide greater connectivity and public benefits.

COMMUNITY NEEDS & OPPORTUNITIES

A number of community needs and opportunities are addressed by the Cuyahoga Greenways project. These include:

- Recognition that many communities within the county have limited access to the existing trail system by non-motorized means. Based on community input and feedback, there is a desire to extend the greenway network into all portions of the county and ensure that each municipality has better access to greenways in the future.
- Broad use of a greenway network is dependent on how comfortable and safe users feel. While the county is making strides in implementing

on-street bicycle facilities (e.g. bicycle lanes), many of these facilities will only ever serve a small portion of the cycling community. Creating greenway infrastructure (like trails and sidepaths) that are accommodating to all ages and all abilities creates an opportunity for a majority of the population to feel comfortable and safe with non-motorized travel.

- While off-road trails are generally preferred, in many parts of the community opportunities for off-road trails are limited due to the high density of existing land development. In these areas, finding opportunities for creating safe and comfortable on-road routes are critical. This may require rethinking the balance of uses within greenways located along roadway corridors, shifting emphasis away from vehicular modes of travel in order to give more space and priority to safe non-motorized travel.
- From a planning and implementation standpoint, there is a need to better align projects across municipal boundaries to make better use of resources for greenway construction and management while providing greater connectivity and public benefit. The Cuyahoga Greenways Plan can provide a framework to guide collaborative decision-making.

LEAD PROJECT PARTNERS

Three organizations assumed co-leadership roles over the course of this planning project. Each of these lead project partners provided financial and technical support for this planning effort.



NORTHEAST OHIO AREAWIDE COORDINATING AGENCY (NOACA)

Northeast Ohio Areawide Coordinating Agency is a five-county Metropolitan Planning Organization (MPO). One of NOACA's primary tasks is helping to plan and implement signature transportation projects to improve the mobility of residents in the region. The Transportation for Livable Communities Initiative (TLCI) is a critical program for funding planning and implementation projects - including this Cuyahoga Greenways Plan.

County Planning

CUYAHOGA COUNTY PLANNING COMMISSION

The Cuyahoga County Planning Commission provides professional planning services to cities, villages, and townships in Cuyahoga County, as well as to regional public agencies. County Planning aims to create opportunities to align Cuyahoga Greenways recommendations with local resources, leadership, support, and community engagement efforts. Similarly, community master plans were a source of input into the planning process, which helped identify route locations that were previously supported through local master plans.



CLEVELAND METROPARKS

Established in 1917, Cleveland Metroparks is a regional park and recreation leader with more than 23,000 acres of natural areas, open space, and recreational facilities within Cuyahoga County, Hinckley Township in Medina County, and adjacent park areas. The majority of existing regional trails are within Cleveland Metroparks' "Emerald Necklace" of open spaces and reservations that loop through the county. Cleveland Metroparks has been a key partner in building access to open space and non-motorized facilities.

1.1 HISTORY

HISTORICAL CONTEXT

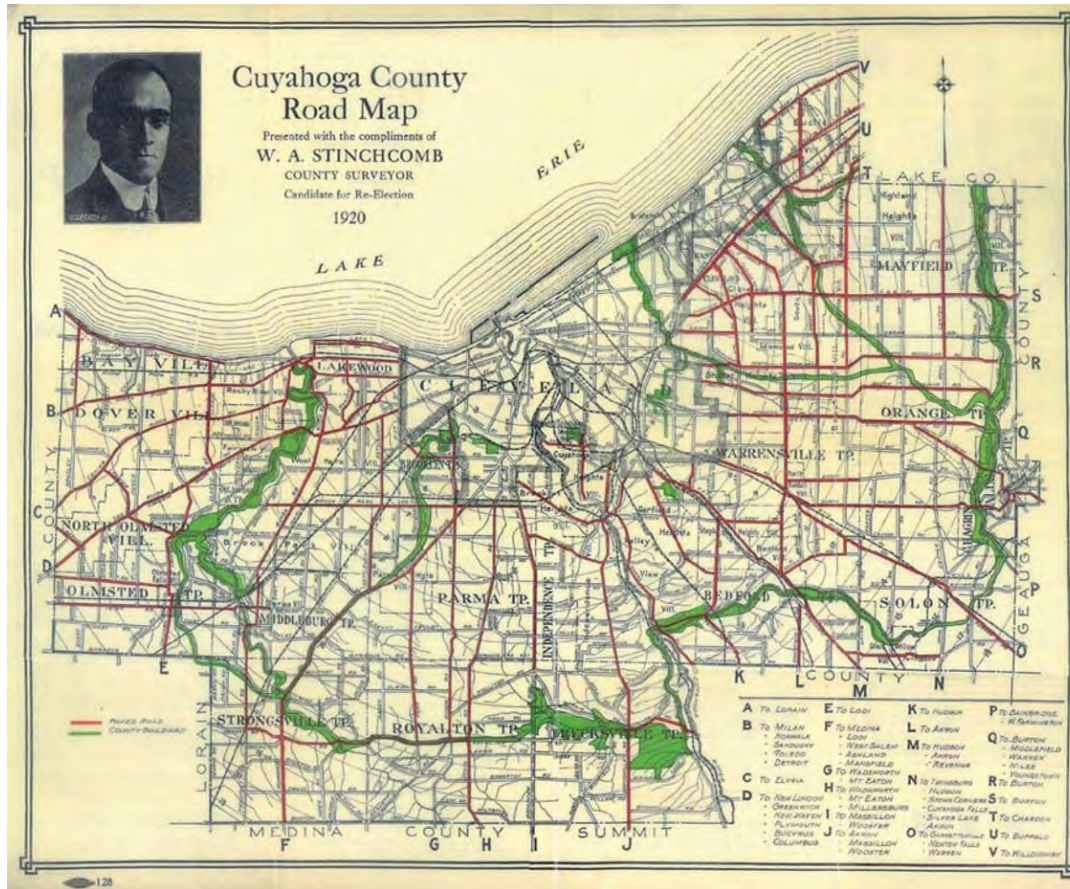


Figure 1.1a - Stinchomb Plan for Metroparks. Image Credit: Cleveland Metroparks

Cuyahoga County is fortunate to contain a large network of existing trails, bike lanes, sidewalks, and other mobility options that serve the needs of many residents. Much of the existing network of trails lie within the Cleveland Metroparks system. Established in 1917, and the oldest park district in Ohio, the vision for the Cleveland Metroparks was to create a “Emerald Necklace” of parks that coursed its way through the county, providing access to natural space and recreational opportunities.

Today, the regional network consists of approximately 165 miles of trails both within and outside the Cleveland Metroparks system. In addition, there are many bicycle lanes and other on-street bicycle facilities throughout the county built by local municipalities.

The Cuyahoga Greenways Plan, like the plan for the Emerald Necklace that preceded it, provides a long-range vision for dramatically reshaping the county and how people move within it. A central question during the planning process was: “That was the first 100 years, now what’s the plan for the next 100 years?” As an urbanized and nearly built out county, opportunities for setting aside more natural areas that can accommodate trails are limited. Since building new greenways and urban trails faces challenges (i.e. complex development and property ownership patterns, public rights-of-way that must continue to meet transportation demands, and varying views of transportation needs within the county), the focus for new routes will be on retrofitting existing vacant or underutilized spaces.

PLANNING CONTEXT



TLCI PLANS

The Cuyahoga Greenways Plan is funded, in part, through the Transportation for Livable Communities Initiative (TLCI) grant program, a federal reimbursable transportation program managed by NOACA. As a TLCI project, Cuyahoga Greenways will help advance NOACA's Regional Strategic Plan by supporting the following goals:

- **Developing transportation projects that provide more travel options.** *The Cuyahoga Greenways Plan proposes new non-motorized facilities and actionable projects.*
- **Promoting reinvestment in underutilized or vacant/abandoned properties.** *The Cuyahoga Greenways Plan identifies locations where underutilized lands could accommodate greenways and urban trails.*
- **Supporting economic development.** *The Cuyahoga Greenways Plan creates additional linkages between residents, jobs centers, and commercial districts.*
- **Ensuring that the benefits of growth and change are available to all members of a community.** *The Cuyahoga Greenways Plan utilizes equity factors as a core part of the decision-making process and connects to all municipalities in the county.*
- **Enhancing regional cohesion.** *The Cuyahoga Greenways Plan provides a framework for municipalities to coordinate and collaborate on greenway implementation.*
- **Providing people with safe and reliable transportation choices.** *The Cuyahoga Greenways Plan adopts an all ages and all abilities approach to non-motorized facility planning.*

NOACA provides oversight and ensures alignment and coordination between this project and other TLCI projects.

EASTSIDE GREENWAY PLAN

The impetus for the Cuyahoga Greenways Plan came out of a prior TLCI study called the Eastside Greenway Plan, which examined potential greenway and urban trail opportunities throughout communities on the eastern part of Cuyahoga County. During that process, many partners and participants noted an opportunity to expand the planning effort to the entire county and create such a plan for all 59 municipalities. The Cuyahoga Greenways Plan built on the recommendations and lessons learned during the Eastside Greenways process.

CUYAHOGA GREENWAY PARTNERS

Running parallel to the Eastside Greenways process was the formation of the Cuyahoga Greenway Partners (CGP) organization. The CGP is a collaborative featuring key executives and staff from agencies and organizations across the county. Each partner brings vested interests in trails, bicycle and pedestrian infrastructure, and transportation planning, and has been tasked with helping to collect and manage trail data across the county and align project opportunities with resources for funding. The organization hosts workshops and conferences within the region, while also acting as a common voice for greenway and trail advocacy, communications, and messaging.

1.2 GREENWAY & URBAN TRAIL BASICS

WHAT IS A GREENWAY OR URBAN TRAIL?

Greenways are most commonly understood as long, linear, dedicated open spaces that include a mixture of natural land areas, open spaces and typically include trails. Trails can take a number of forms, from paved shared-use or all-purpose trails for use by pedestrians and cyclists, to dirt trails or bridle trails. Typically, greenways are separated from streets and other public rights-of-way.

Urban Trails are typically paved, all-purpose trails situated within more built up and developed areas and may have less greenspace or natural area associated with the trail. Urban Trails can take on several forms, from sidepaths (i.e. wide sidewalks next to roadways) to separated and/or protected bicycle lanes, or to off-street pathways that connect through public or private property.

While this project is labeled Cuyahoga Greenways, it examines opportunities for both greenways and urban trails. Additionally, while the preference is always for separated trails and off-street greenways, where there is not sufficient right-of-way space or property access more conventional bike lanes or bike routes may be required in a limited context to provide important network connections.

WHAT ARE THE BENEFITS OF GREENWAYS/TRAILS?

As a tool for improving mobility and the environment, greenways and urban trails can provide a wide range of benefits - particularly when designed for all ages and abilities. Benefits include:

- Increased mobility and transportation options. Connects residents to jobs, commercial areas, institutions, and other destinations.
- Improved community health through active living. Creates attractive, safe and accessible places to walk, bicycle, hike, run, and more.
- Generates economic activity. Adds to property value, attract, businesses and residents, and contributes to tourism.
- Provides environmental benefits. Manages stormwater, protects and restores habitat, and improves air and water quality.
- Enhanced cultural awareness and community identity. Connects to local heritage, interpretive opportunities, and community recreation.



Image Credit: Cleveland Metroparks

1.3 DESIGN APPROACHES



SAFETY FIRST, FOR ALL USERS

Designing trails, bicycle facilities, and pedestrian amenities for safety first will create accessible and welcoming infrastructure for non-motorized users. Key to encouraging greater bicycling rates is understanding the diverse types of bicycle riders that exist in a community and how their level of comfort and sense of safety can be prioritized in the design of bicycle infrastructure.

A national survey of people living in the 50 largest metropolitan areas in the U.S. (see diagram on next page) found, for example, that only 5% of an area's population are "enthused and confident," meaning they are comfortable biking on non-residential (commercial) streets when bike lanes are present. Similarly, the survey found that 51% of the population is "interested but concerned" - they might be willing to bike on separated trails or protected bike lanes if such facilities exist, while 37% are unwilling, unable, or uncomfortable biking anywhere.

One of the planning and engineering tools available for addressing different types of bicycle riders is Level of Traffic Stress (LTS). LTS considers a range of factors for biking within a roadway to determine how "stressful" the riding experience is. Factors include the speed and volume of vehicle traffic, the number of travel lanes, the size and complexity of intersections, and the types

of bicycle facilities provided. LTS 4 roads are considered the most stressful, while LTS 1 are the least.

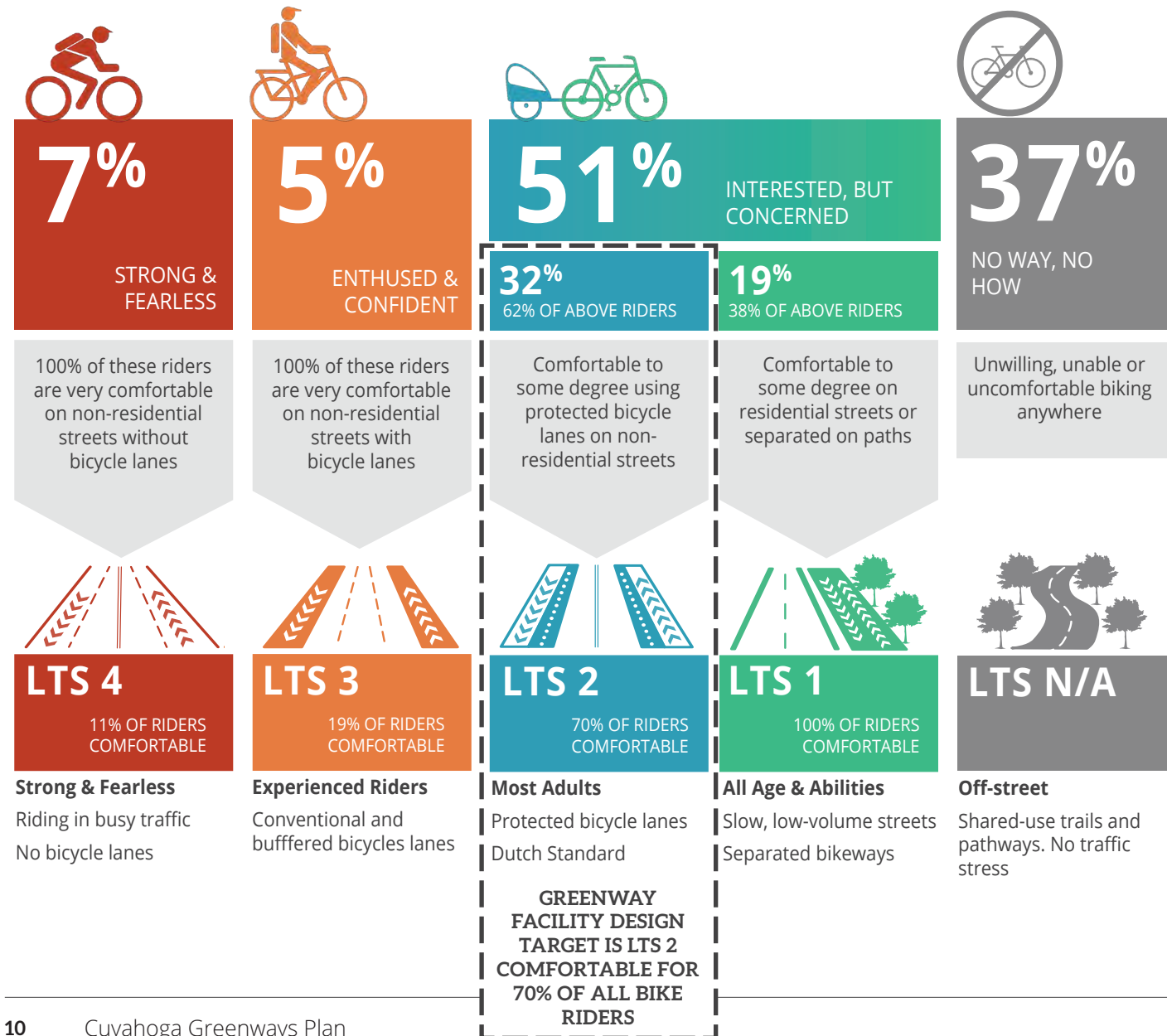
LTS can be linked to the types of bike riders (from the survey) to better understand what types of riders are likely to be comfortable biking on which roadways. This in turn can inform what facilities to create that would make a road more comfortable for a broader range of users. For example, LTS 3 corresponds to conventional bike lanes on major roadways, which only appeals to "strong and fearless" and/or "enthused and confident" riders (only 19% of the bike riding population). If protected bike lanes (typically LTS 2) can be supplied instead, then most adults (70% of the bike riding population) would have some level of comfort using them.

As proposed projects move into the implementation phase, it is important to design with an LTS approach. For the Cuyahoga Greenways Plan, LTS 1 and 2 facilities should be the target for all projects, but especially Critical Gap and Regional Link projects. The typical designs and cross-sections discussed in the following pages indicate what LTS level certain types of facilities can be designed to, as well as design considerations for where those facilities are most appropriate.

Figure 1.3a - Realizing All Ages & Abilities Survey

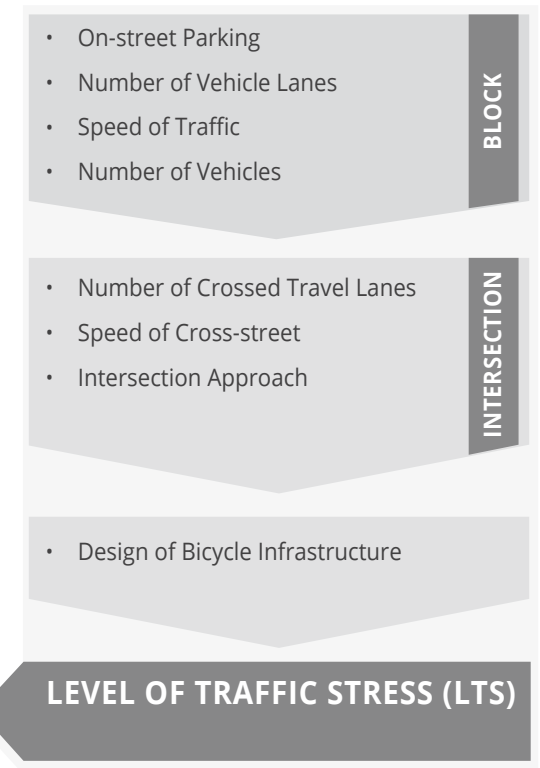
REALIZING ALL AGES & ABILITIES

Linking types of bicycle riders to level of traffic stress and facility design



BIKE RIDER TYPES AND TRAFFIC STRESS

The diagram on this page shows the relationship between the types of bicycle riders and how their stress tolerance relates to Level of Traffic Stress (LTS) and the types of bicycle infrastructure that feels comfortable for those riders.



Source: (2016) Dill J. and McNeil N., *Revisiting the Four Types of Cyclists: Findings from a National Survey*, Journal of the Transportation Research Board.

TYPICAL DESIGNS

The following section describes typical design approaches for greenways and urban trails. While many of these treatments emphasize bicycle facilities (e.g. bike lanes), it is important to acknowledge that pedestrians can be accommodated in a variety of settings as well.

Within street rights-of-way, pedestrians typically use sidewalks while cyclists travel on dedicated bicycle facilities. Outside rights-of-way, shared-use paths are typically used to accommodate both bicycle and pedestrian movements. AASHTO, NACTO, and FHWA provide more detailed guidance documentation for the design, engineering, operations, and maintenance of non-motorized facilities.

TYPICAL CROSS-SECTIONS FOR ON-STREET ROUTES

- Protected bikeway (one-way or two-way)
- Raised bikeway (one-way or two-way)
- Midway (median) cycle track
- Buffered bicycle lanes
- Standard bicycle lanes
- Sidepaths
- Advisory bicycle lanes
- Bicycle boulevard streets

To the extent possible, project designs should maximize the amount of space given over to pedestrian and bicycle movement along greenway and urban trail routes. While minimum dimensions can be used, provided they meet applicable design guidance, achieving preferred widths (or wider) should be considered at the onset of potential projects.

OTHER DESIGN ELEMENTS

The overall network of greenways and urban trails should be distinct and recognizable, going above and beyond the typical bicycle facility or sidewalk treatment. Other elements that should be incorporated into the design of greenway projects include:

- Site amenities such as benches, waste receptacles, information kiosks
- Unified signage and wayfinding to connect individually named trails into the overall network
- Trail heads and points of access for off-street routes
- Special paving or other aesthetically pleasing elements
- Additional landscaping such as street trees, native plantings, and stormwater management facilities (bioswales, rain gardens, etc.)
- Pedestrian-scaled lighting
- Habitat creation, restoration, or enhancement.



Image Credit: Cleveland Metroparks

PROTECTED BIKEWAY (ONE-WAY OR TWO-WAY)

Definition

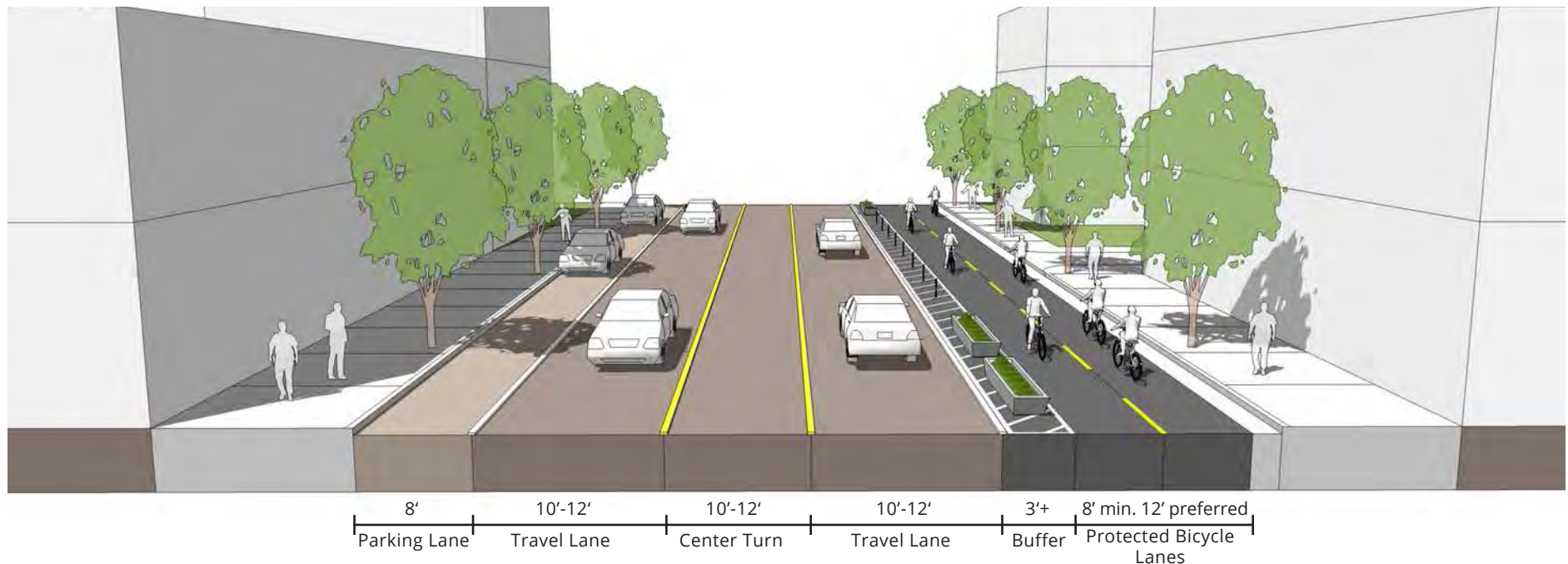
Bikeways may be one-way or two-way, and may be at street level, at sidewalk level, or at an intermediate level. If at sidewalk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the bikeway from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking, or bollards. By separating cyclists from motor traffic, cycle tracks can offer a higher level of security than traditional bicycle lanes and are attractive to a wider spectrum of the public.

Design Considerations

- May be vertically separated from street or immediate sidewalk.
- Must be protected from adjacent travel lane.
- Desirable two-way cycle track width is 12 feet.
- Minimum two-way cycle track width is 8 feet in constrained locations.
- Buffer width of 3 feet or more preferred.

Typical Level of Traffic Stress (LTS):

- LTS 1 or 2



RAISED BIKEWAY (ONE-WAY OR TWO-WAY)

Definition

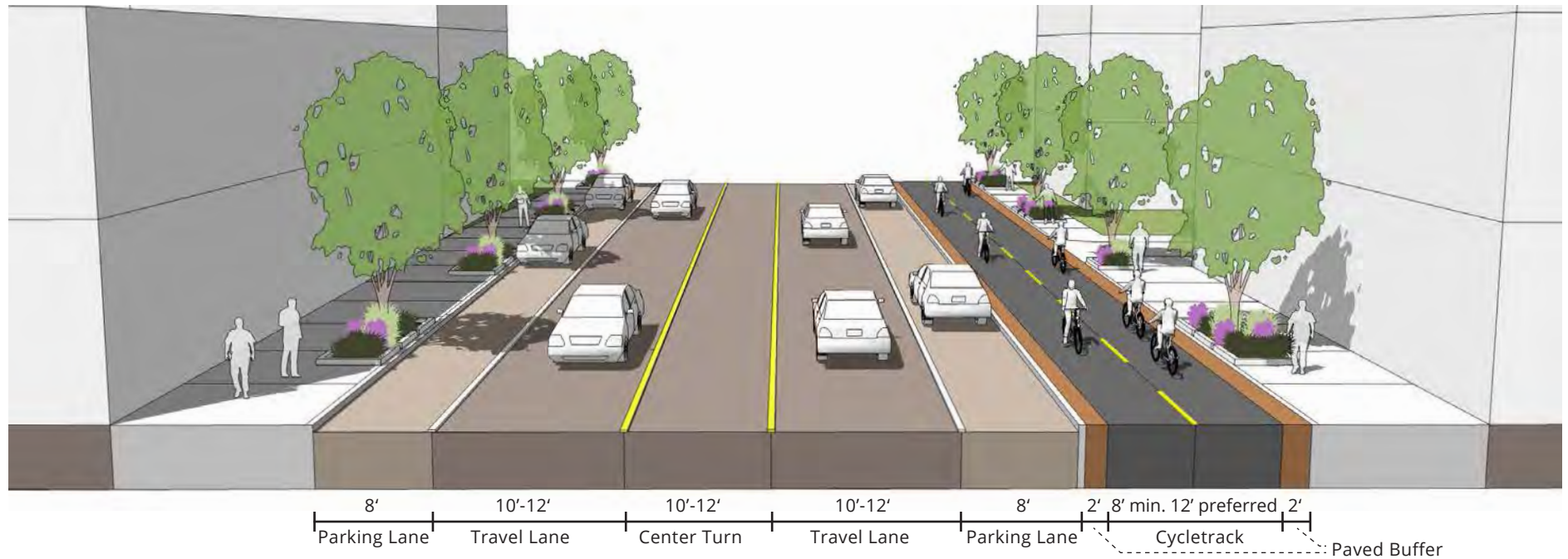
Raised bikeways may be one-way or two-way. These facilities are separated from the vehicular roadway by a standard curb. Clear zones of 2 feet on each side provide adequate clearance on the edge of the bikeway. Often a lane of parked cars (as shown below) can help provide further separation and protection for the bikeway users.

Design Considerations

- Desirable two-way cycle track width is 12 feet.
- Minimum two-way cycle track width is 8 feet in constrained locations..

Typical Level of Traffic Stress (LTS):

- LTS 1 or 2



MIDWAY (MEDIAN) CYCLE TRACK

Definition

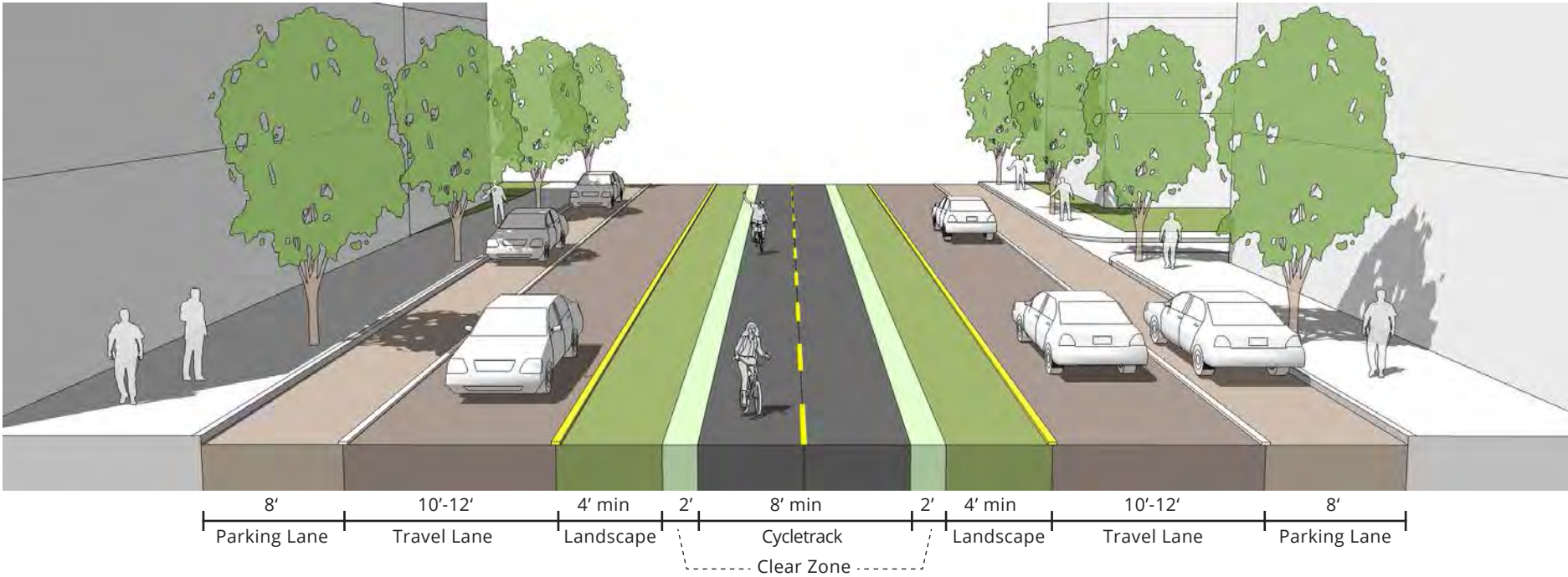
A midway cycle track is a two-way bicycle facility that runs down the middle of a roadway, separated from vehicle travel lanes with a buffered area on each side. Intersections are controlled by traffic signals, typically with dedicated bicycle signals.

Design Considerations

- 16 feet for midway cycle track, which includes bicycle facility plus buffers.

Typical Level of Traffic Stress (LTS):

- LTS 2



BUFFERED BICYCLE LANES

Definition

Buffered bicycle lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent vehicular travel lane and/or parking lane.

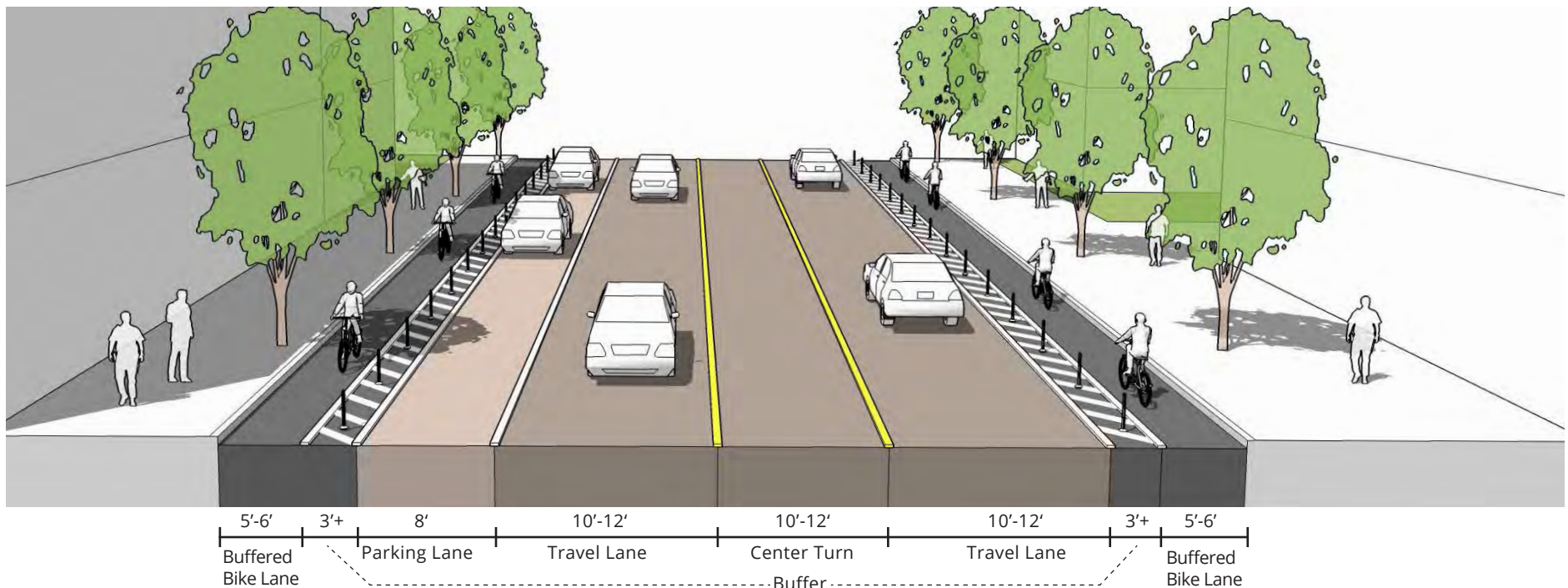
Buffered lanes provide organized space for cycling and are often part of street reconfiguration projects that improve safety and comfort for all users. Buffered bicycle lanes are always higher comfort than conventional bicycle lanes.

Design Considerations

- Desired minimum width of 5 to 7 feet for the bicycle lane.
- Buffers should be at least 3 feet wide.

Typical Level of Traffic Stress (LTS):

- LTS 2 or LTS 3 depending on traffic speeds and volumes and intersection designs.



STANDARD BICYCLE LANES

Definition

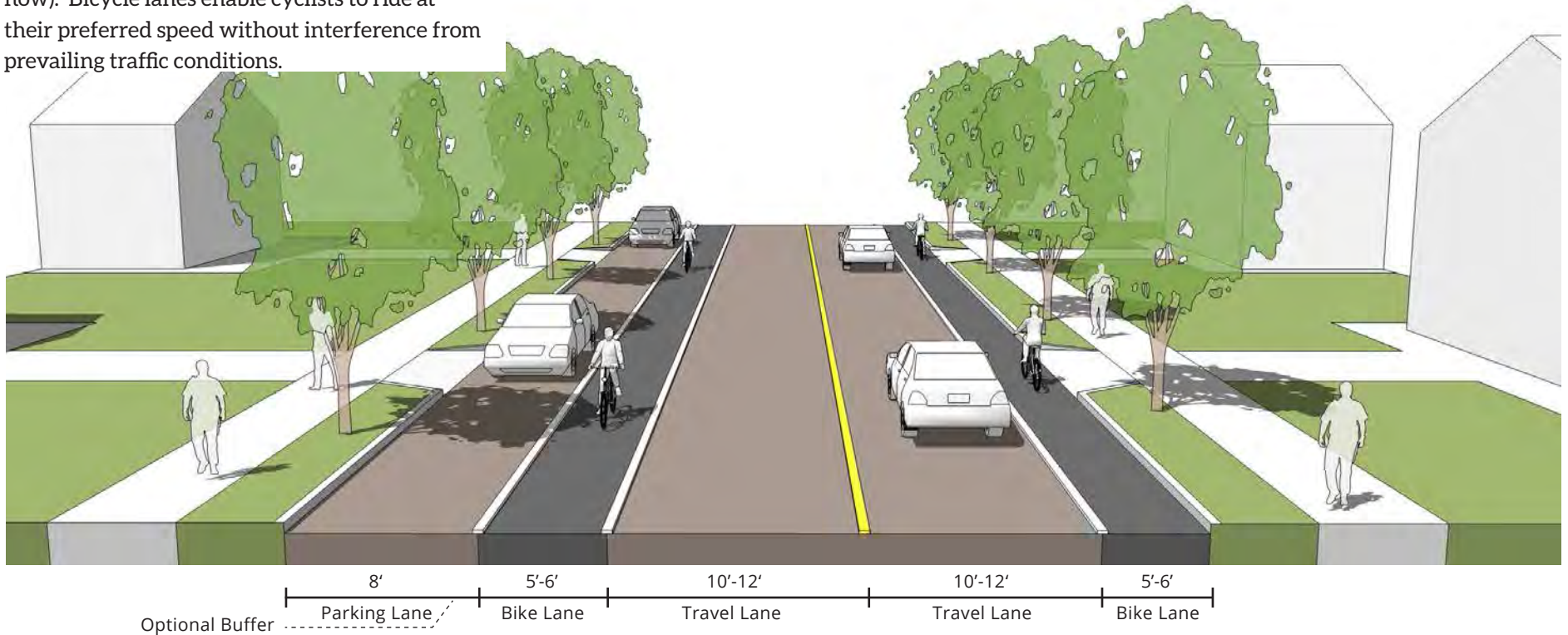
Bicycle lanes appoint an exclusive space for bicyclists using pavement markings and signage. The bicycle lane is found adjacent to motor vehicle travel lanes and flows in the same direction as motor vehicle traffic. Bicycle lanes are typically on the right-hand side of the street, between the adjacent travel lane and curb, road edge, or parking lane. This facility type may be found on the left side when installed on one-way streets or buffered if space allows (See contra-flow bicycle lanes for a discussion of alternate direction flow). Bicycle lanes enable cyclists to ride at their preferred speed without interference from prevailing traffic conditions.

Design Considerations

- Desirable bicycle lane 6 feet (National Association of City Transportation Officials (NACTO)). Recommended width 5 feet (American Association of State Highway and Transportation Officials (AASHTO) 1999 Guide for Development of Bicycle Facilities).
- Desirable minimum ridable surface adjacent to street edge is 4 feet.

Typical Level of Traffic Stress (LTS):

- LTS 3



SIDEPATHS

Definition

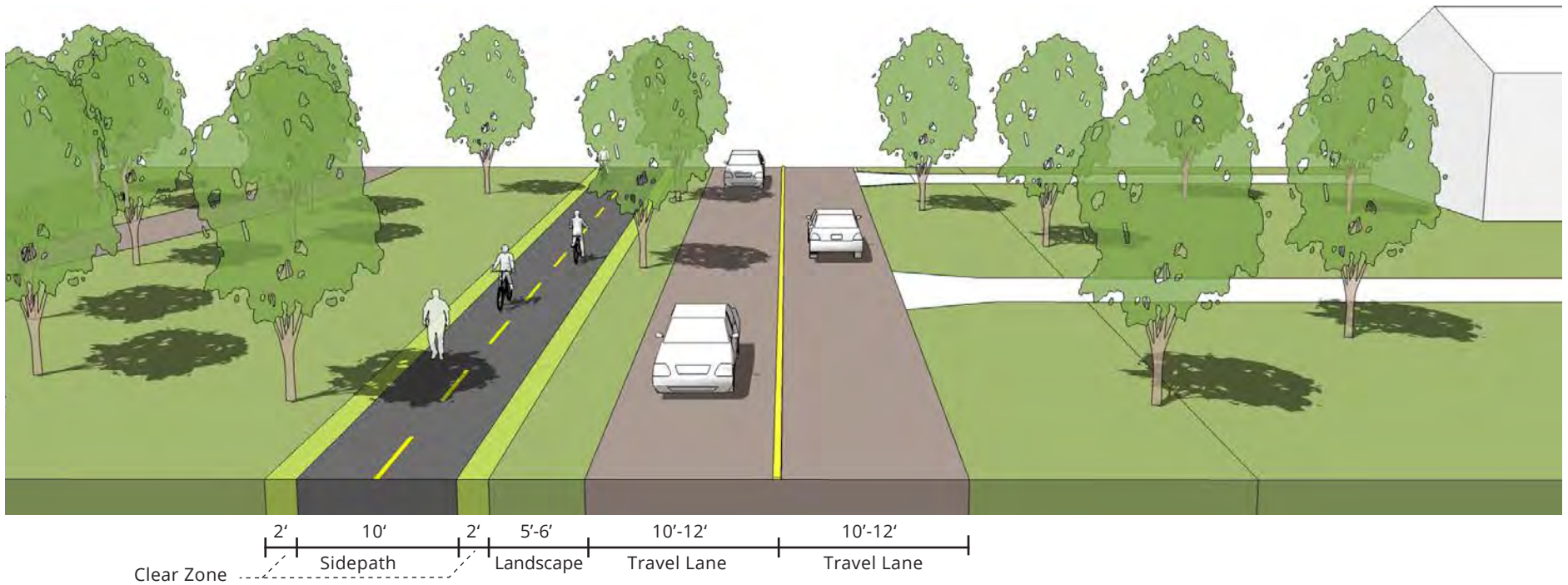
A sidepath is a path next to a road that is wider than a typical sidewalk and is designated for use by both pedestrians and bike riders. Where there is room next to existing sidewalks, they can be expanded into sidepaths to provide separated and safer non-motorized facilities.

Design Considerations

- 10 foot minimum with 2 feet clear on either side of the path.
- 12 feet or more is a preferred width for locations with higher volumes of bicycle and pedestrian traffic.

Typical Level of Traffic Stress (LTS):

- LTS 1



ADVISORY BICYCLE LANES

Definition

A roadway with advisory bicycles lane is a special configuration of lane striping that uses a shared center travel lane for two-way vehicle traffic and a dashed “advisory” bicycle lane on both sides of the center vehicle lane. Cars approaching one another in the shared central lane can shift into the advisory bike lanes to pass only other after yielding to any bike riders, continuing travel down center lane once complete.

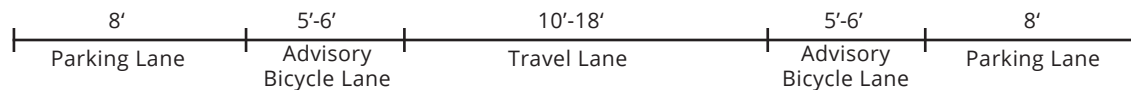
Advisory bicycle lanes are more appropriate for lower traffic volume streets in a residential context, but depending on the center lane width, they may be viable on other streets as well.

Design Considerations

- Center lane widths typically range from 10 feet to 18 feet. The higher the traffic volumes, the wider the center lane should be.
- The advisory bicycle lanes should be 5 to 6 feet wide and may be wider to include a buffer when next to parked cars.

Typical Level of Traffic Stress (LTS):

- LTS 2 or 3 depending on vehicle speeds and traffic volume.



BICYCLE BOULEVARD STREETS

Definition

Bicycle boulevards are streets with low motorized traffic volumes and speeds, designed to give bicycle travel priority. Bicycle boulevards use highly visible signs, pavement markings, reduced speed, and volume management measures to discourage through trips by motor vehicles to create safe and convenient bicycle environments for riders. Appropriate treatments depend on several factors including traffic volumes, vehicle and bicycle circulation patterns, street connectivity, street width, physical constraints, and other parameters.

Design Considerations

- Varies

Typical Level of Traffic Stress (LTS):

- LTS 2



1.4 MAKING SPACE FOR GREENWAYS

Fitting new greenways and urban trails into the existing fabric of developed urban and even rural environments can be challenging. Public street rights-of-way often face many competing demands for their space - vehicular travel lanes, transit service, commercial activities, parking, public gathering space, and more. Finding the room for non-motorized infrastructure, particularly separated and protected facilities for biking, can be a challenge.

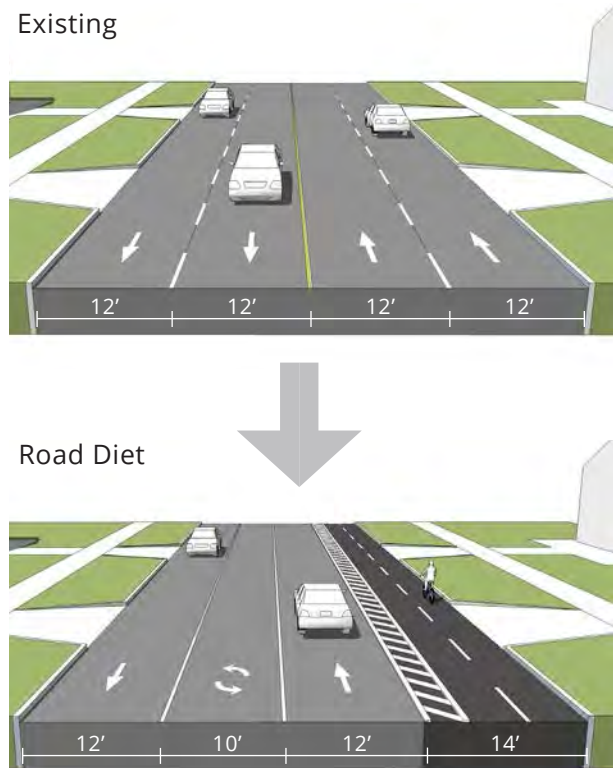
STRATEGIES WITHIN RIGHTS-OF-WAY

Utilizing rights-of-way for greenways and urban trails, where feasible, provides the advantage of using publicly owned land to accommodate trails, either within the existing roadway, reconfiguring the roadway, or placing it adjacent to the road outside curb. There is also the advantage of being able to implement projects in coordination with other improvements to the corridor that can improve safety, access, and aesthetics for all roadway users.

However, integrating greenways and non-motorized facilities into rights-of-way often requires trade-offs between different modes of travel or uses. The following pages show examples of how these transformations can be done.

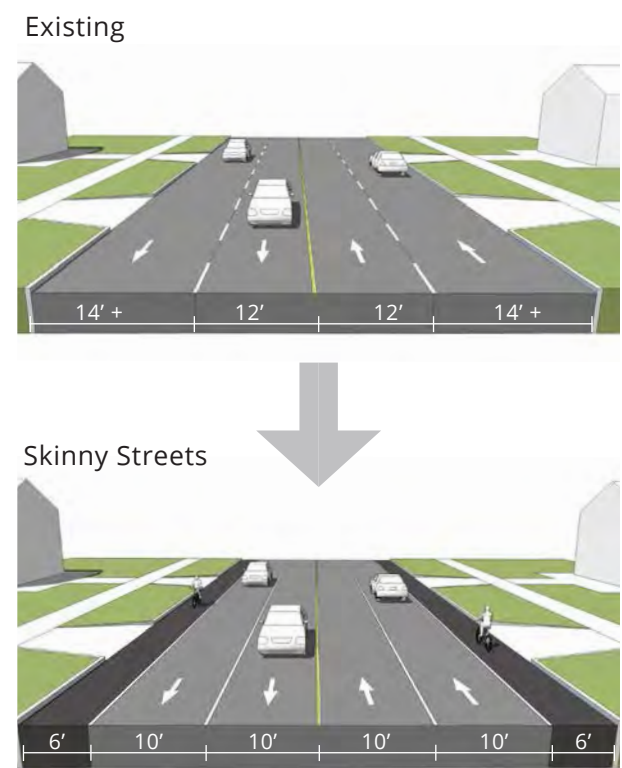
ROAD DIETS

Road diets typically include reducing the number of travel lanes (e.g. a four-lane road to a three-lane road) in order to create space for non-motorized facilities. Often, four-lane to three-lane road diets are feasible where traffic volumes are below 15,000 Annual Average Daily Traffic (AADT).



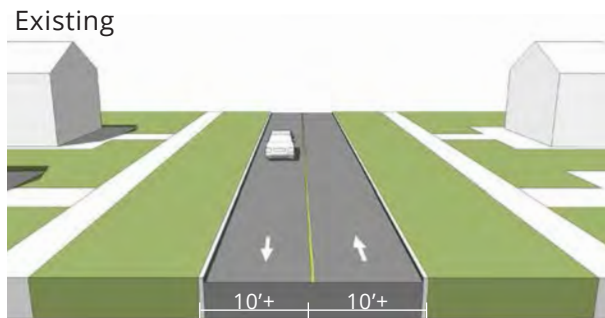
SKINNY STREETS

In some cases, vehicle travel lanes may be much wider than necessary, particularly for multi-lane roads with wide outside lanes. Reducing lanes to 10 or 11 feet in width can help slow vehicle speeds and reduce crash severity, while creating space for bicycle lanes within the roadway.

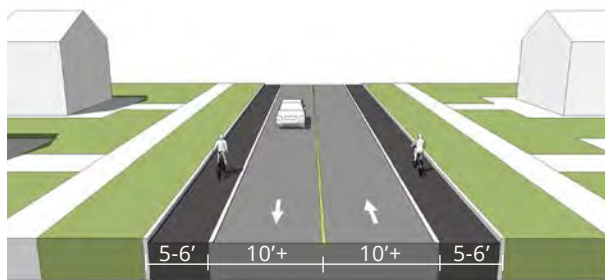


WIDEN SHOULDER

Many roads, particularly in more suburban or rural contexts, have ample room next to vehicle lanes where shoulders can be widened to accommodate better bicycle facilities. In some cases, this may require new pipes, culverts, and/or the modification of drainage ditches.

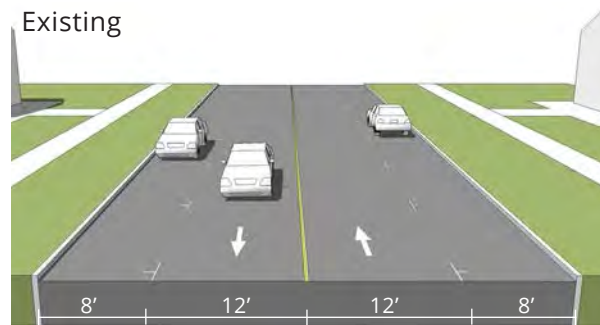


Widen Shoulders

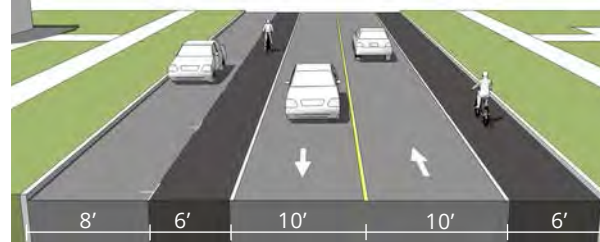


REMOVE ON-STREET PARKING

On-street parking is important for many commercial areas, but often there is more on-street parking than necessary with parking use rates that remain relatively low. Parking can often be removed from one side of the road, in conjunction with shrinking lane widths, to create new space for bicycle facilities.

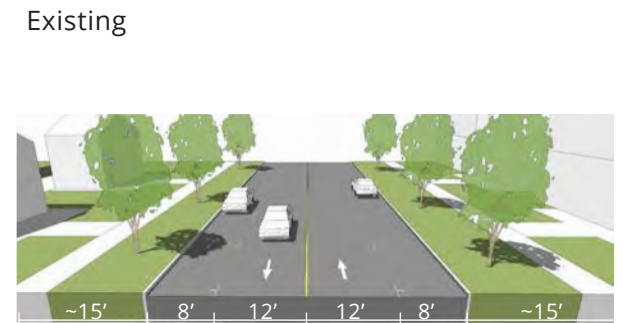


Remove On-street Parking

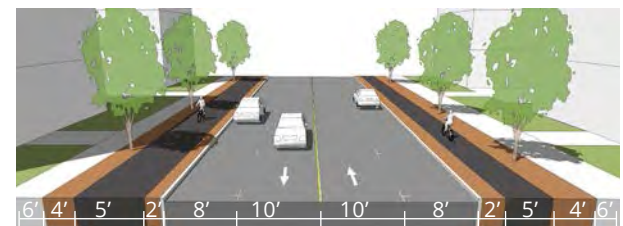


RECONSTRUCT STREETScape

In many locations, particularly more urbanized areas, there can be opportunities to reconstruct the sidewalk/streetscape zone, particularly when widths are 15 feet or more. Raised or Protected Bicycle lanes can then be built at the sidewalk level.



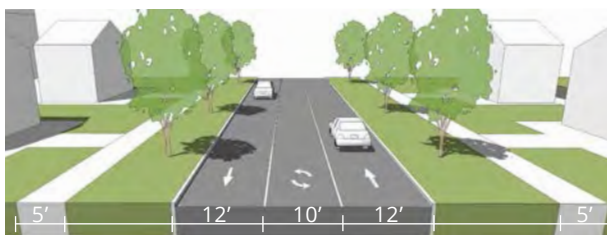
Reconstruct Streetscape



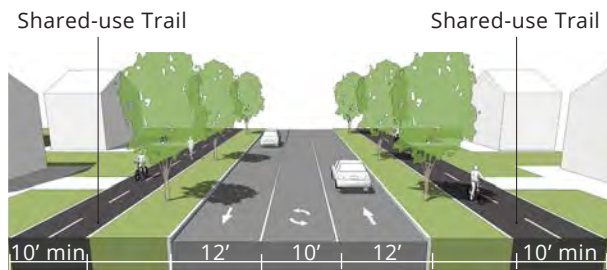
WIDEN SIDEWALKS INTO SIDEPATHS

Often, the landscape zone between the road curb and sidewalk may be wide, particularly in urban and/or rural contexts. This affords the opportunity to expand sidewalks on one or both sides of the road into multi-use sidepaths that can accommodate both pedestrian and bicycle travel.

Existing



Widen Sidewalks into Sidepath



OUTSIDE RIGHTS-OF-WAY

Areas outside the public right-of-way, on either private or publicly owned parcels, can also create opportunities for greenway and urban trail construction. These locations afford some of the best opportunities for implementing significant greenway projects that can incorporate landscaping and open space enhancements alongside a new non-motorized facility. Several approaches can be used to help achieve the desired affect.

ZONING CHANGES

One approach, particularly in built-up urban areas, is to adjust the front setback regulations for development to require a minimum distance from the street curb that is sufficient to accommodate greenways and urban trails. Typically, 20 to 24 feet can provide room for sidewalks, protected bicycle lanes, landscape, and other streetscape amenities and still maintain good urban form.

EASEMENTS ON PRIVATE PROPERTY

Easements on private, public, or institutional/civic properties can be pursued and set up to create corridors for greenways through adjacent parcels. Utility corridors (e.g. power lines) can provide good opportunities for pursuing easements due to their length and continuity. Often paved trails can double as service roads for utility operators.

PRIVATE CONSTRUCTION

Trails and greenways can also be constructed on private property as part of new development or in conjunction with a new development proposal. Several examples existing within the project area where a developer built a new trail or extended an existing trail system through their property. Having a dedicated plan, vision, and support from local leadership and the community can help establish the demand and benefits of adding these facilities.



Image Credit: University Circle Inc.

1.5 PLANNING PROCESS

OVERALL PROCESS

The overall process for the Cuyahoga Greenways Plan consisted of five phases, beginning in June 2017. The five phases included:

- **Project Initiation & Visioning:** Project Teams and Steering Committees were formed to aide in the advancement of brand development, project visioning, and goal setting. Multiple meetings were held to develop a shared understanding within the Project Team about how to guide the process forward.
- **Current Conditions Analysis & Data Gathering:** The Core Team explored a range of data sets and past reports including inventories of the existing trail system across the county. Stakeholders helped identify gaps in records of existing and planned trails.
- **Shaping the Vision:** Project participants helped develop a shared long-term vision for what the greenway system might look like. This included assembling a map of potential “candidate routes” that could be part of a long-term greenway plan.
- **Concept Development & Decision-Making:** The extensive set of candidate routes were refined through a series of analyses and feedback sessions into a series actionable projects.
- **Plan Documentation & Storymap:** This plan document and the online Storymap feature were developed.

EACH PHASE OF THE PROJECT INCLUDED MULTIPLE ROUNDS OF MEETINGS WITH THE KEY PROJECT PARTNERS, INCLUDING A CORE TEAM, A LARGE PROJECT TEAM, TECHNICAL TEAM, STEERING COMMITTEE, AND PUBLIC WORKSHOPS.



WHO WAS INVOLVED?

Multiple entities were engaged throughout the planning process to supply a broad range of technical knowledge and local expertise. Chapter 3 provides additional details about how each of group of stakeholders below were integrated into the decision-making process. Typically, each group had an opportunity to review and refine data that was feeding the planning process, identify current and future opportunities, inspect the route evaluation process, and assist with selecting priority projects.

CORE TEAM

The Core Team was the group responsible for the day-to-day activities of facilitating public engagement, performing analysis, drafting recommendations, and assembling planning documents. This group consisted of:

- Cuyahoga County Planning Commission
- Cleveland Metroparks
- Northeast Ohio Areawide Coordinating Agency (NOACA)
- Consultants: SmithGroup, WSP, & Guide Studio

PROJECT TEAM

The Project Team included the lead project partners, as well as representatives from other agencies and organizations with responsibility, oversight, or input into the design, implementation, and operation of greenways and urban trails. Examples of Project Team members included: Bike Cleveland, West Creek Conservancy, Greater Cleveland Regional Transit Authority (GCRTA), the Northeast Ohio Regional Sewer District (NEORS), The Trust for Public Land (TPL), Cleveland Neighborhood Progress, and Cuyahoga Valley National Park. (See Appendix for a full list of Project Team members).

TECHNICAL TEAM

The Technical Team further expanded on the Project Team's knowledge, pulling in added partners and organizations to help ensure the planning process and recommendations were sound and effective. (See Appendix for a full list of Technical Team members).

STEERING COMMITTEE

Three separate Steering Committees were formed based on a western, central, and eastern split of communities across the county. The Steering Committees were comprised of mayors, planners, city engineers, and other designated municipal staff helping to recognize local community needs and preferences within the plan. Five rounds of Steering Committee meetings (11 meetings in total) were held over the course of the planning process.

In summary:

- 43 of 59 communities took part in Steering Committee meetings.
- 29 different regional and local organizations aided in the development of the Cuyahoga Greenways Plan.

PUBLIC ENGAGEMENT

A cornerstone of the process was a robust public engagement program. In total, over 20 communitywide events were held, with 10 of these meetings specifically dedicated to public comments and feedback, in person or through various online programs and surveys. Media support and corresponding articles both online in print helped drive public participation. Over 400 participants attended one or multiple public meetings and 5,000 individuals visited www.cuyahogagreenways.org to learn about the plan.

LOGO

Guide developed the Cuyahoga Greenways logo through an iterative design process with the Project Team. The logo represents a linking of nature (leaf pattern), with urban life (city grid), and the lake (blue). It illustrates the diversity of environments experienced in Cuyahoga County and the network of proposed greenways rather than just one solitary trail route.



Image Credit: Slavic Village Development Corporation

1.7 VISION & GOALS

VISION

Cuyahoga Greenways is an **interconnected system** of greenways and urban trails that tie in with public transportation and parks to offer **recreational opportunities** and options for getting around the county, elevating the **health of the community** and the **individuals who call it home.**

GOALS

With challenges, needs, opportunities, and vision established, the Cuyahoga Greenways team developed the following goals through an extensive participatory planning effort, and established the methodology that would eventually be used to evaluate and prioritize trail and greenway corridors throughout the county.



Be Accessible.
Build a Connected System

Collaborative mapping and GIS analysis to build a connected network



Be Bold.
Drive + Attract Economic Vitality

Connect to destinations - including job centers and commercial or cultural hotspots



Be Equitable.
Serve All Ages + Abilities

Focus on connecting to all communities
Advance implementation of low traffic stress facilities



Be Healthy.
Link People to Green Infrastructure

Better link all communities to parks and natural systems



Image Credit: Slavic Village Development Corporation

02.

current conditions



2.0 DATA GATHERING

OVERVIEW

Effective planning requires accurate, comprehensive, and vetted data in order to make informed and effective decisions. The data collection activities for the Cuyahoga Greenways project leveraged partnerships with multiple agencies and municipalities along with localized feedback and validation.

Expert input was provided through a Project Team of 29 local and regional agencies and organizations. Community engagement centered on community leader participation through the Steering Committee and public engagement through in-person meetings and online surveys.

Image Credit: University Circle Inc.



Image Credit: The Trust for Public Land



Image Credit: University Circle Inc.



TYPES OF DATA COLLECTED & METHODS

A range of data and information was collected over the course of the project, broadly falling into one of the following categories:

- **Past Studies:** This includes a review and consideration of prior planning work (community master plans, other TLCI projects, e.g. Eastside Greenway). The Core Team collected and reviewed prior planning studies.
- **Spatial/Mapped Data:** Geographic Information System (GIS) data is instrumental in conducting planning work, especially across large scales. A wide range of GIS data, including land use, natural resources, transportation, demographic, and economic data was compiled over the course of the project. Several key data layers are presented on the following pages. ArcGIS - the software platform used for displaying, analyzing, and mapping geographic data - was used extensively throughout this project.

- **Stakeholder Input:** Stakeholder input reflects expert and local knowledge from those familiar with the entire Northeast Ohio region and/or specific geographic areas within county boundaries. Information collected through interviews, Steering Committee meetings, surveys, and mapping exercises. Working collaboratively with stakeholders to map local project opportunities and/or barriers was instrumental in assembling a complete set of candidate routes for consideration.

This information was cataloged and analyzed to:

- Better understand the physical and socioeconomic context of the study area (Section 2.1 - Regional Context)
- Identify existing routes and potential new route opportunities (Section 3.1 - Candidate Route Identification)
- Understand community needs and preferences (Section 2.2 - Stakeholder Feedback)

2.1 REGIONAL CONTEXT

Figure 2.1a - Population Density Map

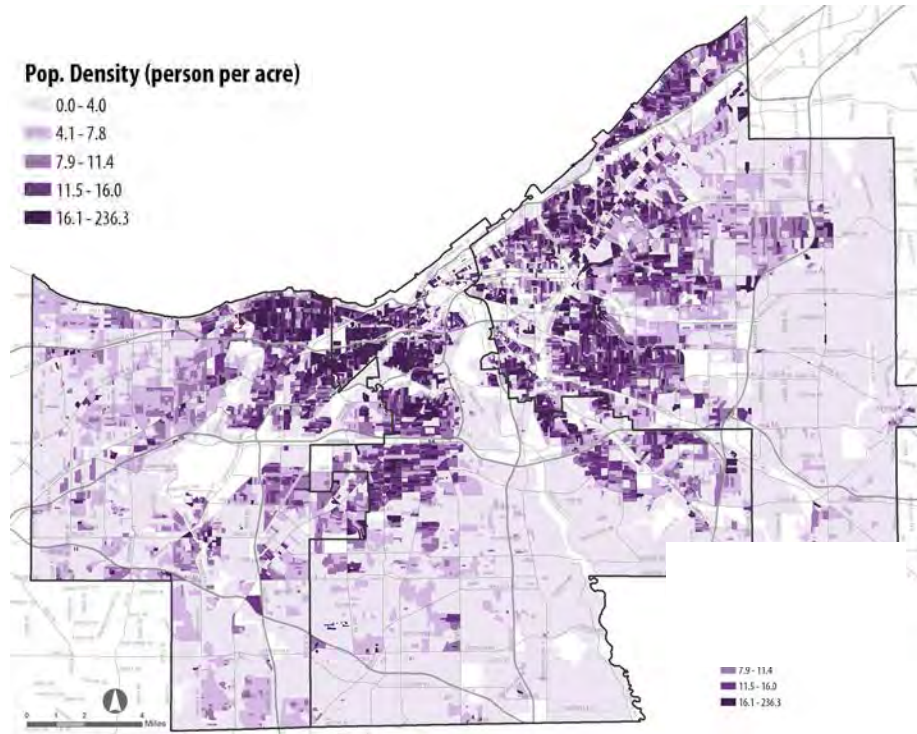
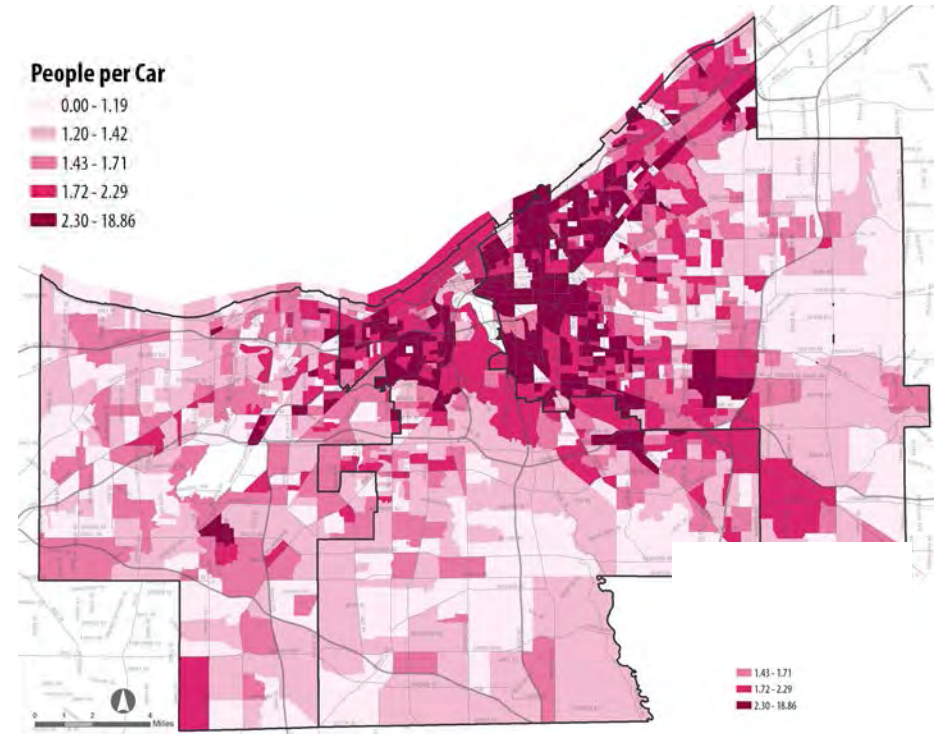


Figure 2.1b - Car Ownership Map



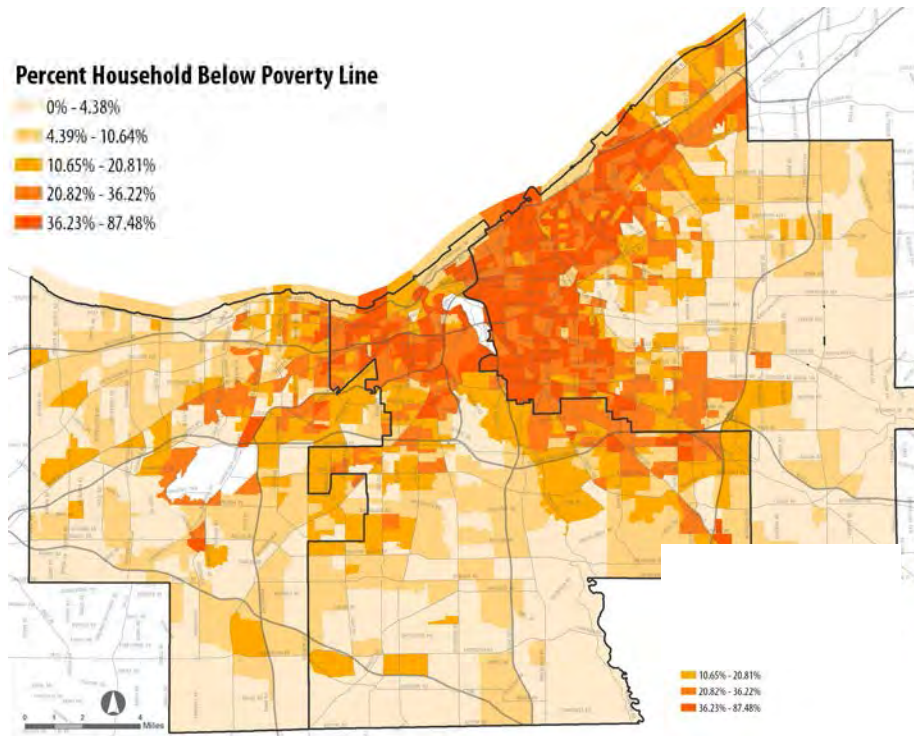
POPULATION DENSITY

Greenways can provide residents with access to recreation and open space. It is important to understand where the greatest concentrations of people are found, locations that showed the greatest need, and sites that could potentially supply the greatest benefits. Population density was mapped in terms of people per acre at the census block-level.

CAR OWNERSHIP RATE

Car ownership (or lack thereof) can be a good indicator of where populations may face transportation challenges. Many areas of Cleveland and East Cleveland have low rates of car ownership (i.e. higher numbers of people per vehicle). Greenways can help provide people with less access to cars with increased access to jobs, commercial centers, and services.

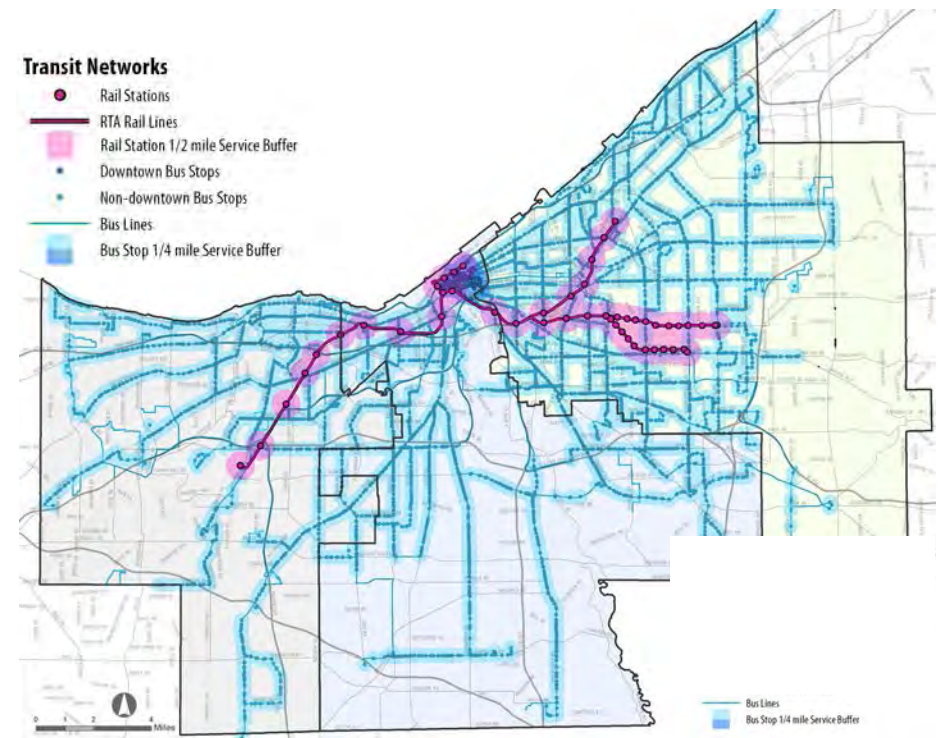
Figure 2.1c - Poverty Rate Map



POVERTY RATE

Households in poverty face disproportionate transportation challenges, such as less access to cars, longer commute times, and unsafe streets for walking and biking. Greenways and urban trails can provide alternative means of transportation for people and additional benefits to the community. This map depicts the percentage of households below the poverty line within a census block-group.

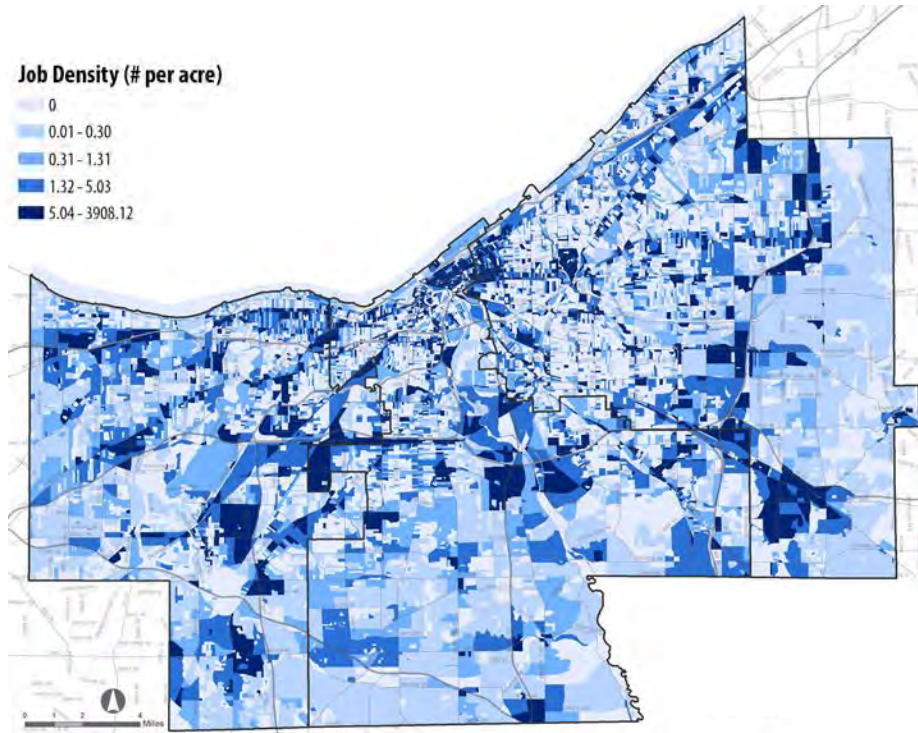
Figure 2.1d - Transit Infrastructure Map



TRANSIT INFRASTRUCTURE

Bus, bus rapid transit (BRT), light rail lines, and all corresponding stations, were mapped alongside near-term transportation projects to highlight opportunities where the proposed system of greenways can complement existing transit corridors and play a vital role in bridging the “first mile/last mile” gap between rider’s origins and destinations.

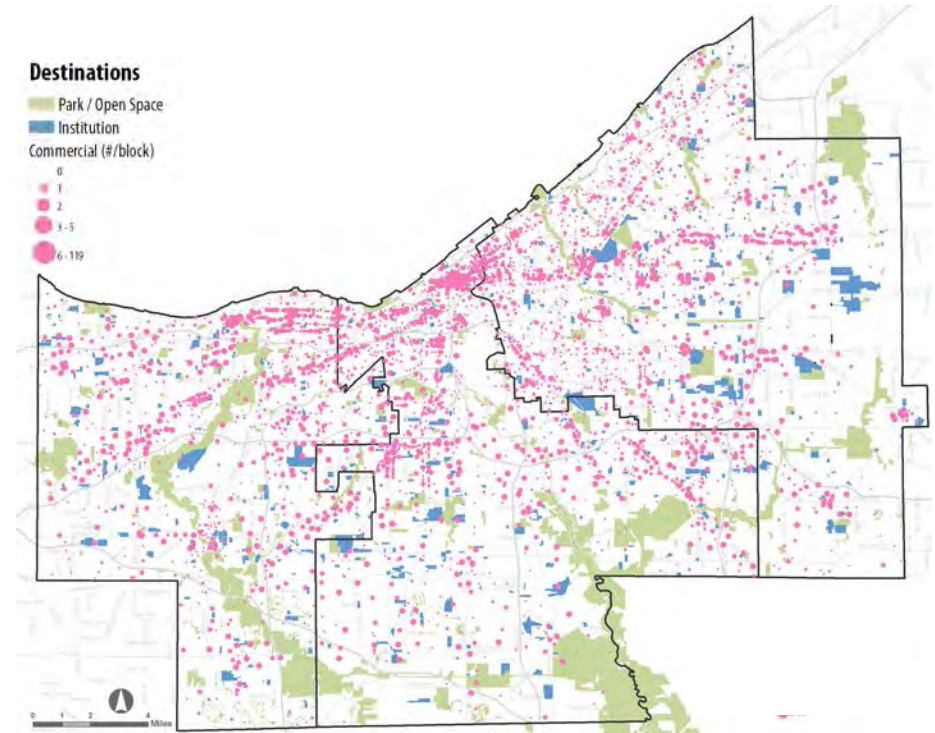
Figure 2.1e - Job Centers Map



JOB CENTERS

Mapping included density of jobs (jobs per acre) showing locations where potential greenway or urban trails would provide high job access benefits.

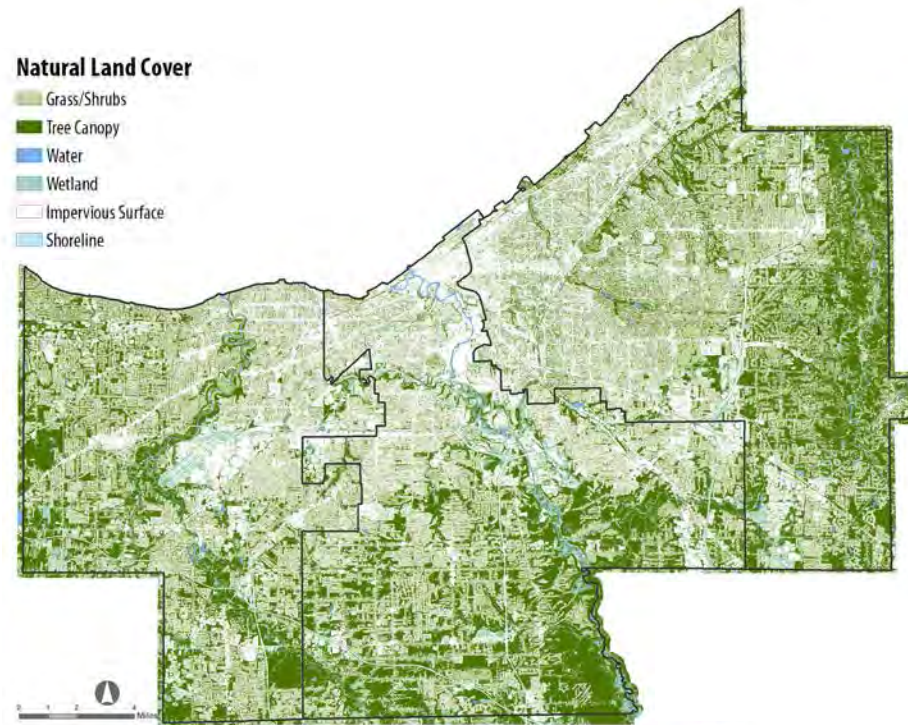
Figure 2.1f - Commercial & Civic Land Uses Map



COMMERCIAL & CIVIC LAND AREAS

This map complements the job center data and shows, at a finer scale, the land use patterns for “destination” oriented land uses, such as industrial and office uses (key job centers), public services, hospitals, government buildings, schools, universities, commercial retail, and entertainment.

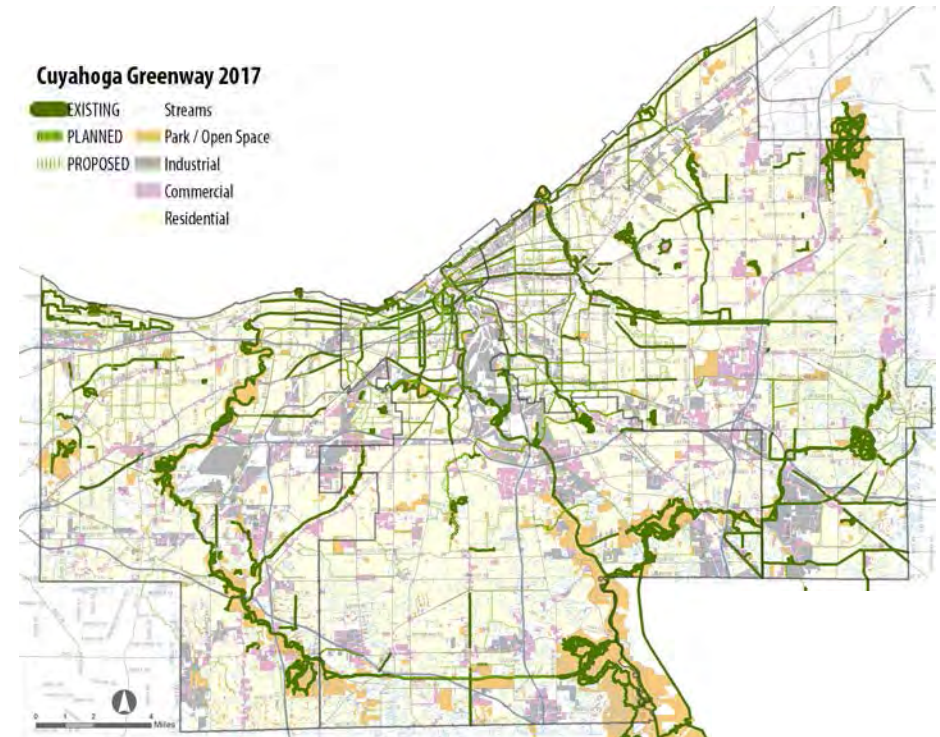
Figure 2.1g - Natural Systems Map



NATURAL SYSTEMS

This depicts an inventory of natural land cover that may be important for conservation. Existing water courses and riparian areas are significant natural features that greenways can align with to expand and preserve habitat.

Figure 2.1h - Existing Bikeways Map



EXISTING BIKEWAYS

Existing bikeways and non-motorized transportation facilities across the county were designated to help identify connections to new greenway routes.

2.2 STAKEHOLDER FEEDBACK

SURVEY KEY RESULTS & FINDINGS

Two questionnaire style surveys were issued over the course of the planning process.

The first survey generated nearly 1,200 responses and asked relevant questions about how often and for what purposes respondents walk and/or bicycle to destinations in their communities.

- Nearly 2/3 of respondents (63.6%) walk and/or bicycle at least once a week - although this is primarily for non-commuting reasons (e.g. exercise or accessing a recreational destination).
- The biggest concerns were related to safety, with a keen desire for separation between bicycle and vehicle traffic.
- Respondents recognized that greenways and urban trails can provide a broad range of benefits to the community - with an emphasis on benefits to community health and wellness and the ability to access natural areas and parks.

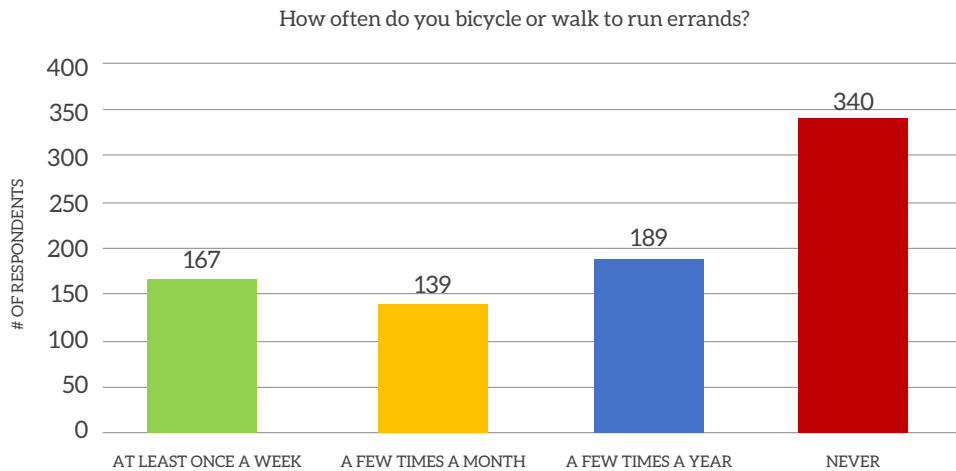
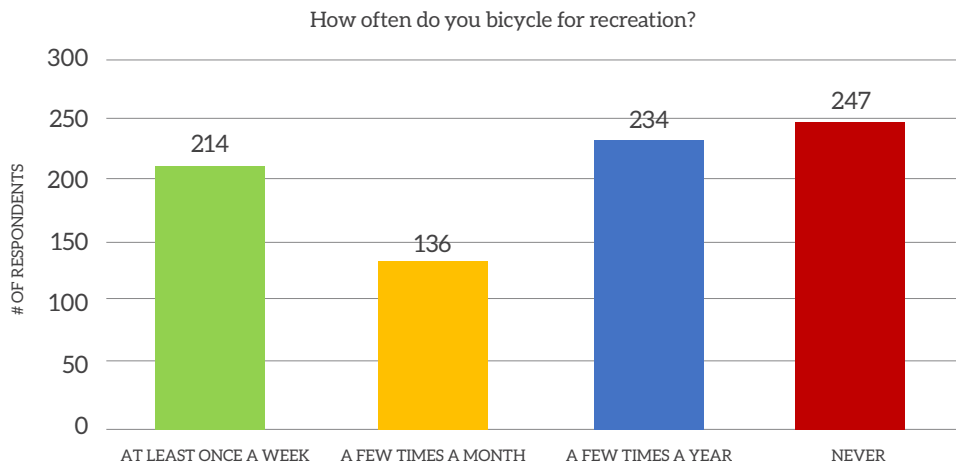
A second survey combined opinion questions with web-based mapping activities. Over 100 responses to the second survey were collected with over 2,200 map comments received (see page 37).

- The second survey also suggested a desire to see buffered and/or protected bicycle facilities.



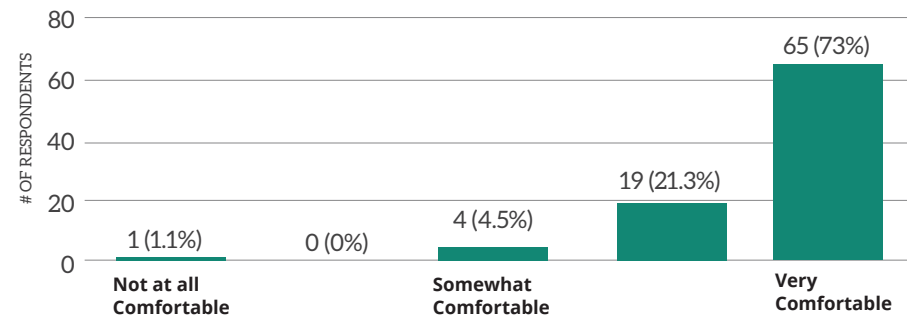
SELECTED RESULTS FROM SURVEY QUESTIONNAIRES

Two web-based surveys were issued and collectively received over 1,300 responses. Questions ranged from consideration of community values, project goals, and preferences for different types of non-motorized facilities. Full results are included in the appendix.



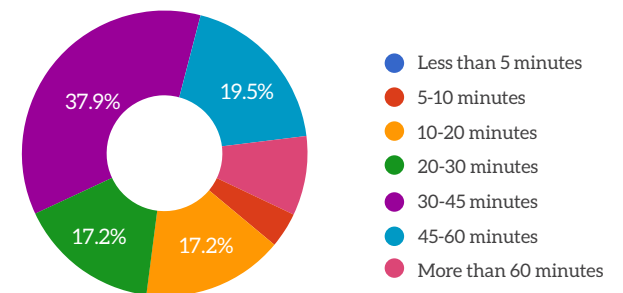
How comfortable are you using PROTECTED BIKE LANES (e.g. cycle tracks) on major streets?

89 responses



What is the longest bicycle trip (time-wise) you would be willing to accept for COMMUNTING to work or school?

87 responses

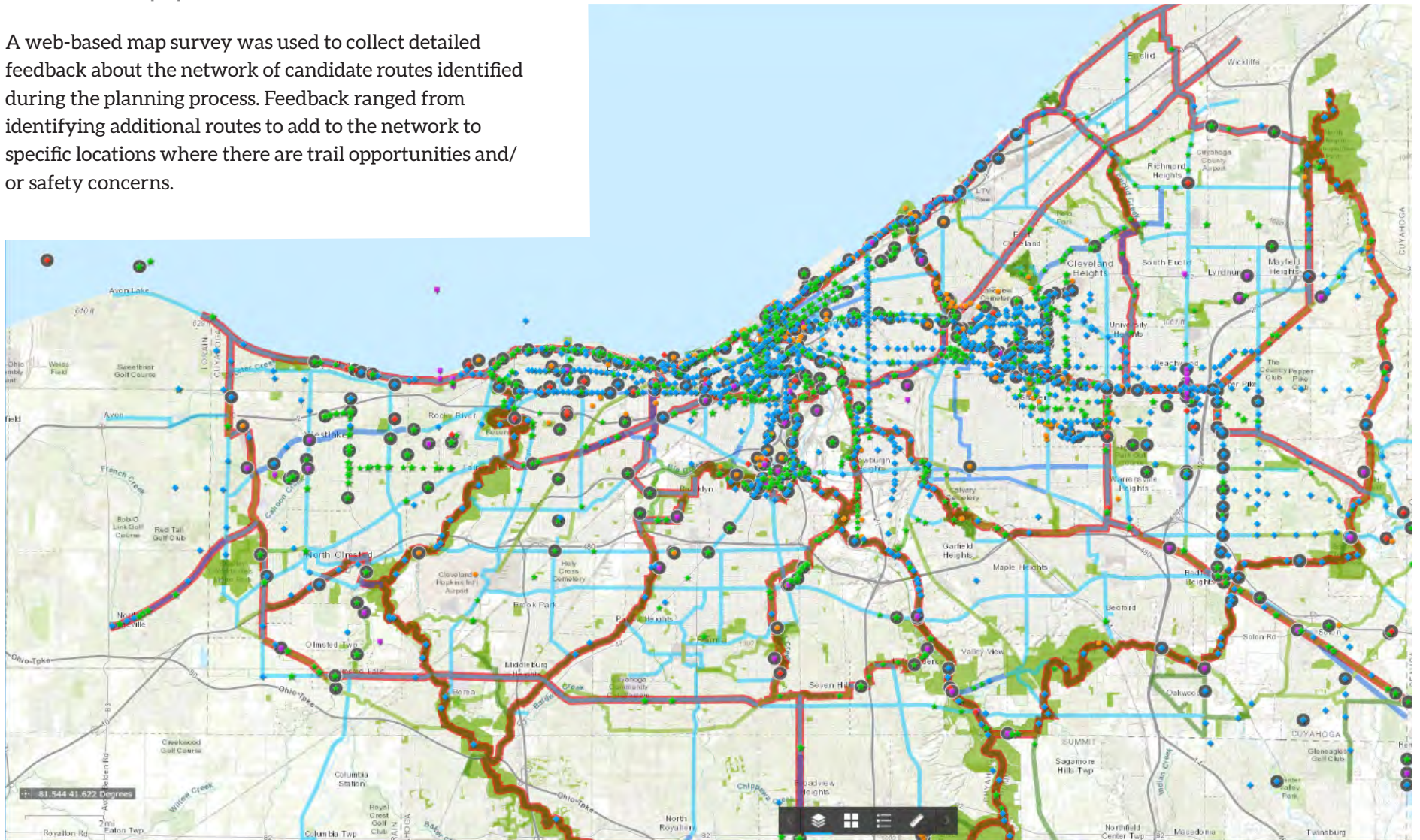


MAP SURVEY

2,200+ map points

A web-based map survey was used to collect detailed feedback about the network of candidate routes identified during the planning process. Feedback ranged from identifying additional routes to add to the network to specific locations where there are trail opportunities and/or safety concerns.

Figure 2.2a - Survey Results Map





STEERING COMMITTEE INPUT

Eleven Steering Committee meetings were held over the course of the planning process. These Steering Committee meetings were an instrumental part of the plan in order to engage local leaders and greenway champions in crafting a plan that would be grounded in reality, appropriate for the local jurisdiction, supported by local leadership, and suitable for implementation.

Steering Committee members helped provide the following types of input into the planning process:

- Identifying important community destinations and assets using web and print maps (job centers, cultural destinations, etc.);
- Identifying existing non-motorized proposed and planned facilities within their jurisdiction;
- Identifying new connections (candidate routes) and eventually prioritizing these connections;
- Guiding development of the evaluation criteria and using results from the analysis to help highlight routes that would meet community goals and needs; and
- Engaging leadership and potential greenway partners in their community and helping to advocate for project implementation.



Image Credit: Slavic Village Development Corporation

03.

plan development



3.0 DATA ENRICHED, COMMUNITY DRIVEN

DECISION-MAKING APPROACH

Developing a plan to guide greenway and urban trail implementation for decades to come is no small feat. Planning and designing a single greenway route can be a challenging endeavor - let alone planning an entire network of routes across diverse physical, jurisdictional, and socioeconomic conditions. In tackling complex planning challenges, it is paramount that the process used to make decisions be transparent, understandable, and defensible to the people involved in the process directly, as well as to the communities directly impacted by those decisions.

The decision-making process for Cuyahoga Greenways relied on technical Geographic Information System (GIS) analysis, expert input, and stakeholder and community engagement to make decisions that were grounded in reality, appropriate for the local context and environment, and ultimately supported by the community.

The approach to decision-making is described by the technical process, discussed on the subsequent pages.

TECHNICAL PLANNING PROCESS

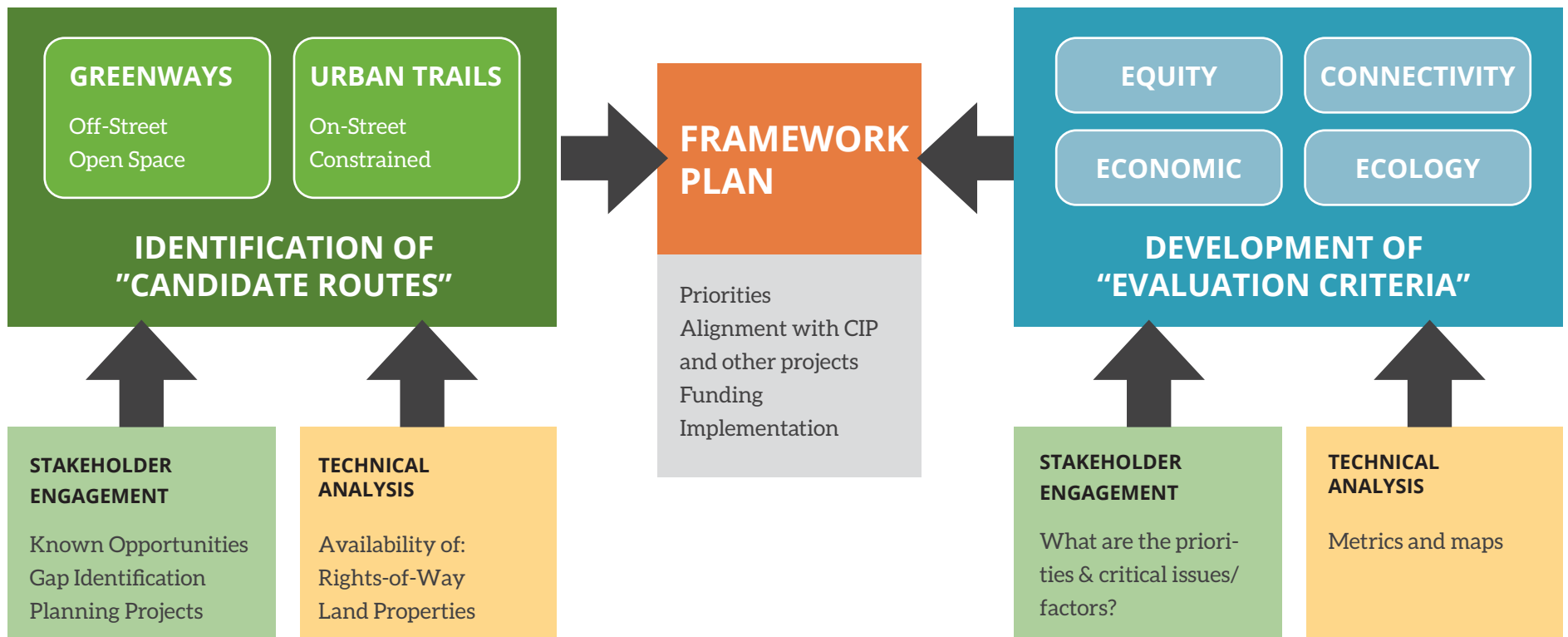
There were three main tasks that were performed over the course of the project:

- STEP 1: Candidate Route Identification and Hierarchy (Section 3.1)
- STEP 2 Route Evaluation (Section 3.2 - 3.5)
- STEP 3: Framework Plan and Project Prioritization (Section 4.0 - 4.1)



Figure 3.0a - Technical Planning Process

WHERE ARE THE OPPORTUNITIES?



STEP 1: CANDIDATE ROUTE IDENTIFICATION & HIERARCHY

An ongoing activity during the planning process was finding all potential candidate routes for inclusion in the greenway network. This process looked to find and emphasize opportunities for off-street routes as much as possible to help accommodate the broadest user base, while also recognizing that on-street routes and urban trails would be necessary in more constrained locations. Candidate routes were identified in multiple ways:

- Collection of municipal data for existing, planned, and proposed non-motorized facilities and routes across the county and adjacent jurisdictions. Data was compiled by NOACA in collaboration with the Cuyahoga Greenway Partners.
- Technical review of roadways, rights-of-way, utility and rail corridors, vacant and undeveloped properties, and land ownership to identify potential routes. This technical review considered other TICI projects and projects on NOACA's Transportation Improvement Program (TIP) and identified aligned projects or new opportunities to incorporate greenway and urban trail elements during planning and design phases.

- Engagement with the Project Team, Technical Team, Steering Committee, and the public to help show additional routes for consideration. A combination of printed and web-based maps, surveys, workshops, and public meetings were utilized to collect feedback.

In addition to identifying candidate routes, all proposed alignments were separated into a hierarchy of regional routes and supporting routes (Section 3.1 - Candidate Identification Route), as follows:

- Regional Routes are the “backbones” of the greenway system connecting and expanding the existing “all ages and abilities” network of trails across the entire county and into adjacent counties;
- Supporting Routes supply local connections to the regional routes while providing residents and municipalities access to key neighborhood destinations.

STEP 2: ROUTE EVALUATION

The next step was evaluation of each route to identify and prioritize a focused list of projects for implementation. With hundreds of miles of routes proposed, candidate routes were each evaluated across multiple criteria. The criteria considered the overall project goals, and asked, “What routes best help address the project goals?” The Project Team, Steering Committee, and other stakeholders identified eight “Core Factors” that reflected the opportunities and benefits future greenway routes might provide: Regional Trails Access; Park & Recreation Access; Habitat Factor; Socioeconomic Factor; Personal Mobility Factor; Transit Factor; Job Centers Factor; and Commercial/Civic Factor.

STEP 3: FRAMEWORK PLAN & PROJECT PRIORITIZATION

The decisive step in the process was to take all the evaluated routes and refine and prioritize a smaller list for implementation. With input from the Technical Team, Project Team, Steering Committee, and public, the results of the analyses were aggregated to see which routes show up multiple times across each of the Core Factors examinations. Routes that have been highlighted reflect those with the greatest opportunity to design safe and accessible corridors that better address connectivity needs, geographic inequality, and utilize excess roadway capacity to accommodate active transportation (Section 4.1 - Greenways Prititization Plan).

Sample from the base planning map series used during stakeholder engagement to identify routes, destinations, issues, and challenges



3.1 CANDIDATE ROUTE IDENTIFICATION

IDENTIFYING INITIAL CANDIDATE ROUTES

The map at the right depicts the composite, unrefined set of candidate routes found during the process. These candidate routes were named using inventory data for non-motorized infrastructure, which included existing, planned, and proposed trails and on-street bicycle facilities (e.g. bike lanes, bike routes). This base data was assembled by NOACA and the Cuyahoga Greenway Partners.

Once identified in the inventory, the Project and Technical Team worked with the Steering Committee to flag route opportunities as “candidate routes” further classifying them into ‘Regional Routes’ or ‘Supporting Routes’. Candidates were also sorted as either “on-street” or “off-street” and as either “existing” or “future”. In many cases, existing routes (particularly on-street) that currently have some type of bicycle infrastructure are still considered candidates for providing higher level facilities in the future that can serve a broader range of users.

Figure 3.1a - Non-Motorized Inventory Map

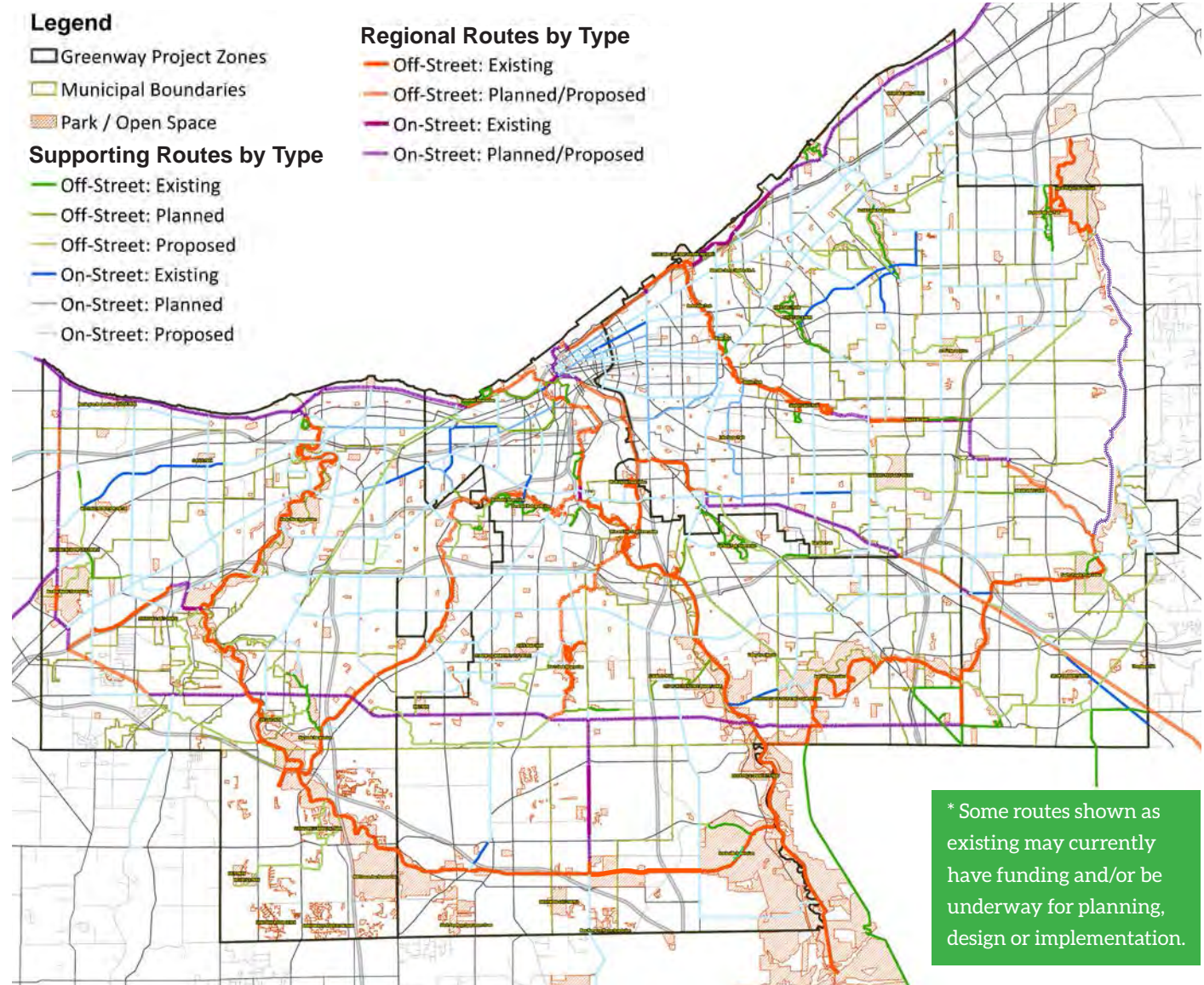


Figure 3.1b - Regional Network Map

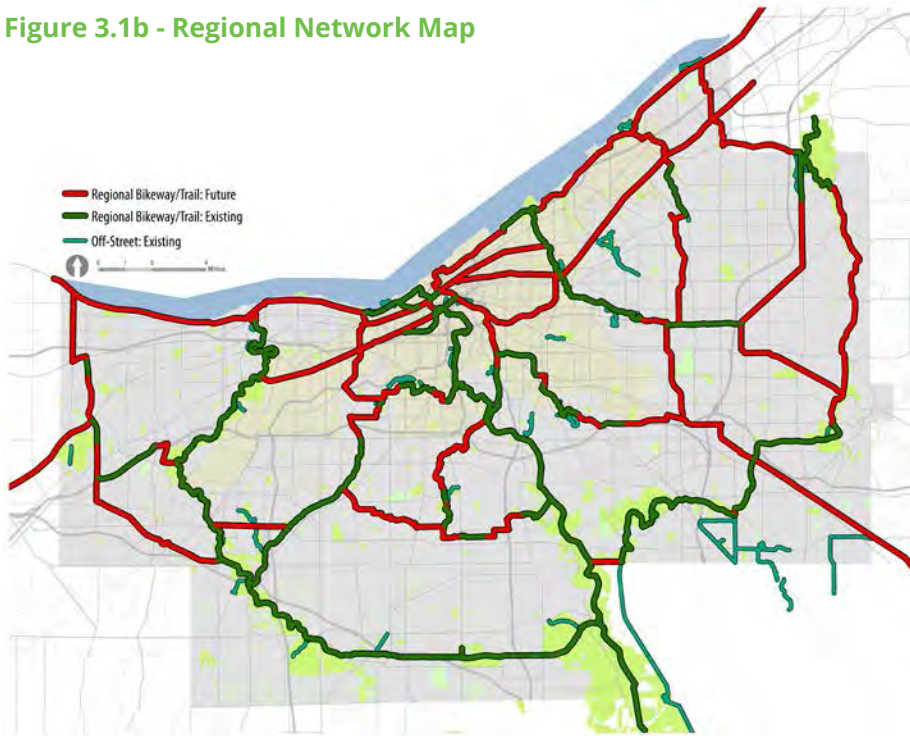
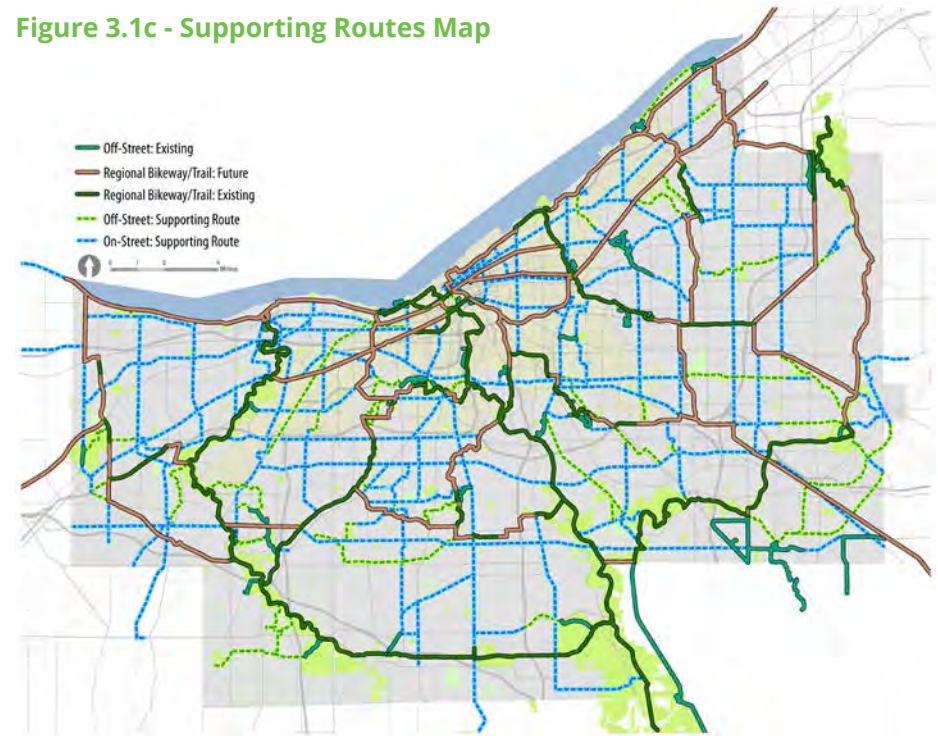


Figure 3.1c - Supporting Routes Map



IDENTIFYING THE REGIONAL NETWORK

Routes comprising a regional network were identified from among the candidate routes based on meeting some or all of the following: (1) filled a “gap” in the existing trail network; (2) provided a critical connection to existing trails; (3) created new cross-county (multi-jurisdictional) connections; and, (4) connected to the larger regional or statewide trail system. Regional routes are the “backbones” of the greenway system connecting and expanding the existing network of trails across the entire county and into adjacent counties. Regional trails are intended to be designed for all ages and all abilities, to the highest extent possible, supplying a comparable experience to existing All Purpose Trails (APTs) in the county. Regional Routes are shown in red in the map above.

DETERMINING SUPPORTING ROUTES

In addition to the regional routes, the route identification effort named many “supporting routes.” Supporting Routes create localized connections into the overall regional system. These include connections to transit stations and stops, commercial districts, job centers, neighborhoods, parks, schools, and other concentrations of local activity. If individual communities can connect residents and businesses via the Supporting Routes, the Supporting Routes can in turn provide their community access to the regional network.



ALL CANDIDATE ROUTES

The candidate route map (next page) depicts the final set of candidate routes and the overall Cuyahoga Greenway Framework based on iterative refinement over the course of the planning process - including input from the Steering Committee and public. This set of candidate routes breaks down as follows:

Overall Candidate Network: 815 miles total

- 185 miles existing off-street routes
- 630 miles of future on- and off-street routes

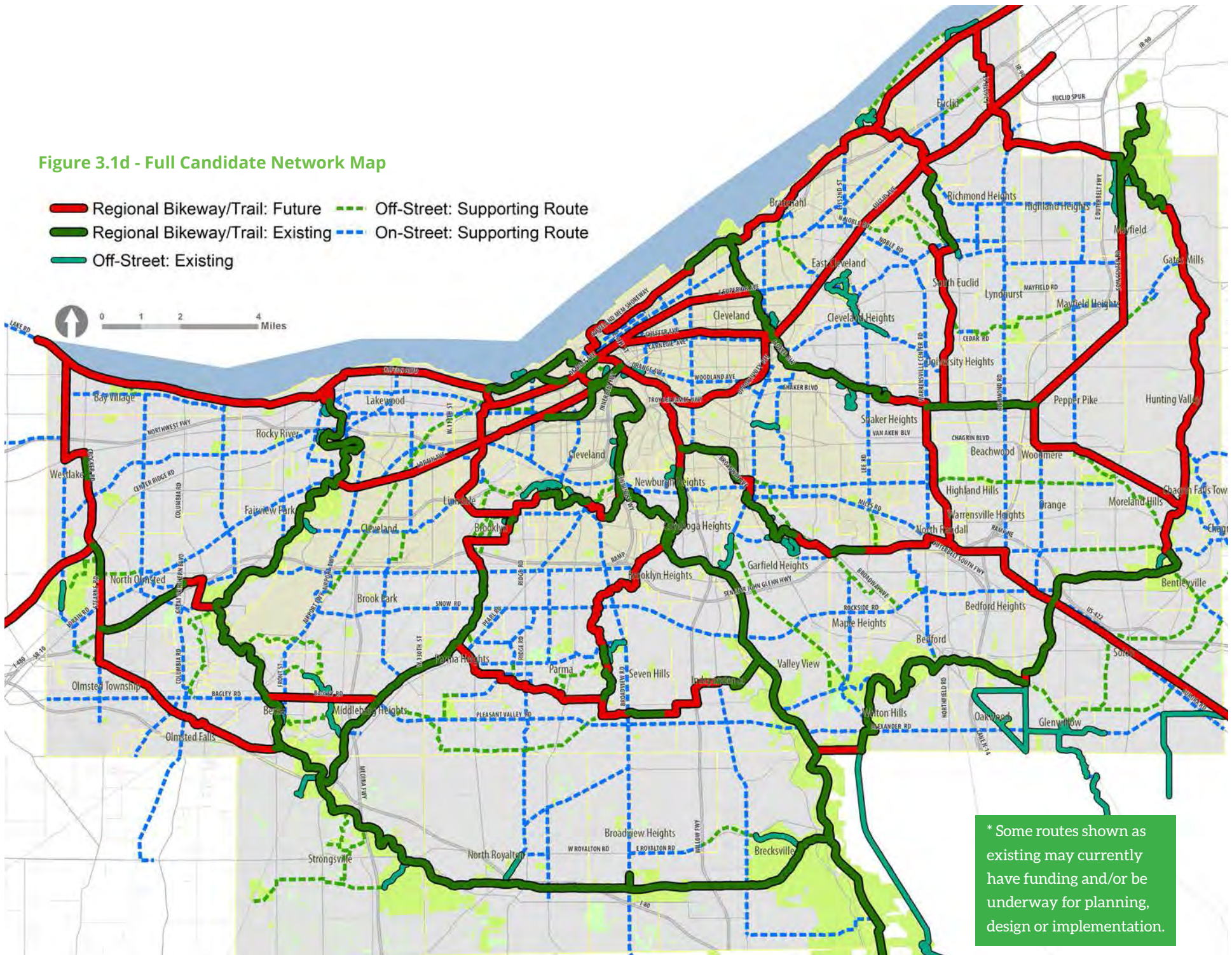
Regional Network Breakdown: 290 miles total

- 122 miles of existing off-street trails
- 168 miles of future on- and off-street routes:
 - 47 miles of off-street trails
 - 121 miles of on-street routes

Supporting Network Breakdown: 525 miles total

- 63 miles of existing off-street trails
- 462 miles of future on- and off-street routes:
 - 102 miles of off-street trail
 - 360 miles of on-street routes (includes 30 miles of existing bicycle lanes that could be upgraded to higher level bicycle infrastructure)

Figure 3.1d - Full Candidate Network Map



3.2 ROUTE EVALUATION

ROUTE EVALUATION

The existing and candidate routes reflect approximately 815 miles of greenways and urban trails (with about 185 miles existing today). While the ultimate vision is to have all mileage constructed, it is important to name priorities among the candidate routes for implementation. The Project Team worked with the Technical Team, the Steering Committee, and the Public to identify means of evaluating the benefits of candidate routes in alignment with the project's overall goals. The route evaluation process moved ahead over several steps.

CORE FACTOR ANALYSIS

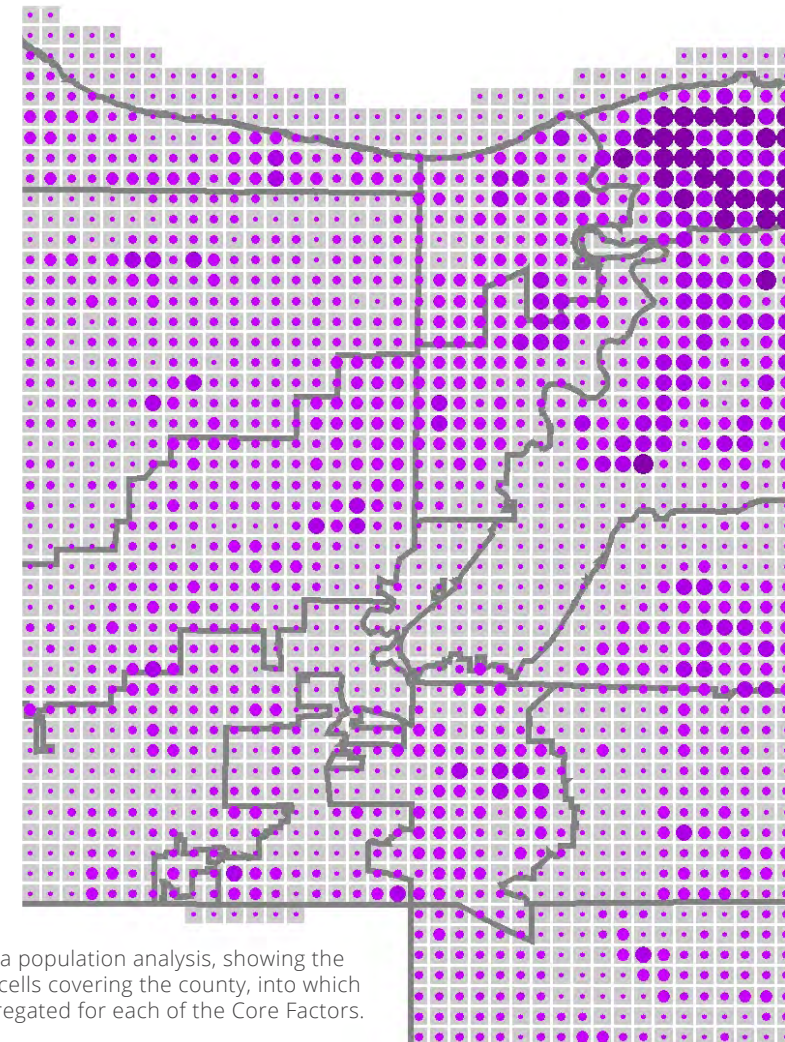
The Project Team, Steering Committee, and other stakeholders identified eight "Core Factors" that reflected the opportunities and benefits future greenway routes might provide. These Core Factors were developed through collaboration with the Project Team, Technical Team, and Steering Committee. During this task, dozens of data sets were mapped, reviewed, and discussed to determine which data sets best aligned with project goals and route prioritization.

Datasets were synthesized by aggregating them into 1/4-mile grid cells across the entire county to provide consistently-sized areas for evaluation. As each proposed route passed through these grid cells, it was assigned a score based on how well

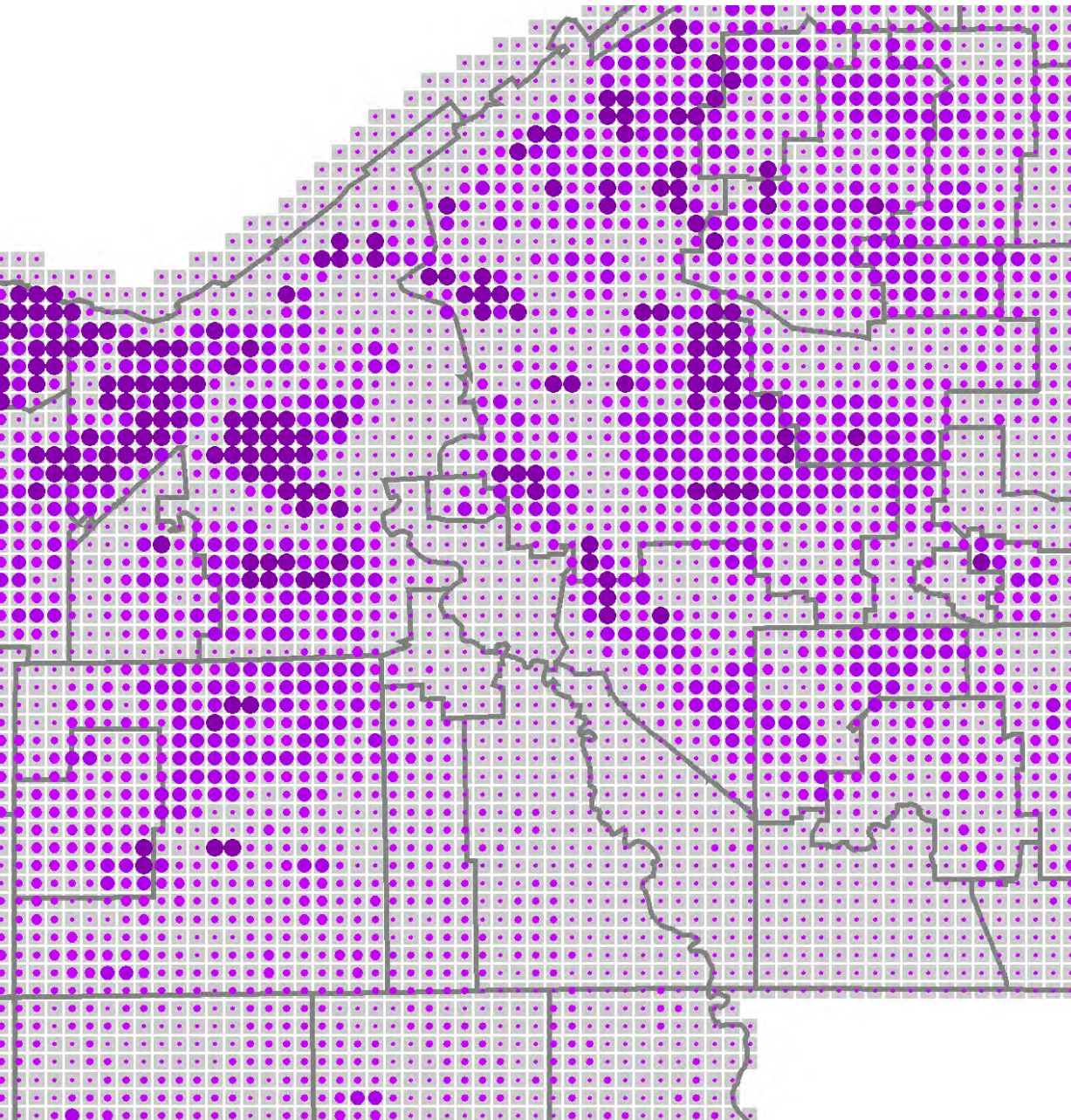
it addressed each Core Factor. Routes scoring in the top 20% or bottom 20% for each factor were highlighted. The Core Factors include:

- Access to trails
- Access to parks and open space
- Habitat protection and restoration opportunities
- Socioeconomic conditions
- Personal mobility
- Access to transit
- Density of jobs
- Proximity to commercial and civic destinations

Individual Core Factors are presented further below in this section.



Excerpt from a population analysis, showing the 1/4-mile grid cells covering the county, into which data was aggregated for each of the Core Factors.



HYBRID “CONNECTIONS” ANALYSIS

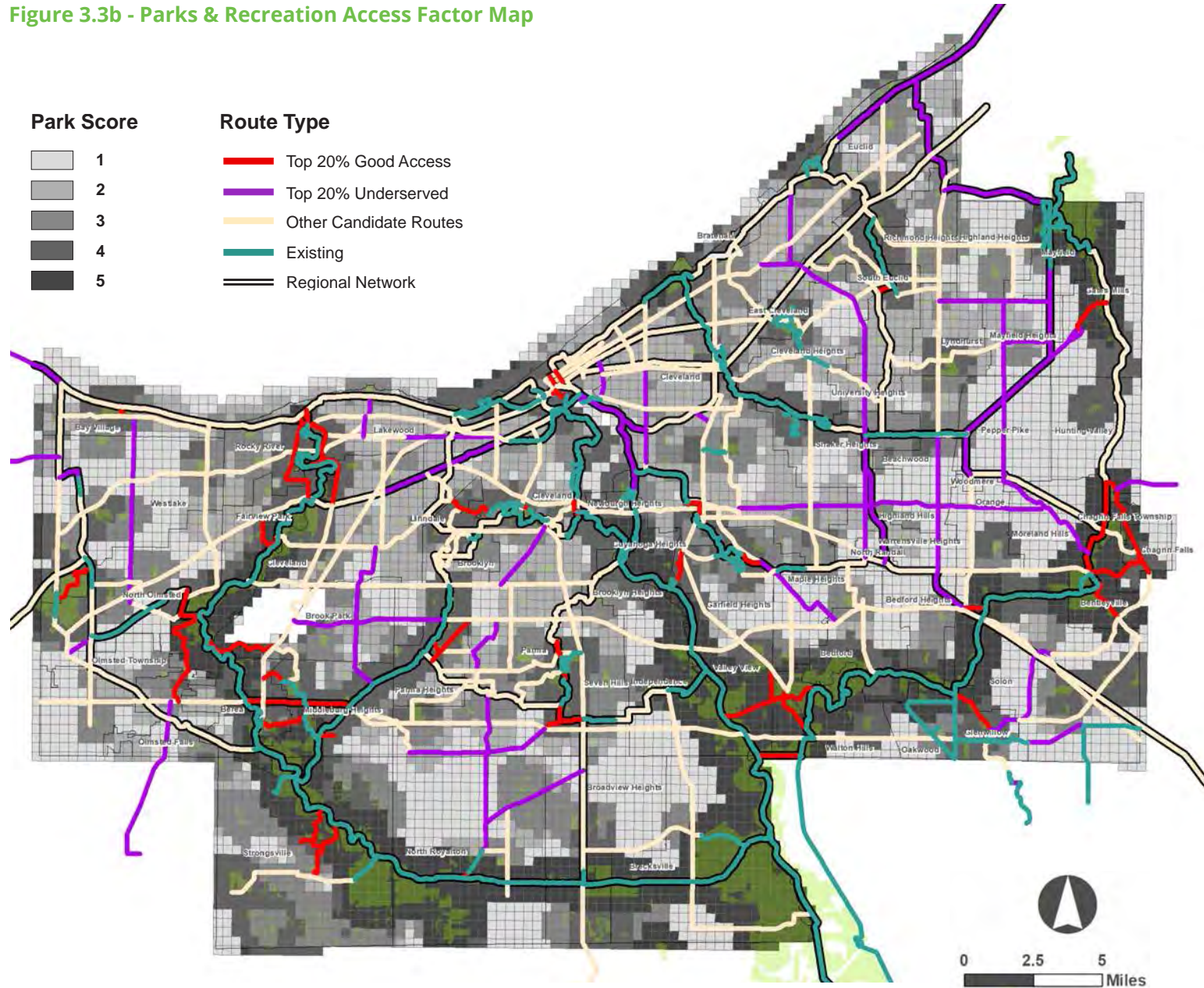
Route evaluation developed further into a series of Hybrid “Connections” Analyses, helping to distinguish significant correlations between Core Factors and routes that could provide the greatest links and benefits to these trip origin and destination points. The hybrid “connections” analysis included:

- People to Jobs
- Jobs to Transit
- People to Trails
- Parks to Habitat

TOP SCORING ROUTES

The last step in route evaluation was to aggregate the results of the hybrid analyses and see which routes showed up multiple times across each of the analyses. These routes, in turn, reflect those with a greater opportunity to address connectivity needs and achieve the overall goals of the project. These routes were reviewed in tandem with Steering Committee, Project Team, and Public to begin finding a smaller priority set of projects.

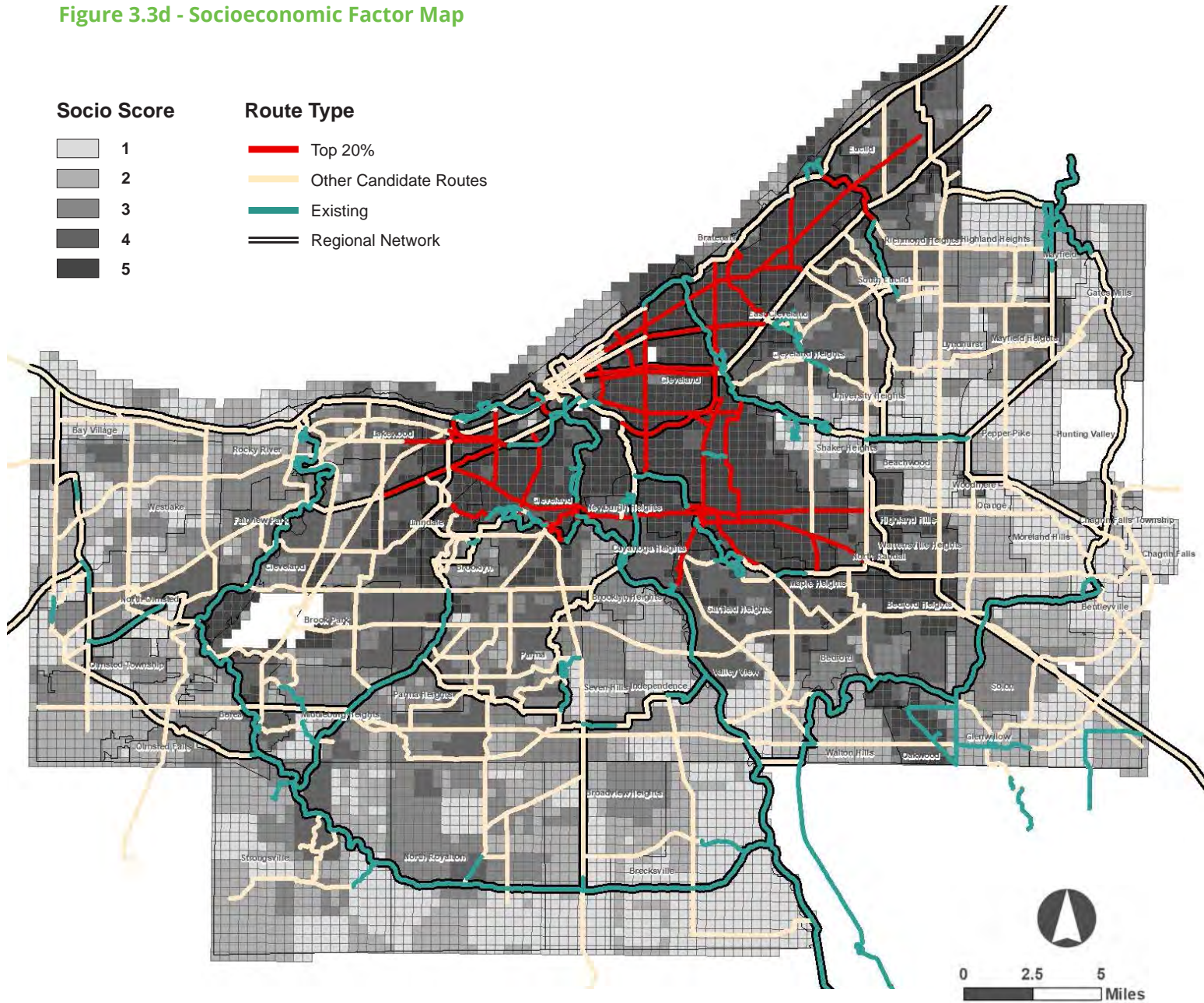
Figure 3.3b - Parks & Recreation Access Factor Map



2. PARK & RECREATIONAL ACCESS FACTOR

The Park & Recreational Access Factor analysis determined how many acres of accessible park space per person are within a 1/4-mile buffer of each grid, deriving an average score to park spaces along a given candidate route, highlighting areas with good (Top 20% - RED) and poor (Bottom 20% - PURPLE) park access.

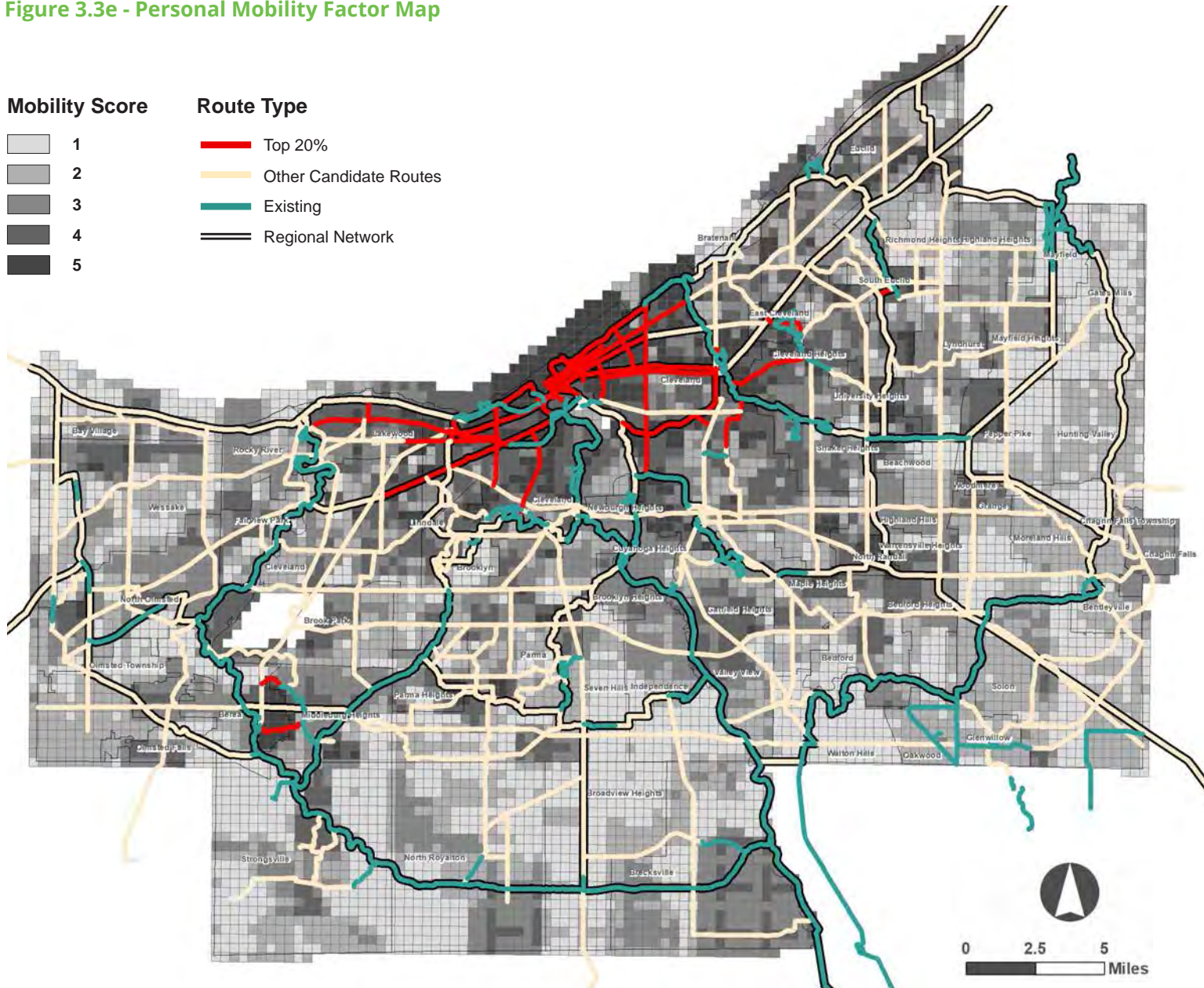
Figure 3.3d - Socioeconomic Factor Map



4. SOCIOECONOMIC FACTOR

The Socioeconomic Factor considers (1) median income; (2) percentage of households in poverty; (3) unemployment rate; and (4) population density in areas of greater socioeconomic need. Routes in RED have scores in the top 20% for Socioeconomic Factor, showing areas with significant needs and/or challenges.

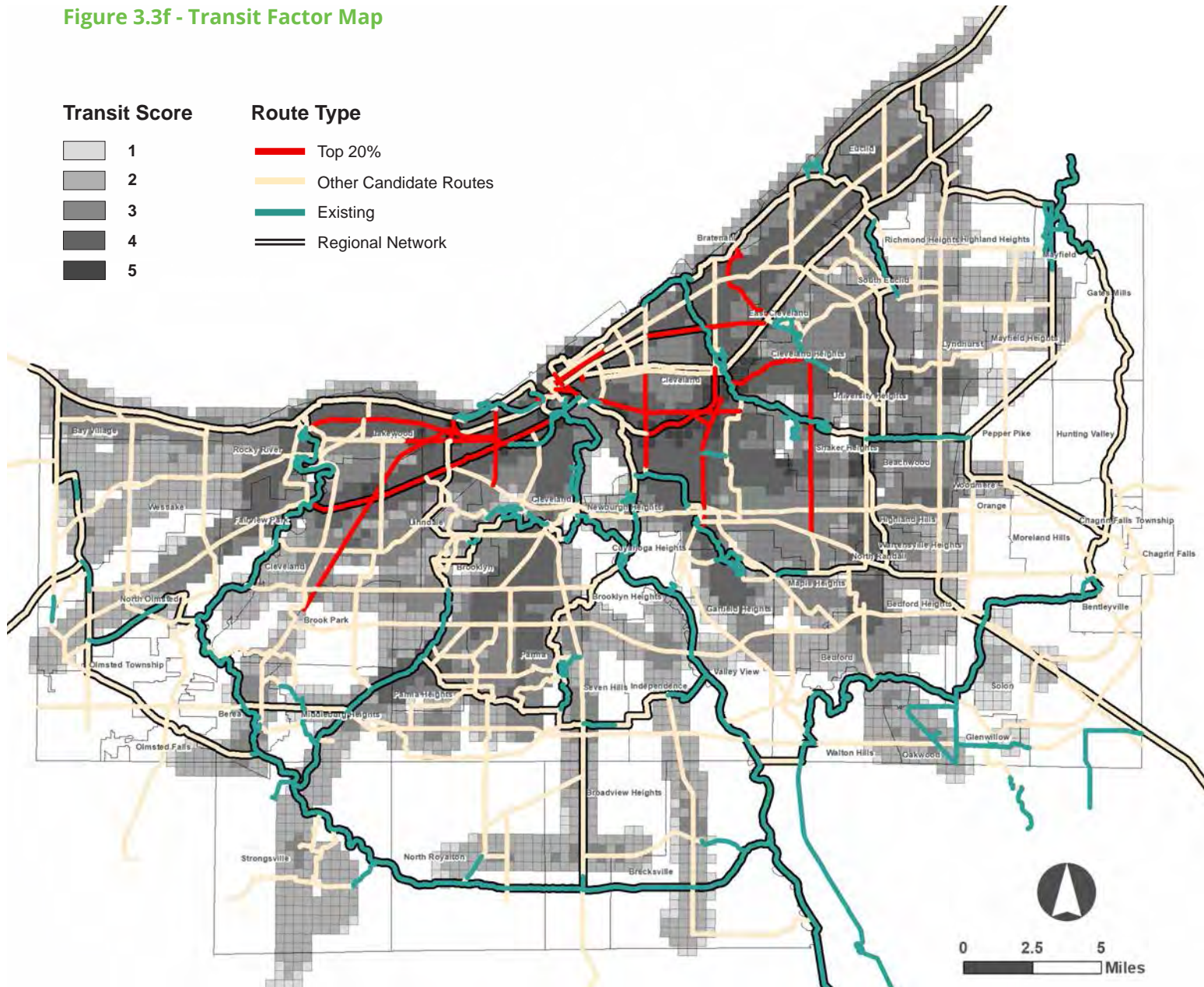
Figure 3.3e - Personal Mobility Factor Map



5. PERSONAL MOBILITY FACTOR

The Personal Mobility Factors relate to people's ability and means of moving about, particularly in terms of getting to employment. This factor considers (1) car ownership rates; (2) percentage of people walking or biking to work; and (3) population density. Routes in RED have scores in the top 20% for personal mobility factor, pinpointing areas where people may choose or need alternatives to the automobile to meet transportation demands.

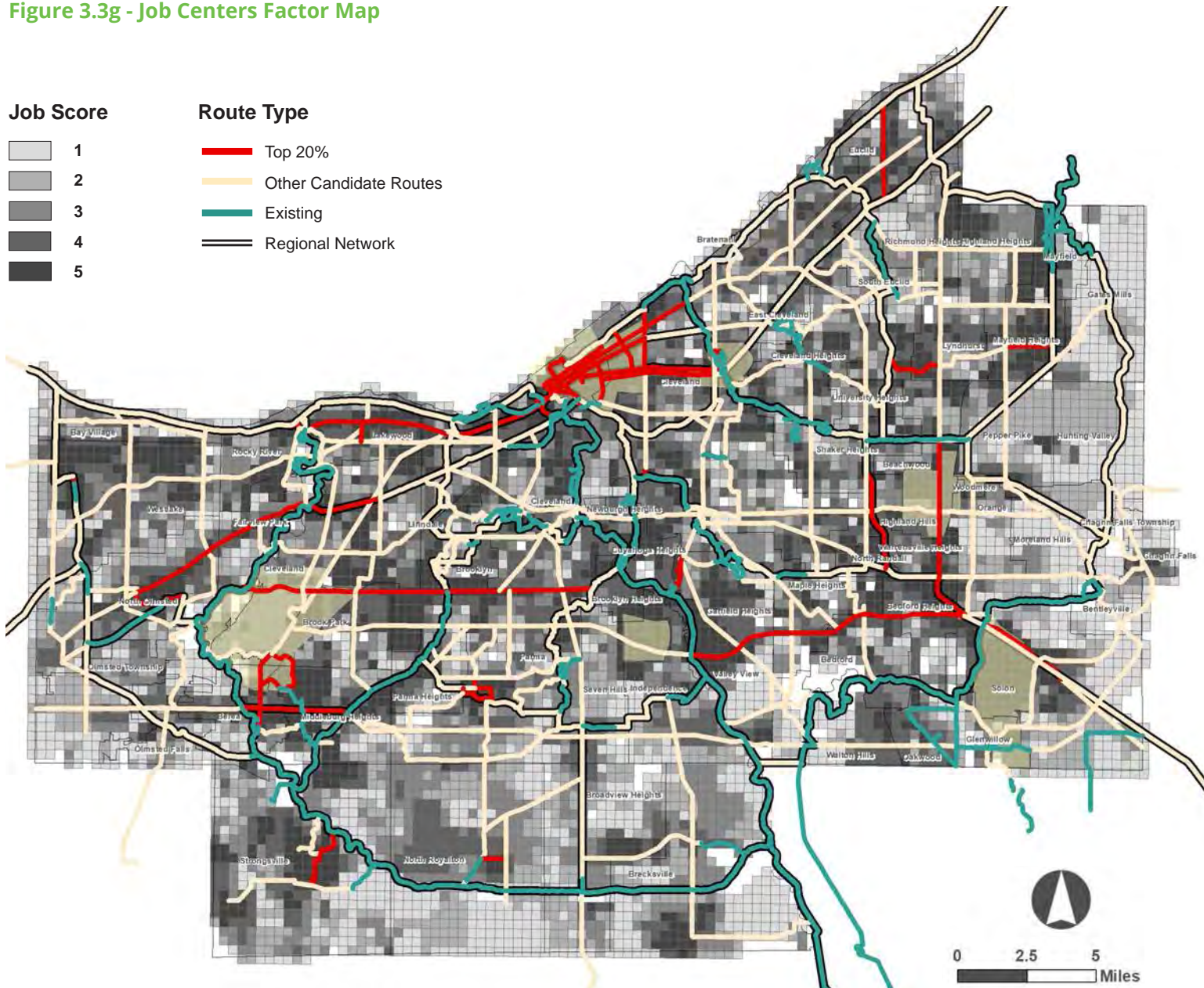
Figure 3.3f - Transit Factor Map



6. TRANSIT FACTOR

The Transit Factor highlights candidate routes that intersect with transit corridors and could help provide “first mile/last mile” connections between transit routes and final destinations for people. In addition to considering bus stops and Greater Cleveland Regional Transit Authority (GCRTA) rail stations, GCRTA priority transit corridors also factored into the scoring. Routes in RED have scores in the top 20% for Transit Factor.

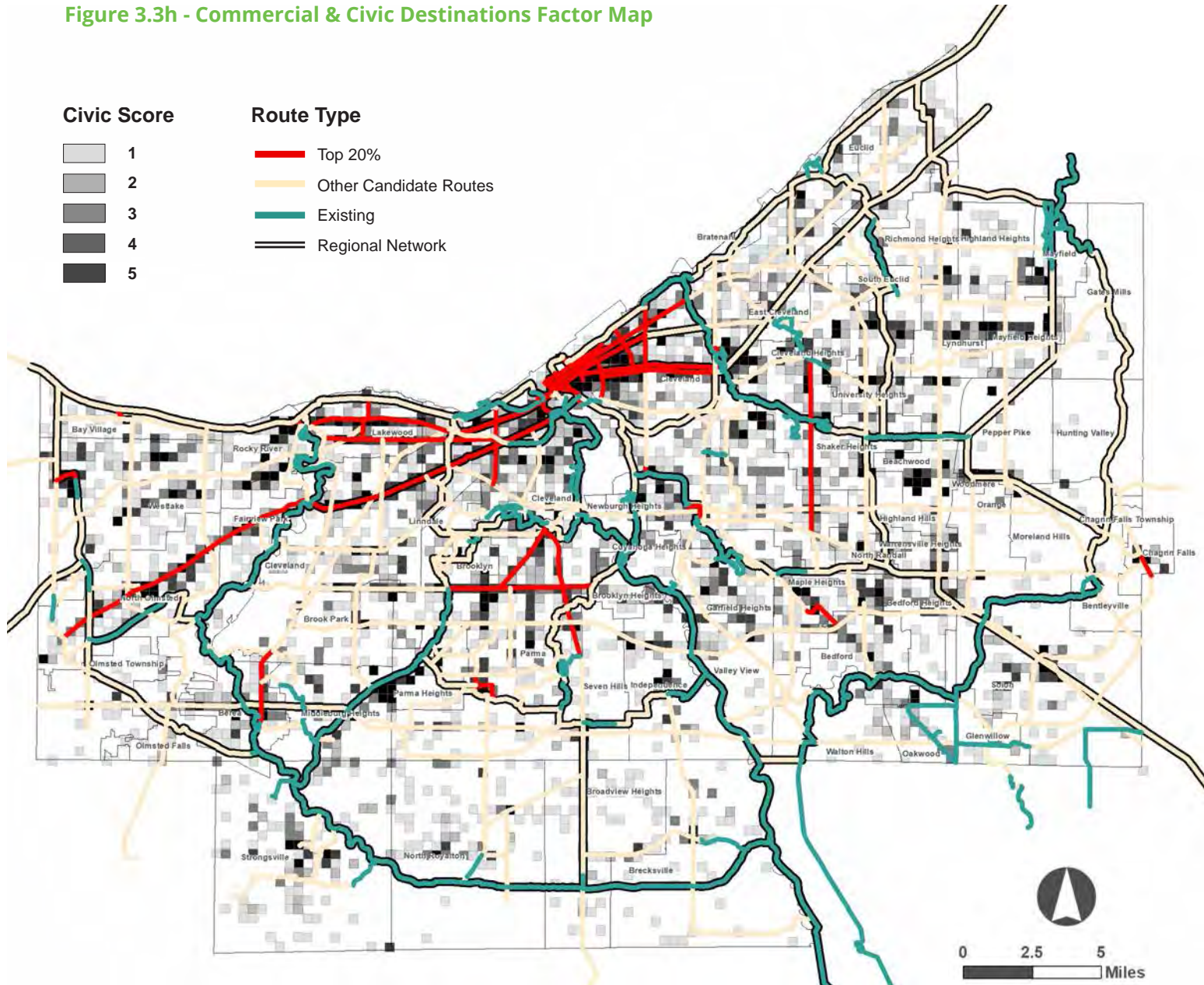
Figure 3.3g - Job Centers Factor Map



7. JOB CENTERS FACTOR

The Job Centers Factor portrays the density of jobs at the place of employment within the 1/4-mile grid cells. Trails that can provide greater access to job hubs and employment centers can play a stronger role in supporting economic access and non-motorized commuting. Routes in RED have scores in the top 20% for the Job Centers Factor, showing those corridors with high job density.

Figure 3.3h - Commercial & Civic Destinations Factor Map

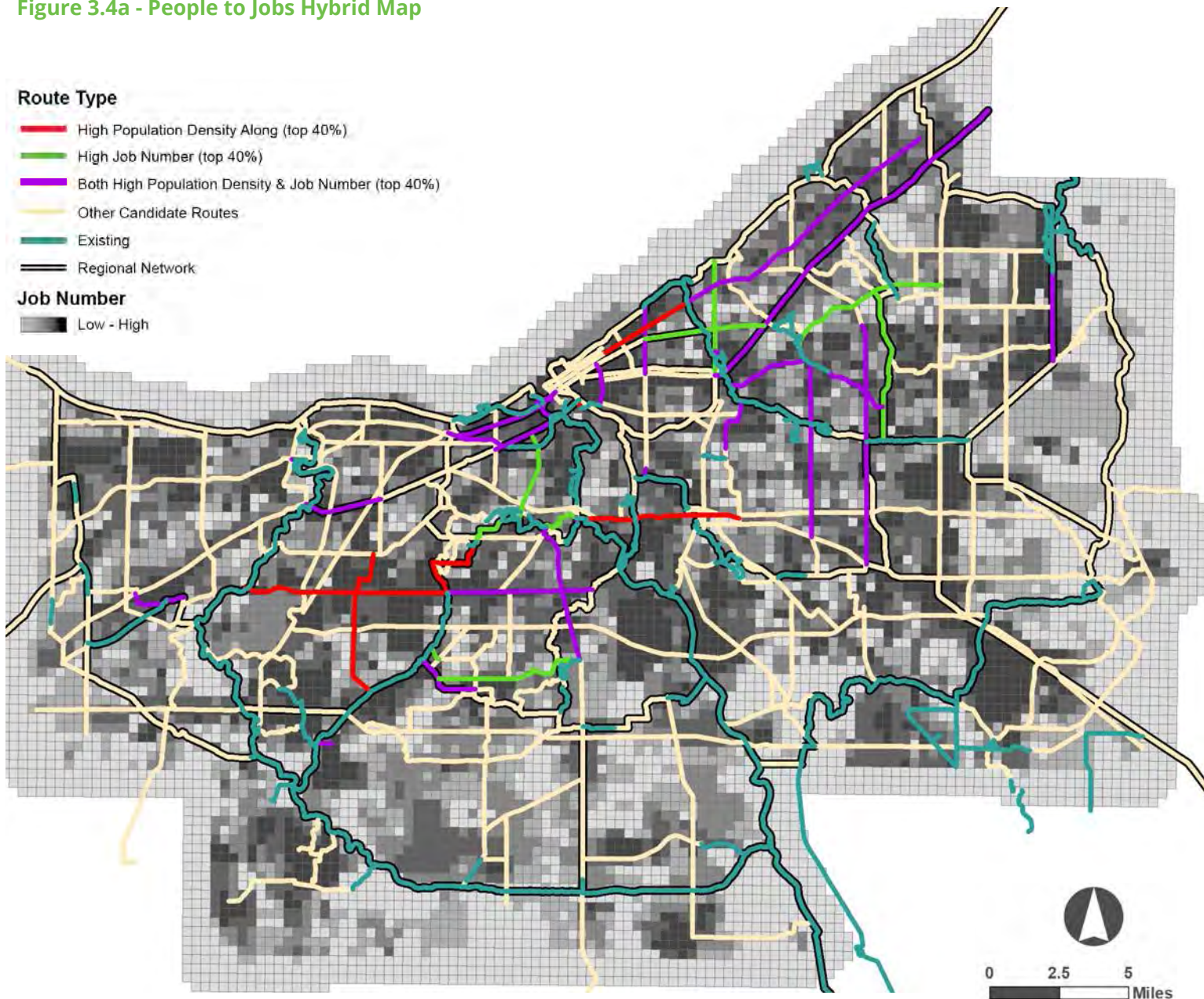


8. COMMERCIAL-CIVIC FACTOR

The Commercial-Civic Factors depict the density of community destinations near the candidate trails. These destinations include retail and shopping areas, entertainment venues, schools, colleges, museums, libraries, and other civic institutions. Routes in RED have scores in the top 20% for the Commercial-Civic Factor.

3.4 HYBRID "CONNECTIONS" ANALYSIS

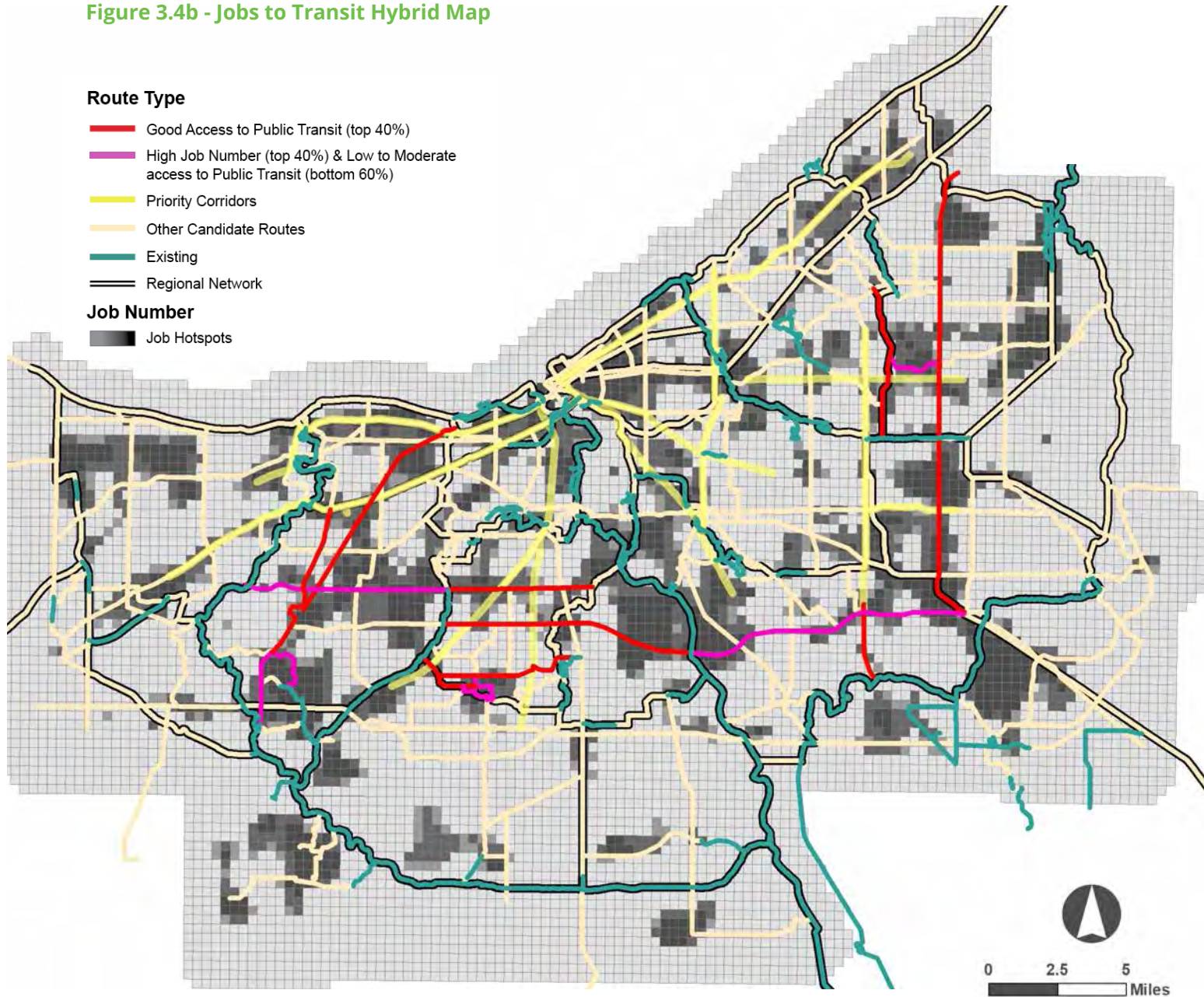
Figure 3.4a - People to Jobs Hybrid Map



1. PEOPLE TO JOBS

This map highlights routes that contain densely populated areas (Top 40% - RED) and high job density locations (Top 40% - GREEN). Additionally, routes that connect both densely populated areas directly to high job density locations either through proposed facilities or by using existing trail sections are shown in PURPLE.

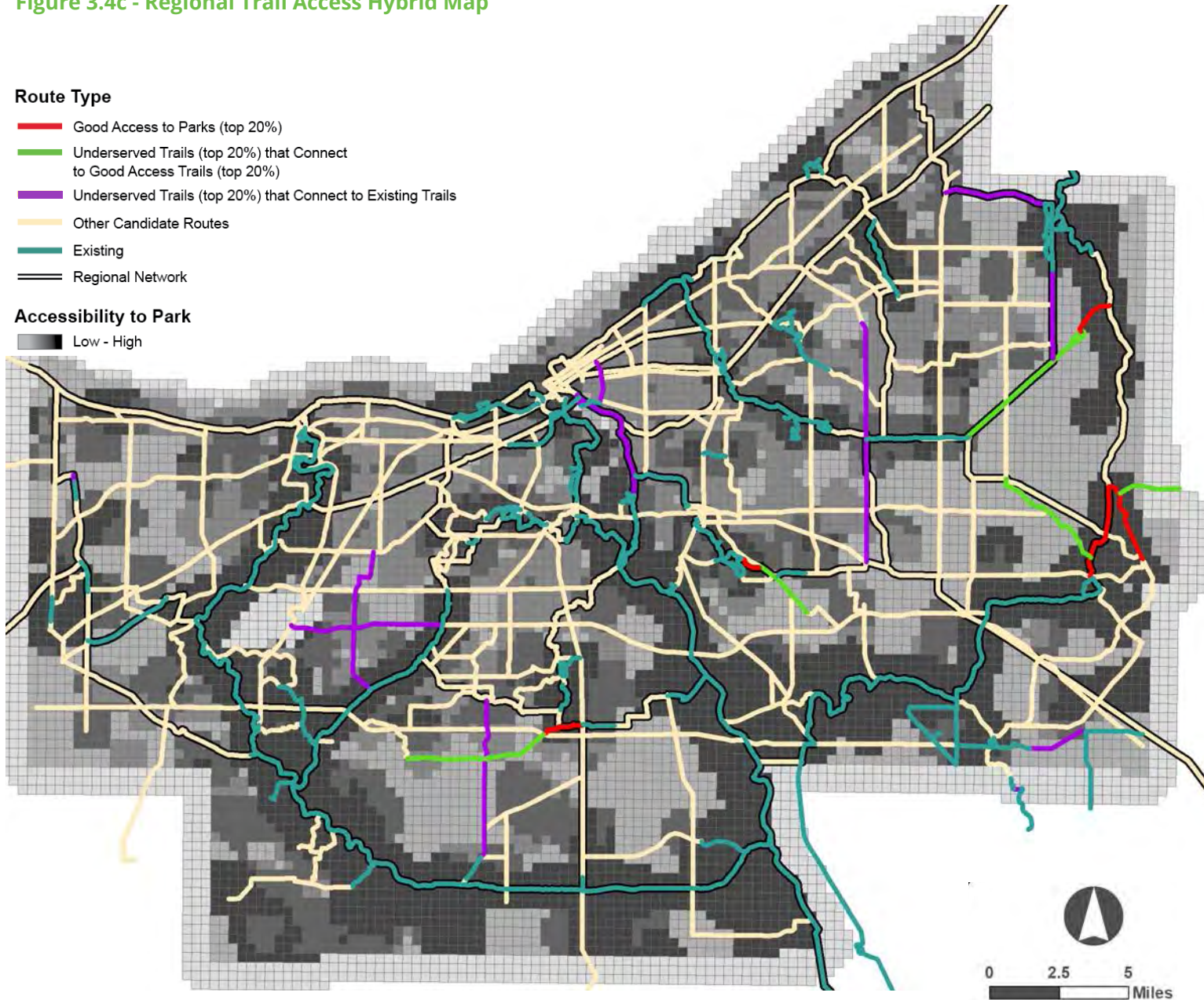
Figure 3.4b - Jobs to Transit Hybrid Map



2. JOBS TO TRANSIT

This map indicates existing or proposed routes with good access to Public Transit (Top 40% of transit score for 1-mile access - RED), along with high job density routes (Top 40%) that have low or moderate access to Public Transit (Bottom 60% - PURPLE). Emphasizing the importance of building alternative transportation facilities like trails or bike lanes within these corridors will help overcome the limited transit access to employment centers and improve “first mile/last mile” relationship between destinations.

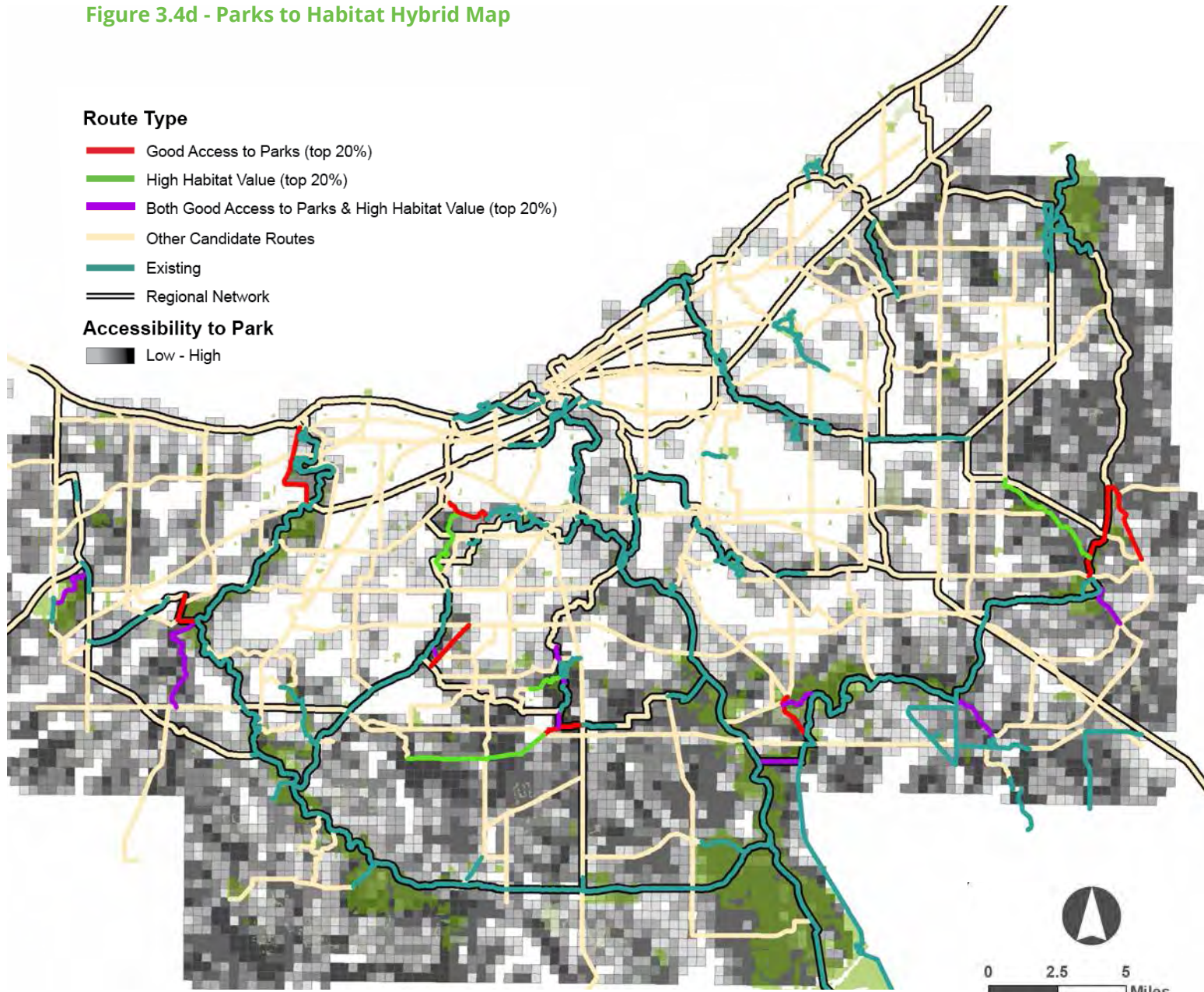
Figure 3.4c - Regional Trail Access Hybrid Map



3. PEOPLE TO TRAILS

This analysis found existing and proposed routes with good access to parks/trails (Top 20% - RED) as well as areas that are underserved (Top 20%) when it comes to trail access but also connect to existing trails (PURPLE). In addition, it highlights routes that have both poor access but connect to those routes having good trail access (Top 20% - Green). The analysis illustrates areas where new trails can leverage existing access or expand park/trail access and also indicates where a new greenway might be best suited to provide some of the benefits lacking from poor trail/park access.

Figure 3.4d - Parks to Habitat Hybrid Map



4. PARKS TO HABITAT

The final connections analysis looks at routes that may be a good opportunity for natural area restoration. These are routes that have either good access to parks (Top 20% - RED) or located in high habitat value areas (Top 20%- Green). Also shown are routes that have both high habitat value and good park access. (Top 20% - PURPLE)

3.5 EVALUATION SUMMARY

HYBRID ANALYSIS SUMMARY

The Summary Map (next page) shows all routes named in at least one of the Hybrid Connections Analyses (indicating a high score across at least two Core Factors). Overall, from among the approximately 300 candidate routes, there are 18 routes that show up twice (listed to the right) and 84 routes named once across the hybrid analyses.

The Evaluation Summary was one of the key sources of input when working with the Project Team, Technical Team, and Steering Committee to determine what potential projects from the Framework Plan could be considered a priority or that are extremely successful in meeting the project goals. In several cases (e.g. Brookpark Road), this analysis helped draw attention to previously overlooked corridors where there were nevertheless opportunities to provide substantial greenway benefits to the region.



Image Credit: Rails-to-Trails Conservancy

ROUTES THAT SHOW UP TWICE IN THE HYBRID CONNECTIONS ANALYSIS

- A Big Creek Connector Trail
- B Brookpark Road East
- C Brookpark Road West
- D Chagrin Valley Connector South
- E Commercial Road Connector
- F Day Drive To Big Creek Connector
- G E 22nd Street
- H Fowles Road
- I Garfield Park Reservation
- J Normandy Connector
- K Rockcliff Drive
- L S Belvoir Boulevard
- M Smith Road Greenway
- N Som Center Road
- O Treadway Creek Trail
- P W Ridgewood Drive
- Q Warrensville Center Road

Figure 3.5a - Hybrid Analysis Summary Map

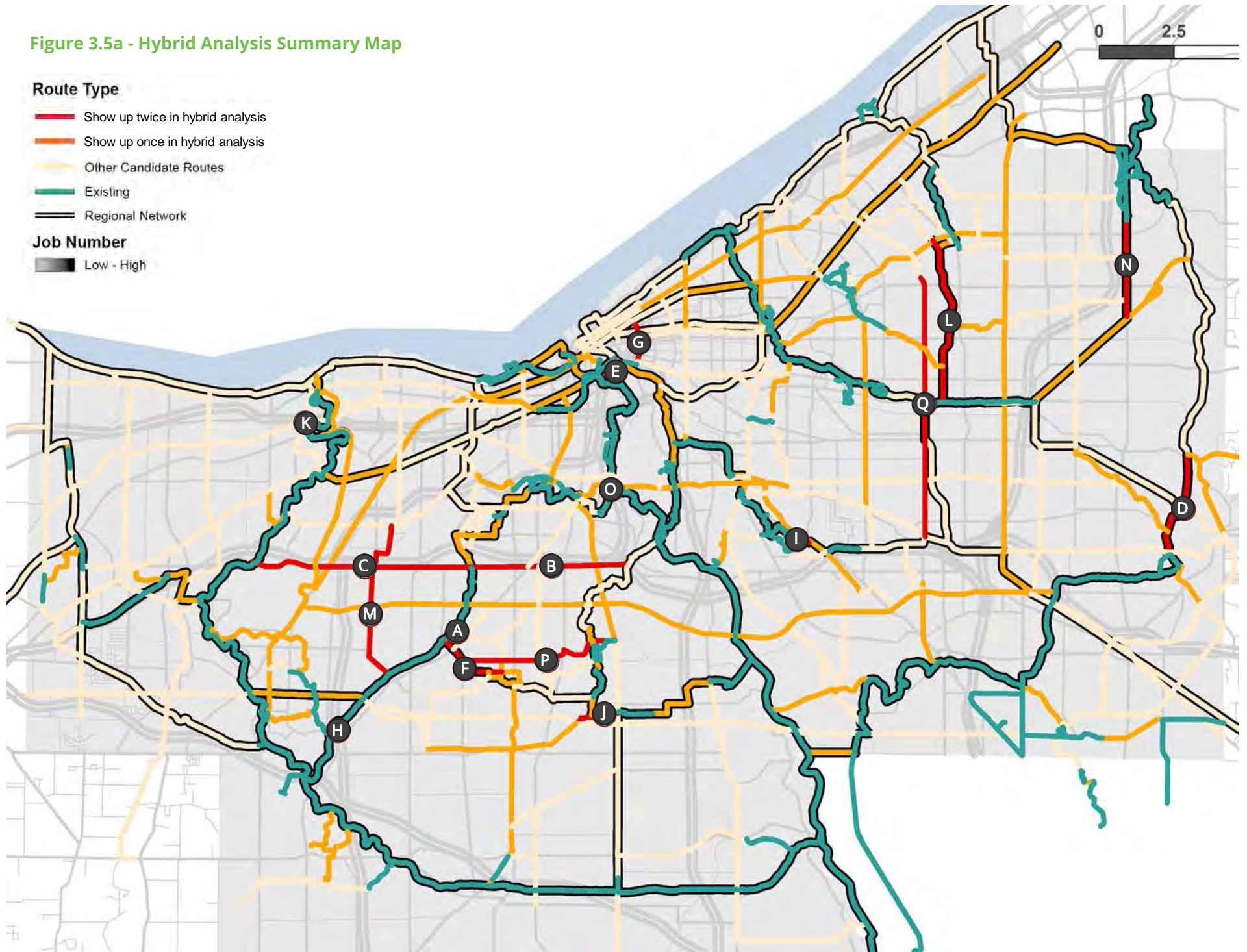




Image Credit: The City of Lakewood

04.

implementation



4.0 IMPLEMENTATION

OVERVIEW

Implementing the Cuyahoga Greenways Plan will require a long-term commitment to regional coordination and collaboration. The full framework names 815 miles of greenways and urban trails, 630 miles of which are not yet realized, each having their own unique qualities and challenges for construction. The value of this Framework Plan is that regional and local governments, agencies, non-profit groups, and other organizations now have a shared blueprint for building routes that complement one another while growing the overall network.

New trails and non-motorized facilities can have the biggest impact when they increase access to local destinations while expanding and working alongside existing land uses and transportation infrastructure. While implementation of the plan will ultimately take place at the local level, it should represent a regional approach that's mutually beneficial to local neighborhoods and the county. Local jurisdictions will continue to be responsible for all site-specific decisions related to the development of their components in the regional network, but all of these decisions would hopefully be done for the collective benefit of all county residents.

FOR A BIG, POSITIVE IMPACT

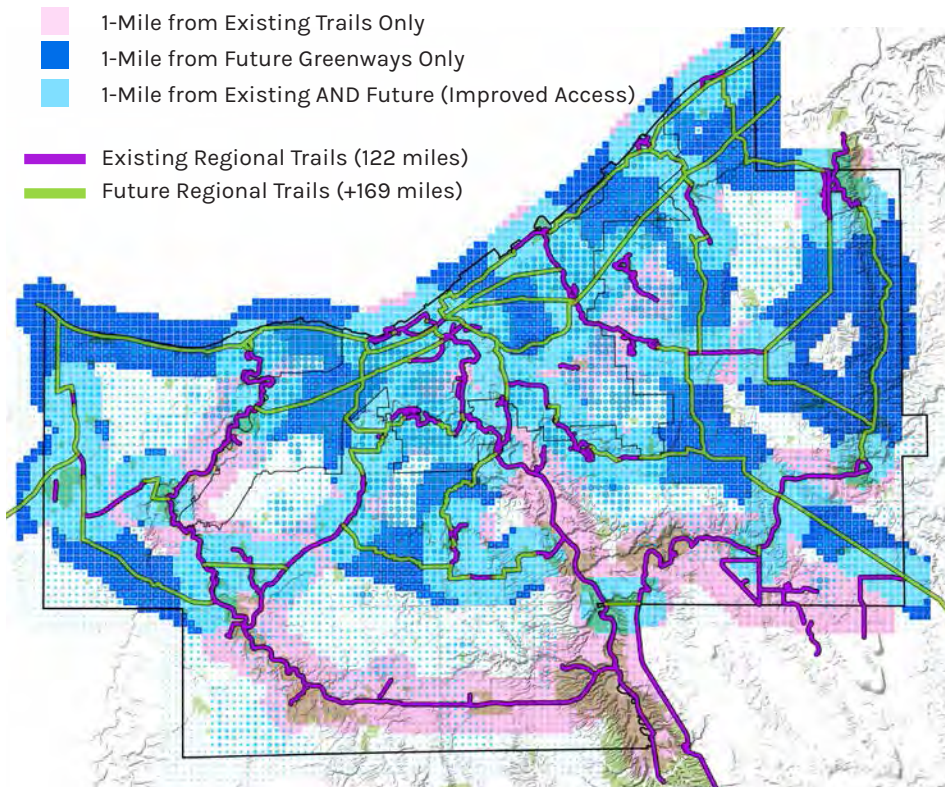
Building out the proposed regional trail system will substantially increase county residents' access to trails. **Currently, 280,000 residents live within a mile of the regional trail system. When fully built out, the system will reach over 500,000** (over 40% of the county population).

When it comes to access to jobs, the benefits of a built-out regional greenway system are just as significant: **355,000 jobs are within one mile of an existing trail today. In the future, the system will provide access to over 525,000 jobs.** Based on the 1.1 million jobs currently in Cuyahoga County, upon completion of the network approximately 50% of the jobs will be within one mile of regional greenways and urban trails.

PRIORITIZATION PLAN

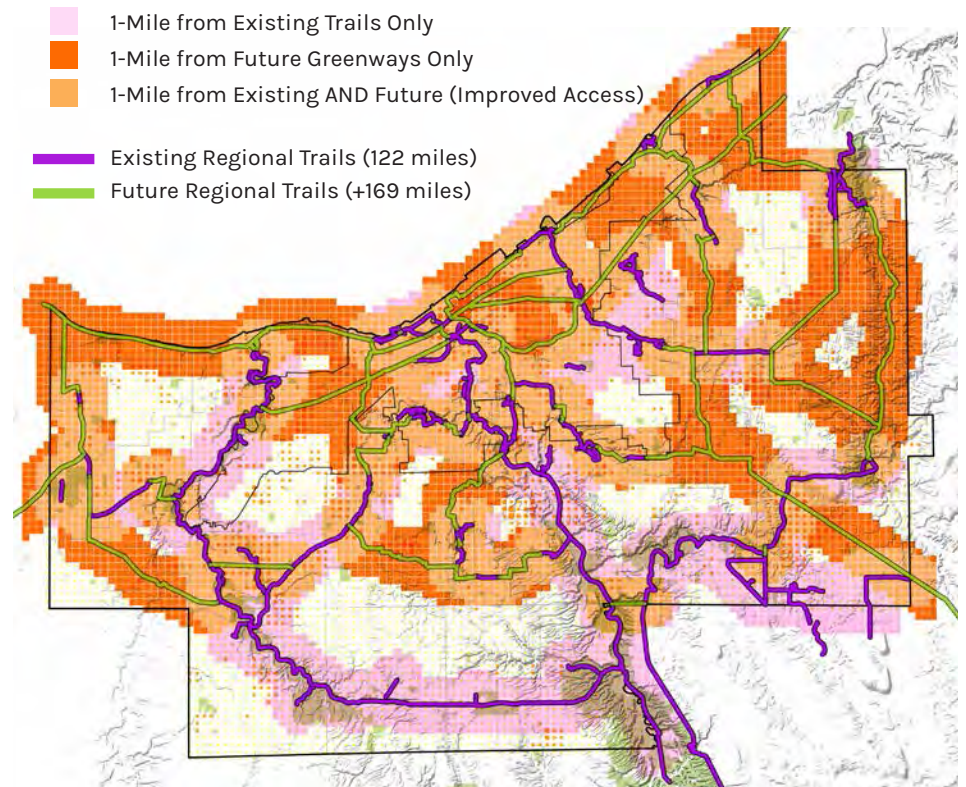
The Prioritization Plan is the culmination of the route identification process and technical evaluation. It takes all 815 miles of trails and candidate routes identified in the Greenways Framework and refines them into a set of 69 named projects, totaling approximately 242.5 miles. These 69 projects were determined based on technical analyses and stakeholder input during the final stages of the planning process. These projects are called out and prioritized due to their functional role within the network, the potential benefits they afford to the county, community needs that are addressed, and local support that may already exist for their implementation.

Figure 4.0a - Population Near Existing Trail Network



EXISTING: 280,453 PEOPLE WITHIN 1 MILE (120 REGIONAL TRAIL MILES)
FUTURE: 508,091 PEOPLE WITHIN 1 MILE (295 REGIONAL TRAIL MILES)

Figure 4.0b - Total Jobs Near Existing Trail Network



EXISTING: 355,159 JOBS WITHIN 1 MILE (120 REGIONAL TRAIL MILES)
FUTURE: 528,564 JOBS WITHIN 1 MILE (295 REGIONAL TRAIL MILES)

MAKING IT HAPPEN

PARTNERSHIPS & COORDINATION

Without a single regional or government agency responsible for the Greenways Plan, successful implementation of the greenway framework, in both the short and long-term, will need strong partnerships. It is important to acknowledge that there is not a one-size fits all approach to implementation, and the mix of partners involved will vary from project to project. It is anticipated that a range of regional partners will need to work with local governments to help achieve the desired vision. Non-profit groups, public and private entities, and local municipalities will need to understand and work together on pooling resources to help achieve greater and more equitable outcomes. This will require many groups to embrace the Plan's importance by including its recommendations and priorities into their decision-making processes. Working together in this fashion, and using a shared regional blueprint, can help create a more coordinated and efficient infrastructure improvement process.

CUYAHOGA GREENWAYS PARTNERS

The Cuyahoga Greenway Partners (CGP) is a collaborative featuring key executives and staff from public agencies and non-profit organizations across Cuyahoga County. Active members include: Bike Cleveland, Cleveland Metroparks, Cleveland Planning Commission, Cuyahoga County Department of Public Works, Cuyahoga County Planning Commission, Greater Cleveland Regional Transit Authority, Northeast Ohio Areawide Coordinating Agency, Northeast Ohio Regional Sewer District, and Rails-to-Trails Conservancy. Though the CGP is not a new legal organization or funding entity, its active members bring focused perspectives and knowledge of trails, bicycle and pedestrian infrastructure, and transportation planning.

ADDITIONAL INFORMATION

In addition to highlighting the groups involved, the Implementation Section of this document includes a variety of information on proposed routes, example projects, and other information necessary on how local trails and bike lane projects have been funded, built, and programmed. The examples and supplementary information provided are meant to illustrate how regional partnerships and funding mechanisms achieve desired transportation goals through collaboration, community support, and project champions.



Image Credit: Slavic Village Development Corporation

4.1 GREENWAYS PRIORITIZATION PLAN

WHAT IS THE PRIORITIZATION PLAN

A decisive step in the process, the Prioritization Plan is the culmination of the route identification and technical evaluation. It takes all 800+ plus miles of trails and candidate routes identified in the Overall Greenways Framework and refines it into a smaller set of 69 named projects for implementation. With input from the Technical Evaluation, Project Team, Steering Committee, and the public, these routes - representing approximately 257 miles - have been highlighted with the understanding that some routes may move to implementation quickly, while other more transformative projects may take much longer and include complex funding scenarios. These projects are highlighted and prioritized due to their functional role within the network, the potential benefits they afford to the county, community needs that are addressed, and existing local support for implementation. With hundreds of miles of routes proposed, it was important to identify those routes that meet many (or all) of the project's goals.

Such routes would:

- Score highly across multiple factors during technical evaluation. These routes are anticipated to provide a broad range of benefits to the communities they pass through.
- Align directly with input from stakeholders, including projects with local champions, overlap with other infrastructure projects, have funding in place, or other specific needs that have driven a route towards becoming a priority.
- Play a critical role in making the proposed network of greenways and urban trails functional on variety of levels from tourist amenity to local demand, regardless of how the routes scored.

The projects in the Prioritization Plan include a mixture of on-street routes and off-street routes. It is important to note that in some cases there may be existing on-street bike facilities that are

named as projects. Typically, this is in recognition that existing facilities may not be suitable as “all ages and all abilities” types of facilities. It is also important to note that projects named in the Prioritization Plan are, in most cases, (like the overall Greenways Framework) established at a conceptual level.

While the Prioritization Plan names notable routes, it is important to acknowledge that all the other supporting routes identified in the overall Greenway Framework remain part of the final network. The entire Greenways Plan is intended to be a guide, and these routes should be considered whenever an opportunity for implementation arises, such as the reconstruction of a roadway or other major infrastructure investment. Realizing the full greenway network will require flexibility and adaptability as segments are implemented and new opportunities arise.

PRIORITIZATION PLAN - ROUTE CLASSIFICATIONS

CRITICAL GAPS

12 Routes - 13.5 Miles

- 8.9 miles on-street routes
- 4.6 miles off-street trail

Critical Gaps are the relatively short sections of future greenways or urban trails that fill “gaps” in the existing regional trail network. These gaps typically connect to existing trails or other non-motorized facilities at both ends.

REGIONAL LINKS

27 Routes - 122 Miles

- 88.1 miles on-street routes
- 33.9 miles off-street trail

Regional Links reflect longer sections of the regional network. These routes typically connect to existing regional trails on at least one end, linking major population centers, employment hubs, recreational anchors, or even trails and communities outside of Cuyahoga County.

KEY SUPPORTING ROUTES

30 Routes - 107 Miles

- 86.5 miles on-street routes
- 20.5 miles off-street trail

Key Supporting Routes are those routes (not classified as regional) that have a significant opportunity to address local needs. Many of these routes were found through public engagement, Steering Committee input, or technical evaluation. They provide substantial local benefits or other significant links in the network and are thus important projects for implementation.

ALL OTHER ROUTES

371 Miles

- 279.3 miles on-street routes
- 91.7 miles off-street trail

Other Supporting Routes are all remaining routes named in the Overall Framework but not shown or highlighted in the prioritization plan. Every route shown within the Overall Framework Plan is considered a meaningful connection in the county and should be built if local demand, funding, and conditions make construction possible. As projects are built and local demand shifts in ways not yet identified, these remaining routes may indeed be elevated to Critical Gap or other high priority status.

CRITICAL GAPS

RT#	MILEAGE	RT NAME
CG-01	1.8	ROCKY RIVER RESERVATION TO GREAT NORTHERN CONNECTOR
CG-02	2.5	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - SOUTH
CG-03	1.2	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - NORTH
CG-04	0.9	LOWER BIG CREEK GREENWAY - UPLAND TRAIL
CG-05	0.2	LOWER BIG CREEK GREENWAY - TOWPATH CONNECTOR
CG-06	0.5	CLEVELAND FOUNDATION CENTENNIAL LAKE LINK TRAIL - IRISHTOWN BEND
CG-07	0.8	MORGANA RUN TRAIL - BOOTH AVENUE EXTENSION
CG-08	1.2	MCCRACKEN TRAIL TO GARFIELD RESERVATION CONNECTOR
CG-09	1.2	BEDFORD RESERVATION TO TOWPATH CONNECTOR
CG-10	1.2	SHAKER MEDIAN TRAIL TO SHAKER LAKES CONNECTOR
CG-11	2.4	EUCLID CREEK GREENWAY
CG-12	0.3	SOUTH CHAGRIN RESERVATION TO BEDFORD RESERVATION

REGIONAL LINKS

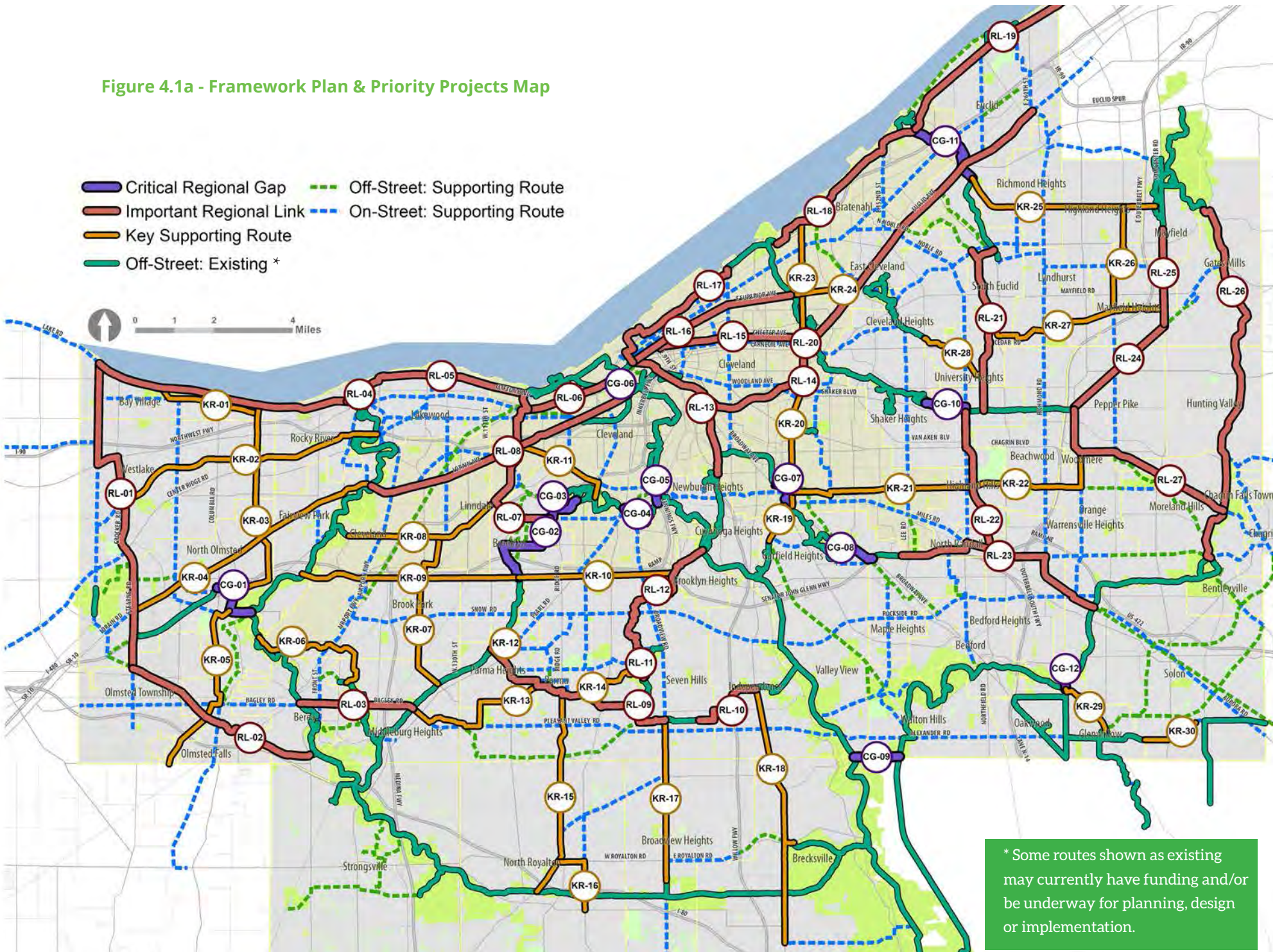
RT#	MILEAGE	RT NAME
RL-01	8.6	LAKEFRONT GREENWAY WEST TO NORTH OLMSTED 480 TRAIL
RL-02	5.3	NORTH OLMSTED 480 TRAIL TO MILL STREAM RUN RESERVATION
RL-03	2.9	BAGLEY ROAD CONNECTOR
RL-04	6.9	LAKEFRONT GREENWAY (WEST 2)
RL-05	5.5	LAKEFRONT GREENWAY (WEST 1)
RL-06	2.5	DETROIT AVENUE
RL-07	4.8	LAKEFRONT RESERVATION EDGEWATER PARK TO BROOKLYN MEMORIAL PARK
RL-08	7.1	LORAIN AVENUE CYCLETRACK
RL-09	5.9	WEST CREEK GREENWAY TO BIG CREEK RESERVATION
RL-10	2.2	WEST CREEK GREENWAY (SOUTH)
RL-11	0.3	WEST CREEK GREENWAY
RL-12	4.6	WEST CREEK GREENWAY (NORTH)
RL-13	4.4	SLAVIC VILLAGE DOWNTOWN CONNECTOR
RL-14	3.9	OPPORTUNITY CORRIDOR & IRON COURT CONNECTOR
RL-15	3.8	CHESTER AVENUE
RL-16	4.4	SUPERIOR AVENUE MIDWAY CYCLETRACK
RL-17	4.3	LAKEFRONT GREENWAY (EAST 1)
RL-18	5.0	LAKEFRONT GREENWAY (EAST 2)
RL-19	7.9	LAKEFRONT GREENWAY (EAST 3)
RL-20	8.4	EUCLID AVENUE
RL-21	4.7	S. BELVOIR BOULEVARD
RL-22	3.6	NORTHFIELD ROAD/WARRENSVILLE CENTER ROAD
RL-23	5.9	SOUTH CHAGRIN RESERVATION TO MCCRACKEN TRAIL CONNECTOR
RL-24	3.1	GATES MILLS BOULEVARD TRAIL
RL-25	2.4	SOM CENTER ROAD
RL-26	9.9	CHAGRIN RIVER ROAD
RL-27	5.2	CHAGRIN BOULEVARD/OLD BRAINARD ROAD

KEY ROUTES

RT#	MILEAGE	RT NAME
KR-01	2.6	WOLF ROAD
KR-02	7.0	HILLIARD BOULEVARD
KR-03	5.5	CLAGUE ROAD
KR-04	6.8	LORAIN ROAD
KR-05	4.9	COLUMBIA ROAD/USHER ROAD
KR-06	3.8	ABRAM CREEK GREENWAY
KR-07	4.3	SMITH ROAD GREENWAY
KR-08	4.0	BELLAIRE ROAD/PURITAS ROAD
KR-09	5.6	BROOKPARK ROAD - WEST
KR-10	4.0	BROOKPARK ROAD - EAST
KR-11	2.6	FULTON ROAD/DENISON AVENUE
KR-12	0.7	PEARL ROAD - SOUTH
KR-13	4.1	WEST CREEK GREENWAY/SHOPPES AT PARMA TO BIG CREEK RESERVATION
KR-14	2.1	WEST CREEK RESERVATION - PARMADALE TO STERNS HOMESTEAD
KR-15	5.3	RIDGE ROAD/BENNETT ROAD
KR-16	1.9	ROYALTON ROAD/STATE ROAD
KR-17	4.1	BROADVIEW ROAD - CENTRAL
KR-18	6.8	BRECKSVILLE ROAD
KR-19	1.0	WARNER ROAD
KR-20	3.7	E. 93RD STREET
KR-21	4.7	HARVARD AVENUE (CENTRAL)
KR-22	3.7	HARVARD AVENUE (EAST)
KR-23	3.1	E. 105TH STREET
KR-24	1.7	SUPERIOR AVENUE (EAST)
KR-25	5.0	HIGHLAND ROAD
KR-26	2.9	MINER ROAD/LANDER ROAD
KR-27	5.0	ACACIA CONNECTOR
KR-28	1.9	WASHINGTON BOULEVARD
KR-29	1.6	TINKER'S CREEK TRAIL - NORTH
KR-30	1.4	PETTIBONE ROAD

Figure 4.1a - Framework Plan & Priority Projects Map

- Critical Regional Gap
- Important Regional Link
- Key Supporting Route
- Off-Street: Existing *
- Off-Street: Supporting Route
- On-Street: Supporting Route



* Some routes shown as existing may currently have funding and/or be underway for planning, design or implementation.

TERMINOLOGY IN PROJECT INFORMATION TABLES (BELOW)

The following describes the information attributes and terms used in the project information tables on the following pages.

ID

Refers to the type of project, as identified in the framework map. The letters denote the project type (list below) and the number is the project ID number for that type of project.

- CG = Critical Gaps
- RL = Regional Link
- KR = Key Route

ROUTE NAME

The name of the project in the framework. Note that these names may differ from established trail names in cases where portions of proposed projects overlap with existing trails or other planned projects.

COMMUNITIES

List of municipalities touched directly by the route alignment.

LENGTH

Length of the project in miles.

Note that there may be portions of the route that contain existing facilities (e.g. trail segments or bicycles lanes). This length nevertheless reflects the total length of the project's route. In many cases there may be a desire to provide a higher level of facility than what exists today.

ROUTE TYPE

Refers to the whether the road is on-street (inside public rights-of-way), off-street, or a mixture.

- **On-Street:** Route is 85% or more on-street
- **Off-Street:** Route is 85% or more off-street
- **Hybrid:** Route is a mixture of on- and off-street (neither is over 85%)

CONTEXT

Refers to the general intensity of development and urbanization along the project route. This has an impact on amount of space available – particularly within street rights-of-way – for potential greenway facilities.

- **Urban:** Typically fully urbanized land areas. Denser parcel configurations and land use mix. Streets tend to be wider with the full width of rights-of-way utilized. Overall tend to be more constrained for space.
- **Suburban:** More suburban development patterns. Neighborhoods have larger lots and bigger setbacks. Commercial areas tend to be more auto-centric development models (e.g. strip malls, lots of surface parking). Streets tend to be wider with multiple lanes. Moderate level of space constraints.
- **Rural:** Lower level of development, larger ex-urban parcels for residential properties. Commercial properties tend to be on large parcels with generous setbacks. Roads tend to not have curb and gutter, and instead shoulders with drainage ditches. Relatively least contained for space.

LAND USE MIX

This refers to the types and relative mixtures of land uses along the project route. This is important for considering the types of amenities, as well as the potential design and expenses for implementing different routes.

- **Residential:** Refers to land uses for housing, including single-family and mixed-density housing.
- **Commercial:** Applies to commercial uses such as office, retail, dining, entertainment, services, and other business uses.
- **Civic:** Institutional uses such as schools, universities, and health care facilities. Partnerships with property owners and/or institutional operators may provide opportunities for easements for greenways and urban trails.
- **Industrial:** Uses for light manufacturing, warehousing, and general production/manufacturing. Can be relatively more challenging to implement trails along these areas and may require more supplemental amenities to provide a welcoming trail facility.
- **Recreational:** Broadly includes open spaces, whether used for recreational purposes or natural resources. Lands typically more able to accommodate greenways and trails.

- **Infrastructure:** Primarily refers to land areas with major transportation infrastructure, including bridges highway interchanges, utility corridors, and railroads. Projects along these areas may face greater design challenges and associated implementation costs.
- **Mixed:** Denotes that a diverse range of uses exist along the route in addition to the primary land use types identified above.

IMPLEMENTATION NOTES

This contains notes relative to implementation of the particular project, including:

- Opportunities to align the project with other initiatives or transportation projects;
- Partnerships or funding opportunities;
- Existing planning status (if recent targeted planning studies exist);
- Alternative route alignments that make the same end-to-end connections; and,
- Ideas for potential greenway or urban trail facilities considered previously

ROAD LANES

For on-street or hybrid routes, the number of vehicle travel lanes that typically exist along the corridor. Four-lane roads with less than 15,000 annual average daily trips (AADT) may be candidates for road diets.

TRAFFIC AADT

AADT is a measure of the total number of cars traveling along a section of roadway over the course of an average day.

PRIORITY ROJECTS: CRITICAL GAPS

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
CG-1	ROCKY RIVER RESERVATION TO GREAT NORTHERN CONNECTOR	North Olmstead	1.8	On-Street	Urban	Commercial Mixed/ Residential/ Recreational	North Olmsted Master Plan; Rocky River Master Plan	
CG-2	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - SOUTH	Brooklyn	2.5	Hybrid	Urban	Residential / Infrastructure.	Big Creek Greenway Trail Alignment & Neighborhood Connector Plan (TLCI); Brooklyn Master Plan (in progress)	
CG-3	BROOKSIDE RESERVATION TO BIG CREEK RESERVATION CONNECTOR - NORTH	Brooklyn Cleveland	1.2	On-Street	Urban	Residential	Brookside Master Plan; Big Creek Greenway Trail Alignment & Neighborhood Connector Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
CG-4	LOWER BIG CREEK GREENWAY - UPLAND TRAIL	Cleveland	0.9	Hybrid	Urban	Residential/ Industrial	Western Reserve Land Conservancy Thriving Communities (purchased Henninger property)	Applied for Clean Ohio (trail fund denied; conservation funding is pending); applied for private funding (pending)
CG-5	LOWER BIG CREEK GREENWAY - TOWPATH CONNECTOR	Cleveland	0.2	On-Street	Urban	Industrial	CMP Reservation Planning for Ohio & Erie Canal; Cleveland Bikeway Master Plan (updated database)	
CG-6	CLEVELAND FOUNDATION CENTENNIAL LAKE LINK TRAIL - IRISHTOWN BEND	Cleveland	0.5	Off-Street	Urban	Industrial	Irishtown Bend Redevelopment Plan (TLCI); Cleveland Bikeway Master Plan (updated database); Canal Basin District Plan (TLCI)	CMAQ funding received for trail construction (2021)
CG-7	MORGANA RUN TRAIL - BOOTH AVENUE EXTENSION	Cleveland	0.8	Hybrid	Urban	Industrial/ Residential	Slavic Village Greenway Bike, Pedestrian, and Transit Plan (TLCI); Slavic Village Neighborhood Connections Plan (TLCI); Slavic Village Downtown Connector Plan; Cleveland Bikeway Master Plan (updated database)	
CG-8	MCCRACKEN TRAIL TO GARFIELD RESERVATION CONNECTOR	Garfield Heights Maple Heights	1.2	Off-Street	Suburban	Industrial	(no existing plans)	
CG-9	BEDFORD RESERVATION TO TOWPATH CONNECTOR	Valley View Walton Hills	1.2	Off-Street	Rural	Recreational	Bedford Reservation Master Plan; Cuyahoga Valley National Park Trail Management Plan/Environmental Impact Statement	
CG-10	SHAKER MEDIAN TRAIL TO SHAKER LAKES CONNECTOR	Shaker Heights	1.2	On-Street	Suburban	Recreational / Residential	Eastside Greenway Plan (TLCI); Lake to Lakes Trail	

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
CG-11	EUCLID CREEK GREENWAY	Cleveland Euclid	2.4	On-Street	Urban	Infrastructure / Industrial	Eastside Greenway Plan (TLCI); Lower Euclid Creek Greenway Plan (Cuyahoga Soil & Water Conservation District); Euclid Master Plan; CMO Euclid Creek Reservation Master Plan; Cleveland Bikeway Master Plan (updated database)	CMAQ construction funding for small link within CMP (2022)
CG-12	SOUTH CHAGRIN RESERVATION TO BEDFORD RESERVATION	Glenwillow Oakwood Solon	0.3	Off-Street	Rural	Recreational / Industrial	Emerald Neckace Bicycle & Pedestrian Trail Crossing Improvement Plan (TLCI); Bedford Reservation Park Master Plan (CMP); South Chagrin Reservation Park Master Plan (CMP); Richmond Road Corridor Research & Technical Study	CMP applied for TLCI Implementation Funding (not funded); Glenwillow & Oakwood applied for DOPWIC funding (not received, will reapply in 2019)

PRIORITY PROJECTS: REGIONAL LINKS

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
RL-1	LAKEFRONT GREENWAY WEST TO NORTH OLMSTED 480 TRAIL	<ul style="list-style-type: none"> • Bay Village • North Olmstead • Olmstead Township • Westlake 	8.6	Hybrid	Suburban	Residential/ Commercial	Westlake Citywide Bike Plan (TLCI); Bay Village Master Plan; Bradley Woods Master Plan (CMP)	Existing segment along Crocker-Stearns (adjacent to Bradley Woods, Center Ridge Road to municipal line)
RL-2	NORTH OLMSTED 480 TRAIL TO MILL STREAM RUN RESERVATION	<ul style="list-style-type: none"> • Berea • Olmstead Falls • Olmstead Township 	5.3	Off-Street	Rural	Infrastructure/ Recreational	Mill Stream Run Reservation Master Plan (CMP); Olmsted Twp Complete Streets Plan	Located along the utility corridor (regional bicycle network on NOACA portal; its name may be the First Energy Trail)
RL-3	BAGLEY ROAD CONNECTOR	<ul style="list-style-type: none"> • Berea • Middleburg Heights 	2.9	On-Street	Suburban	Commercial/ Civic Mixed	(no existing plans)	
RL-4	LAKEFRONT GREENWAY (WEST 2)	<ul style="list-style-type: none"> • Rocky River • Bay Village • Lakewood 	6.9	On-Street	Suburban	Residential	Rocky River Master Plan; Bay Village Master Plan; Cahoon Park Connectivity Plan (TLCI)	Coordinate with Bay Village plans for Wolf Rd; bicycle lanes implemented as part of Cahoon Park Connectivity Plan
RL-5	LAKEFRONT GREENWAY (WEST 1)	<ul style="list-style-type: none"> • Cleveland • Lakewood • Rocky River 	5.5	On-Street	Urban	Residential	Rocky River Master Plan; Lake Avenue Bike Infrastructure Plan (TLCI in progress); Cleveland Bikeway Master Plan (updated database)	
RL-6	DETROIT AVENUE	<ul style="list-style-type: none"> • Cleveland 	2.5	On-Street	Urban	Commercial Mixed	Cleveland Bikeway Master Plan (updated database)	Conventional bicycle lanes exist
RL-7	LAKEFRONT RESERVATION EDGEWATER PARK TO BROOKLYN MEMORIAL PARK	<ul style="list-style-type: none"> • Brooklyn • Cleveland • Linndale 	4.8	On-Street	Urban	Residential/ Commercial/ Infrastructure	Cleveland Parks & Boulevards, circa 1906 (Kelly will send plan name); Cleveland Bikeway Master Plan (updated database)	
RL-8	LORAIN AVENUE CYCLETRACK	<ul style="list-style-type: none"> • Cleveland • Fairview Park 	7.1	On-Street	Urban	Commercial Mixed	Ohio City's Lorain Avenue studies and plans; Cleveland Bikeway Master Plan (updated database)	
RL-9	WEST CREEK GREENWAY TO BIG CREEK RESERVATION	<ul style="list-style-type: none"> • Parma • Parma Heights 	5.9	Hybrid	Suburban	Recreational/ Commercial Mixed	Parma Master Plan; West Creek Greenway Trail Master Plan	
RL-10	WEST CREEK GREENWAY (SOUTH)	<ul style="list-style-type: none"> • Independence • Seven Hills 	2.2	Hybrid	Suburban	Residential/ Civic	West Creek Greenway Trail Master Plan; West Creek Reservation Master Plan (CMP)	small CMAQ construction funding (2022)
RL-11	WEST CREEK GREENWAY	<ul style="list-style-type: none"> • Parma 	0.3	Off-Street	Rural	Recreational	West Creek Greenway Trail Master Plan; West Creek Reservation Master Plan (CMP)	
RL-12	WEST CREEK GREENWAY (NORTH)	<ul style="list-style-type: none"> • Brooklyn Heights • Cuyahoga Heights • Parma • Seven Hills 	4.6	Off-Street	Urban	Residential/ Recreational	West Creek Greenway Trail Master Plan; West Creek Reservation Master Plan (CMP)	

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
RL-13	SLAVIC VILLAGE DOWNTOWN CONNECTOR	• Cleveland	4.4	Off-Street	Urban	Infrastructure/Industrial	Slavic Village Greenway Bike, Pedestrian, and Transit Plan (TLCI); Slavic Village Neighborhood Connections Plan (TLCI); Slavic Village Downtown Connector Plan; Cleveland Bikeway Master Plan (updated database)	TAP funding for Phase 1 construction (2021)
RL-14	OPPORTUNITY CORRIDOR & IRON COURT CONNECTOR	• Cleveland	3.7	Hybrid	Urban	Infrastructure/Industrial	Opportunity Corridor (ODOT); Slavic Village Neighborhood Connections Plan (TLCI)	OC section will be built with OC construction
RL-15	CHESTER AVENUE	• Cleveland	3.8	On-Street	Urban	Commercial Mixed	Midway Cycle Track Design Concept and Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
RL-16	SUPERIOR AVENUE MIDWAY CYCLETRACK	• Cleveland	4.4	On-Street	Urban	Commercial Mixed	Midway Cycle Track Design Concept and Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
RL-17	LAKEFRONT GREENWAY (EAST 1)	• Cleveland	4.3	Hybrid	Urban	Infrastructure	Lakefront Greenway and Downtown Connector Plan (TLCI); Eastside Greenway Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
RL-18	LAKEFRONT GREENWAY (EAST 2)	• Bratenahl • Cleveland	5.0	On-Street	Suburban	Residential	Eastside Greenway Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	Some conventional bicycle lanes
RL-19	LAKEFRONT GREENWAY (EAST 3)	• Cleveland • Euclid	7.9	On-Street	Urban	Residential	Euclid Master Plan; Cleveland Bikeway Master Plan (updated database)	
RL-20	EUCLID AVENUE	• Cleveland • East Cleveland • Euclid	8.4	On-Street	Urban	Commercial Mixed	Eastside Greenway Plan (TLCI); Euclid Master Plan; Cleveland Bikeway Master Plan (updated database); Circle-Heights Missing Links TLCI Study (TLCI); Euclid Avenue Recreationway Corridor (Destination Euclid);	
RL-21	S. BELVOIR BOULEVARD	• Cleveland Heights • Shaker Heights • South Euclid • University Heights	4.7	On-Street	Suburban	Residential	Eastside Greenway Plan (TLCI); University Heights Master Plan (MM needs to check); South Euclid Master Plan (does it exist? MM checking)	

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
RL-22	NORTHFIELD ROAD/ WARRENSVILLE CENTER ROAD	<ul style="list-style-type: none"> • Highland Hills • North Randal • Shaker Heights • Warrensville Heights 	3.6	Hybrid	Suburban	Commercial Mixed/Civic	Northfield-Warrensville Multimodal Connectivity Plan (TLCI); Eastside Greenway Plan (TLCI); Van Aken District Connections Plan (TLCI)	
RL-23	SOUTH CHAGRIN RESERVATION TO MCCRACKEN TRAIL CONNECTOR	<ul style="list-style-type: none"> • Bedford Heights • Cleveland • Garfield Heights • North Randall • Solon • Warrensville Heights 	5.9	Hybrid	Suburban	Industrial/ Infrastructure	(no existing plans???)	
RL-24	GATES MILLS BOULEVARD TRAIL	<ul style="list-style-type: none"> • Gates Mills • Mayfield Heights • Pepper Pike 	3.1	Off-Street	Suburban	Recreational/ Residential	Eastside Greenway Plan (TLCI)	Mayor of Pepper Pike is interested, supportive but nothing is planned
RL-25	SOM CENTER ROAD	<ul style="list-style-type: none"> • Gates Mills • Mayfield • Mayfield Heights 	2.4	On-Street	Suburban	Commercial/ Residential	Eastside Greenway Plan (TLCI); Mayfield Village Master Plan; Mayfield Village Green Corridor Master Plan	
RL-26	CHAGRIN RIVER ROAD	<ul style="list-style-type: none"> • Bentleyville • Gates Mills • Hunting Valley • Moreland Hills 	9.9	Hybrid	Rural	Recreational/ Residential	Eastside Greenway Plan (TLCI); Chagrin Valley Connector Study (TLCI)	
RL-27	CHAGRIN BOULEVARD/OLD BRAINARD ROAD	<ul style="list-style-type: none"> • Woodmere • Pepper Pike • Moreland Hills 	5.2	Hybrid	Rural	Commercial/ Residential Mixed	Eastside Greenway Plan (TLCI) Woodmere Master Plan (in progress with CCPC)	

PRIORITY PROJECTS: KEY SUPPORTING ROUTES

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
KR-1	WOLF ROAD	• Bay Village	2.6	On-Street	Urban	Residential	Bay Village Master Plan; Cahoon Park Connectivity Plan (TLCI)	Some existing conventional bicycle lanes
KR-2	HILLIARD BOULEVARD	• Lakewood • Rocky River • Westlake	7.0	On-Street	Suburban	Residential	Westlake Citywide Bike Plan (TLCI); Rocky River Master Plan	
KR-3	CLAGUE ROAD	• Bay Village • North Olmsted • Westlake	5.5	On-Street	Suburban	Residential	Westlake Citywide Bike Plan (TLCI); Bay Village Master Plan; North Olmsted Master Plan (verify it exists & includes Clague)	
KR-4	LORAIN ROAD	• Fairview Park • North Olmsted	6.8	On-Street	Suburban	Commercial Mixed	Fairview Park Lorain Road Corridor Study (TLCI, in progress)	
KR-5	COLUMBIA ROAD/USHER ROAD	• North Olmsted • Olmsted Falls • Olmsted Township	4.9	On-Street	Suburban	Residential/ Commercial	Olmsted Falls Master Plan;	
KR-6	ABRAM CREEK GREENWAY	• Brook Park • Cleveland • Middleburg Heights • Olmsted Township	3.8	Off-Street	Suburban	Infrastructure/ Industrial	Abram Creek Greenway Plan (TLCI)	
KR-7	SMITH ROAD GREENWAY	• Brook Park • Cleveland • Middleburg Heights	4.3	Hybrid	Urban	Residential/ Infrastructure/ Recreational	(no existing plan)	Some existing conventional bicycle lanes
KR-8	BELLAIRE ROAD/PURITAS ROAD	• Cleveland • Linndale	4.0	On-Street	Urban	Commercial Mixed/ Residential	Midway Cycle Track Design Concept and Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
KR-9	BROOKPARK ROAD - WEST	• Brook Park • Brooklyn • Cleveland • Fairview Park • Parma	5.6	On-Street	Suburban	Commercial/ Infrastructure	Brook Park Master Plan (in progress, CCPC)	
KR-10	BROOKPARK ROAD - EAST	• Brooklyn • Brooklyn Heights • Cleveland • Parma	4.0	On-Street	Suburban	Commercial/ Infrastructure	Brook Park Master Plan (in progress, CCPC)	Some existing conventional bicycle lanes
KR-11	FULTON ROAD/DENISON AVENUE	• Cleveland	2.6	On-Street	Urban	Commercial Mixed	Midway Cycle Track Design Concept and Plan (TLCI) VERIFY???: Cleveland Bikeway Master Plan (updated database)	
KR-12	PEARL ROAD - SOUTH	• Parma Heights	0.7	Hybrid	Suburban	Commercial/ Recreational	Parma Heights Master Plan; Pearl Road Complete and Green Streets Initiative (TLCI)	

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
KR-13	WEST CREEK GREENWAY/ SHOPPES AT PARMA TO BIG CREEK RESERVATION	• Middleburg Heights • Parma • Parma Heights	4.1	Hybrid	Suburban	Residential/ Recreational	Parma Master Plan	
KR-14	WEST CREEK RESERVATION - PARMADALE TO STERNS HOMESTEAD	• Parma	2.1	Off-Street	Suburban	Civic/ Recreational	Parma Master Plan; West Creek Greenway Trail Plan	
KR-15	RIDGE ROAD/BENNETT ROAD	• North Royalton • Parma	5.3	On-Street	Rural	Residential Mixed	(no existing plan)	
KR-16	ROYALTON ROAD/STATE ROAD	• North Royalton	1.9	On-Street	Rural	Residential/ Commercial Mixed	(no existing plan)	
KR-17	BROADVIEW ROAD - CENTRAL	• Broadview Heights • Parma	4.1	On-Street	Rural	Residential/ Commercial Mixed	(no existing plan)	
KR-18	BRECKSVILLE ROAD	• Brecksville • Independence	6.8	On-Street	Rural	Residential Mixed	Brecksville Master Plan	Some existing conventional bicycle lanes
KR-19	WARNER ROAD	• Cleveland • Garfield Heights	1.0	On-Street	Urban	Commercial Mixed	Warner-Garfield Trail & Trailhead Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
KR-20	E. 93RD STREET	• Cleveland	3.7	On-Street	Urban	Industrial/ Commercial Mixed	Thrive 105 Plan; Cleveland Bikeway Master Plan (updated database)	
KR-21	HARVARD AVENUE (CENTRAL)	• Cleveland • Warrensville Heights	4.7	On-Street	Urban	Residential/ Commercial	Eastside Greenway Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
KR-22	HARVARD AVENUE (EAST)	• Beachwood • Highland Hills • Orange • Warrensville Heights • Woodmere	3.7	Hybrid	Suburban	Commercial/ Recreational Mixed	Eastside Greenway Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
KR-23	E. 105TH STREET	• Bratenahl • Cleveland	3.1	On-Street	Urban	Commercial/ Civic Mixed	Thrive 105 Plan; Cleveland Bikeway Master Plan (updated database)	
KR-24	SUPERIOR AVENUE (EAST)	• Cleveland • East Cleveland	1.7	On-Street	Urban	Commercial Mixed	Midway Cycle Track Design Concept and Plan (TLCI); Eastside Greenway Plan (TLCI); Cleveland Bikeway Master Plan (updated database)	
KR-25	HIGHLAND ROAD	• Euclid • Highland Heights • Mayfield • Richmond Heights	5.0	On-Street	Suburban	Residential	Eastside Greenway Plan; Cleveland Bikeway Master Plan (updated database)	

ID	ROUTE NAME	COMMUNITIES	LENGTH (Miles)	ROUTE TYPE	CONTEXT	LAND USE MIX	ALIGNED PLANS & PROJECTS	IMPLEMENTATION NOTES (PARTNERS, FUNDING, DESIGN)
KR-26	MINER ROAD/LANDER ROAD	<ul style="list-style-type: none"> Highland Heights Mayfield Mayfield Heights 	2.9	On-Street	Suburban	Residential Mixed	Eastside Greenway Plan (TLCI)	
KR-27	ACACIA CONNECTOR	<ul style="list-style-type: none"> Lyndhurst Mayfield Heights South Euclid 	5.0	Hybrid	Suburban	Residential/Civic	Acacia Reservation Master Plan (CMP)	
KR-28	WASHINGTON BOULEVARD	<ul style="list-style-type: none"> Cleveland Heights University Heights 	1.9	On-Street	Urban	Residential	Eastside Greenway Plan (TLCI); University Heights Master Plan; Warrensville Center Road and Cedar Road Multimodal Transportation Plan (TLCI)	
KR-29	TINKER'S CREEK TRAIL - NORTH	<ul style="list-style-type: none"> Glenwillow 	1.6	Off-Street	Rural	Recreational/Residential	Bedford Reservation Master Plan (CMP); Tinker's Creek Watershed Plan; Village of Glenwillow Master Plan (2009); Glenwillow Trail Plan (2005)	Some existing conventional bicycle lanes
KR-30	PETTIBONE RD	<ul style="list-style-type: none"> Glenwillow Solon 	1.4	On-Street	Rural	Residential	Village of Glenwillow Trail Development Plan	



Image Credit: The City of Lakewood

TIMEFRAME

The Greenways Plan is intended to be flexible, and as recommended projects move toward implementation, there may be alternative alignments and routes that make the same end-to-end connections but are determined to be more feasible or preferable for implementation. In addition, there may be routes included in the Overall Framework that become higher priorities as development patterns change throughout the county. Therefore, the timeframe for implementing the plan is variable and can be largely driven by a project's current status (planning, design, and construction), community support, and regional and local funding available. Some projects may be implemented quickly or within a few years' time, while other more

transformative projects, particularly those along built-up commercial corridors, may take many years to become fully realized.

The important role of this plan is to establish a vision for the county and a set of desired routes and links that should be evaluated and pursued by a variety of groups, organizations, and civic leaders as ideas are developed and funding sources materialize. Development of this plan has also confirmed the regional desire and need for facilities of this type. This should help encourage the movement towards implementation for all projects listed in the Greenways Framework, not just those not currently highlighted in the prioritization plan.

Based upon recent bike and trail construction in the region, and the slight uptick in trail demand and funding, this plan promotes an aspirational goal of constructing 250 miles of trails and bikeways in Cuyahoga County over the next 50 years, equaling approximately 5 miles of new facilities each year. Even if they are not attainable at the region's current pace of construction, having established goals helps track progress and increases urgency and resolve toward achievement. Reaching this goal and completing the entire 257 miles of projects highlighted in the Prioritization Plan represents a logical, meaningful, and achievable target for implementation.

4.2 PARTNERSHIPS & COORDINATION

While implementation of the plan will take place at the local level, it should represent a regional approach that is mutually beneficial to local neighborhoods and the county. Local jurisdictions will continue to handle all site-specific decisions related to the development of their pieces in the regional network. Partnerships between public entities, non-profit groups, and other project partners are important for ensuring that projects are designed and built in alignment with the framework plan. Partners can help supply technical expertise for the design/construction phases as well as helping to advocate for implementation, identify funding sources, or provide maintenance.

Project coordination across varying strategic plans and organizations allows a complex project like the Greenways Plan to be implemented as effectively and efficiently as possible. Integrating the Greenways Framework into the long-range plans of other regional partners ensures each route is discussed, planned, and developed within the context of a multi-modal approach. Each of the following Project Partners, in addition to being part of the CGP, has named some procedures and policies that could aid with implementation.

COUNTY PLANNING

County Planning will integrate routes into community master plans to help confirm alignments, evaluate alternatives, and gather support through public engagement. The Community Master Plan process will allow route changes and project updates based on local feedback, current infrastructure projects, and capital improvements. County Planning and its staff will also serve as the curator and steward of the Greenway Plan to help communicate information and ideas to both citizens and local leadership. This includes working closely with the CGP group by dedicating staff time to help identify and cultivate the next steps in the implementation process. It is expected that along with County Planning other agencies in the CGP will also dedicate staff time to the implementation of plan projects on an ongoing basis. These include but are not limited to, developing a project website, coordinating GIS data updates, and helping foster a long-term strategic vision for the CGP.

CLEVELAND METROPARKS

Cleveland Metroparks is committed to advancing connections and trail systems that complete the Emerald Necklace and, in partnership with other agencies and communities, connect with local, state, and regional trail networks, communities, and places of interest. Reservation Master Plans identify opportunities for internal trail improvements as well as links to neighboring communities. Park District staff is also active in regional efforts such as the Industrial Heartland Trail, the Ohio and Erie Canal Towpath Trail, and the Lake Erie Coastal Ohio Trail. The Greenway Plan bridges the local efforts and regional efforts and highlights key segments to improve the trail network by connecting existing trail segments. Cleveland Metroparks will utilize the Cuyahoga Greenways Plan to help prioritize trail projects as the organization continues to work with community partners and pursue funding and implementation.

NOACA

NOACA will continue to build on its efforts to include bicycle and pedestrian facilities as a safe, healthy, and viable transportation choice in Northeast Ohio. To provide a system that supports active transportation effectively, NOACA gathers and provides valuable data, analyzes the data to identify trends and needs, develops plans to accomplish goals, and uses these materials for integration into planning and project development. There are several specific NOACA programs and projects that will potentially aid in Cuyahoga Greenways implementation:

- The 2020 Bicycle and Pedestrian Plan will translate global best practices into the Northeast Ohio context in order to help our member communities reap the health, social, and economic benefits of creating bikeable and walkable spaces. NOACA will proactively collaborate with stakeholders and our member communities to create the plan.

- NOACA's Transportation for Livable Communities Initiative (TLCI) provides assistance to communities and public agencies for integrated transportation and land use planning and projects that strengthen community livability.
- Implementation funding is available through the Transportation Improvement Program (TIP). The TIP represents all federally funded transportation projects adopted for implementation in the immediate four years of the NOACA long-range transportation plan (LRTP). The TIP process budgets, prioritizes, and schedules projects identified by NOACA in its LRTP, as proposed by local communities, county engineers, the Ohio Department of Transportation, and other sponsors.

ADDITIONAL GROUPS

In addition to Project Partners' support for plan implementation, several Project Team members also suggested, during a project exit survey, that when applicable they too would work to integrate the Cuyahoga Greenways Plan into their current transportation planning and implementation efforts. This group of survey respondents, while small, showed how coordination among groups and projects was important -- none of the groups set aside more than \$500,000 for trail construction/improvements as part of their annual budgets. Several respondents did not contain any dedicated trail funding at all, displaying the need to leverage popular existing funding sources (NOACA's various federal aid programs, Clean Ohio Trails Fund, Recreational Trails Fund, municipal funding, private funding, and foundation grants) to achieve financing goals. This further demonstrates the need to strengthen partnerships and coordination between groups so that all projects - when competing for the limited funding available - will mutually reinforce both the local and regional visions established in the Greenways Plan.

4.3 CUYAHOGA GREENWAY PARTNERS

FORMATION OF THE CGP

The Cuyahoga Greenway Partners (CGP), formed in 2014, is a collaborative featuring key executives and staff from agencies and organizations across Cuyahoga County. Each member partner brings focused perspectives and knowledge of trails, bicycle and pedestrian infrastructure, and transportation planning. The CGP convened to establish a regional vision for a network of trails and bike lanes serving the transportation, recreation, and mobility needs of all citizens.

To guide the new group's work, CGP leaders established the following six aspirational goals:

- Establish and sustain a unified clearinghouse to inventory, coordinate and routinely monitor, with supportive data, the status of the recreation, transportation-choice network, planning, and implementation initiatives.
- Define the regional working trail/bikeway plan on a three (3) year horizon and update with new priorities every year.

- Leverage and maximize funding to the region through collaboration in the seeking, supporting, developing and allocating of funds and other resources for the recreation, transportation-choice network development.
- Build and sustain trail development capacity.
- Become a common voice for ongoing advocacy for recreation and transportation-choice network.
- Establish and periodically refresh common messaging, marketing and promotion for the recreation, and transportation-choice network of the region.

In 2016, after early success in developing several work products related to the above goals, as well as completion of the Eastside Greenway Plan, CGP leadership and the Cuyahoga County Planning Commission decided to pursue TLCI funding for the proposed Cuyahoga Greenways Plan. An overarching framework to guide greenway and urban trail development in the county for the foreseeable future. The Cuyahoga Greenways planning process and subsequent Framework Plan was developed with support from the CGP.

CUYAHOGA GREENWAYS PLAN IMPLEMENTATION

Now that the Cuyahoga Greenways Plan exists, the CGP is in process of updating its goals to align its efforts towards implementing the plan. The CGP may adopt the logo, messaging, route list, and this plan document, and use them as a meaningful and reference guide and resource for their ongoing work.

In addition to updating the group's goals, it could be advantageous for the CGP to launch its own strategic plan that clearly defines its vision, mission, organizational structure, and preferred role in helping to establish and implement the Cuyahoga Greenways Plan. With no single agency currently responsible for the governance, development, funding, construction, and maintenance of regional trails, the implementation of plan recommendations will need local partnerships and multiple agency coordination.

POSSIBILITIES FOR THE FUTURE

A general management and oversight organization – found within a government entity or outside through a non-profit, foundation, or alliance – could help guide the overall implementation process and aid with or advocate for facility development for the Cuyahoga Greenways Plan. Where the CGP, or another group, fits within the regional context going forward will be key in forming a valuable and practical organization that helps promote active transportation and achieve the Plan’s mission.

Listed below and in the Nationwide Benchmark section are examples of other greenway initiatives and the various governance structures, partners, roles, and organizational types used. These examples have been researched by both the CGP and as part of the Cuyahoga Greenways planning process, though none has been identified as the best fit for the county. They could, however, provide an optional blueprint for new regional governance and funding structures, regional agencies (government vs. non-government) responsible, and what potential role(s) the CGP and other organizations might fulfill moving forward. Establishing a permanent governing structure could help ensure a common message and coordinated management strategy throughout future planning and implementation processes.

SINGLE-AGENCY MODEL

The single-agency greenway model is developed around the leadership of a local, regional or state government agency. Often this will be a parks and recreation or planning department whose interests and operating mission are naturally aligned with the goals for greenways. This would require one current agency – e.g. County Planning – to become the curator and advocate for the plan and its implementation.

The Raleigh, North Carolina Capital Area Greenway Trail System (primarily off-road trails) is an example of a single-agency greenway model with the City of Raleigh Parks and Recreation Department as lead agency. Under this structure the CGP would function in a supportive role to advocate for implementation of the Cuyahoga Greenways Plan recommendations.

MULTI-AGENCY MODEL

The multi-agency model offers a similar organizational foundation as the single-agency model; however, in this example, two or more agencies have pooled their talents and divided the responsibilities to resolve the complex issues for greenway implementation. A partnership among groups like government agencies, park districts, MPOs and/or a lead group like County Planning would be needed for this model to take shape.

The Charlotte-Mecklenburg County, North Carolina Greenway Program is an example of a dual agency program with Parks and Recreation as lead, and County Stormwater Services, Charlotte-Mecklenburg Utilities and other agencies in supporting roles. Again, under this structure, the CGP would have a limited role and become a key advocate and supporter of the other agency’s roles and missions.

PARTNERSHIP MODEL: PUBLIC DIRECTED

One possible model for greenways is a strong-side public sector, which means that local government partners support the bulk of the design and implementation efforts, with the private or non-profit sector supporting this partnership in any way through advocacy, fundraising, promotion, and programming.

The Roanoke Valley Greenway Commission is a good example of a regional public-private greenway organization. The Greenway Commission was formed with an intergovernmental agreement among five local jurisdictions, each appointing three citizen members. The group’s additional members include a representative from the Roanoke Valley MPO, land conservancy groups, and one member from the ‘Pathfinders for Greenways’ citizen

group. The Pathfinders promote and encourage development of a greenway network, educate citizens and officials on greenway benefits, raise money, receive gifts, donations, and grants, organize volunteers to assist with maintenance, and sponsor greenway promotional efforts and outreach. Pathfinders' volunteers donate 5,000+ hours of service each year and have purchased over \$100,000 worth of trail building equipment. Pathfinders for Greenways, a 501(c)(3) grass roots citizen organization with a volunteer board, envisions establishing a first-class regional greenway system within the Roanoke Valley. This framework provides an example for how the Cuyahoga Greenways Partners group might evolve, expand, and/or function in a similar Government/Public lead strategy.

PARTNERSHIP MODEL: PRIVATE DIRECTED

Under an alternative scenario, the private or non-profit sector is the primary director, meaning these organizations shoulder more of the burden for planning, design, implementation, management, and maintenance of greenways. Under this model, public sector partners typically support greenway efforts in the areas of management, promotion, and programming.

The Saint Paul Riverfront Corporation, a non-profit that played an instrumental role in promoting and designing the downtown St. Paul Riverfront and Chicago Openlands are both good examples of non-profit groups that have been successful in leading redevelopment initiatives such as trails, open space, and greenway planning. While the Saint Paul Riverfront group recently closed after 33 years, Openlands still remains an example of the significant planning, fund raising, land acquisitions, and transportation solutions a group like the CGP can achieve through quality leadership, extensive collaboration, and regional innovation.

OTHER NATIONWIDE BENCHMARKS

Not all the challenges faced in the region can be changed or solved through this Plan. Therefore, in addition to the governance models outlined it is important to highlight how other regional groups, governments, and non-profit organizations have developed similar greenway initiatives and visions throughout the nation. This section highlights some of those programs and gives a detailed look at their vision, total miles to be built, how projects might be funded, what type of organization may lead and govern the project, and who might be additional partners to get involved. The following chart is meant to provide a benchmark and point of reference to compare other regions' methods versus those utilized here in the Cuyahoga Greenways Plan, and to help develop new leadership ideas, resources, and funding mechanisms to cover current and future challenges.

GREENWAY & TRAIL NETWORK BENCHMARKING

LOCATION	HOUSTON	ST. LOUIS	PHILADELPHIA
INITIATIVE	Bayou Greenways 2020	Great Rivers Greenway	The Circuit Trails
Website	www.houstonparksboard.org	www.greatriversgreenway.org	www.circuittrails.org
Vision	Bayou Greenways 2020 is transforming 3,000 underutilized acres of land along the bayous into linear parks and connecting 150 miles of hike-and-bike trails to parks and communities.	Connecting the St. Louis region with greenways so people can explore their rivers, parks, and communities, making it a vibrant place to live, work, and play.	The Circuit is Greater Philadelphia's multi-use trail network connecting people to jobs, communities, parks, and waterways.
New Trails	80 miles	117 miles built, 200 miles in planning	300 miles complete
Lead Entity	Houston Parks Board	Great Rivers Greenway	Circuit Trails Coalition
Organization Type	501(c)3	Government; multi-jurisdictional trails district	9-county collaboration with over 35 members
Role	Fundraising, managing acquisition, design, construction, and management	Oversees design and implementation; manages revenue from sales tax	12-14 member Steering Committee elected by members
Additional Partners	Houston Parks & Rec Department; Harris County Flood Control District	East-West Gateway Council of Governments; GRG Foundation	Delaware Valley Regional Planning Commission (DVRPC); William Penn Foundation
Funding	\$100M from Parks for You bond referendum (\$166 M total value); \$120M in Private Funding including \$50M from Kinder Foundation	2013 vote for 1/10th GRG sales tax - generates @ \$10M annually; also CAR 3/16th - generates \$10M	3 TIGER grants totalling over \$42M; William Penn - \$10.6M; Local investments and other funding
Timespan	2012 - 2020		20 years
Other Partners	Buffalo Bayou Partnership; Cypress Creek Flood Control Coalition; TIGER Federal Transportation Funds; USACE; TxDOT	Bike St. Louis; MoDOT; Trailsnet	
Notes	Total network - 150 miles; \$220M initiative as part of overall Bayou Greenways effort.	1,300 sq. mi. district - St. Louis City; St. Louis County, St. Charles County - Total Network 600 miles	750 miles, estimated cost \$250M over 20 years

GREENWAY & TRAIL NETWORK BENCHMARKING (CONTINUED)

MEMPHIS	BALTIMORE	TALLAHASSEE	DETROIT COMMUNITY FOUNDATION FOR SE MICHIGAN
Mid-South Regional Greenprint & Sustainability Study	Baltimore Greenway Trails Network	Blueprint Government Agency	GreenWays Initiative
www.midsouthgreenprint.org	www.railstotrails.org/our-work/	blueprint2000.org	cfsem.org/initiative/greenways-initiative
A plan to enhance liveability and sustainability through a unified vision for a regional network of green spaces in Mid-South.	Transforming the public realm by providing equitable, healthy trail access for people of all ages and abilities in Baltimore City.	Holistic Planning, Incorporates multiple modes, stormwater, enhanced landscaping and recreation.	The GreenWays Initiative connects communities, fosters increased engagement with the outdoors, promotes healthier lifestyles, and provides safe alternatives to motorized Transportation
	35 miles	29 projects; 139 miles	More than 100 miles of connected greenways
Memphis & Shelby County Office of Sustainability	Baltimore Greenway Trails Coalition	City of Tallahassee & Leon County Agency	Community Foundation for Southeast Michigan
Government; Joint city-county Department of Planning & Development	Coalition led by local APA and APHA	Government	Foundation
Address housing, environmental degradation, and infrastructure needs through implementation of Greenprint	Led by Rails to Trails Conservancy	Design, engineer, and build projects	Greenways planning and advocacy and some grant making for new greenways
Shelby County Resilience Council; Memphis Urban Area MPO; West Memphis MPO		Economic and Environmental Consensus Committee (EECC); Community Partnerships	
\$60M National Disaster Resilience Grant through HUD		One Cent sales tax - \$32M annually	
25 years			
Shelby Farms Park Conservancy; Agricenter International; Big River Strategic Initiative; Mississippi River Corridor TN	Plan completed through a PLAN4Health grant sponsored by the APA and APHA		
No dedicated funding source; plan was created through a HUD Sustainable Communities grant	Vision would complete the original 1904 Omstead Plan for Baltimore and provide more equitable parks & trails.	"Build the Bike Route System (annual allocation of \$750,000); Construct the sidewalk network (\$2,500,000 per year); Implement the Greenways Master Plan (\$790,000 per year)"	

POTENTIAL GOALS & STRATEGIES

The Cuyahoga Greenways Plan highlights priority routes, governance strategies for implementation, and ideas on partnerships, project coordination, and fundraising. With the plan in place, the Cuyahoga Greenway Partners (CGP) group could potentially refocus their current goals towards plan implementation, becoming a key factor in achieving the Plan's vision by bringing both regional and local groups together in an effort to fulfill its recommendations.

The following example goals and short-term and long-term strategies could be integrated into the future work of the CGP, plan partners, or others to implement the plan.

TARGET

The CGP, with help from other Project Partners, ideally would focus on implementation of routes highlighted in the Cuyahoga Greenways Prioritization Plan. The group could consider potential resources needed for each route – does it have planning, engineering, or funding gap? – and rally to coordinate how best to move individual projects forward.

Prospective Implementation Approaches: Short-Term (or ongoing)

- Use the prioritization plan as a guide to where communication, coordination, and resources could be most impactful to achieving trail access
- Conduct outreach to cities and organizations to share information on the prioritization plan and the value of implementation of specific projects
- Document barriers to implementation and strategies to address these barriers
- Determine how best to incorporate new plans and projects into the overall network

Prospective Implementation Approaches: Long-Term

- Revisit the technical analysis when 2020 Census or other data becomes available, to confirm or update the project list
- Highlight significant changes or shifts in hybrid analysis to new neighborhoods and corridors
- Periodically review, revise, and update list of priority projects
- Build relationships with local leaders, groups, and citizens to help identify project champions



Image Credit: Cleveland Metroparks

TRACK

The current database of existing and proposed trails first developed by the CGP was updated as part of the Cuyahoga Greenways Plan. The CGP, with the help of County Planning staff, could continue to help sustain a unified inventory that is agency coordinated, checked, and routinely updated with the status of all active transportation planning and implementation initiatives.

Prospective Implementation Approaches: Short-Term (or ongoing)

- Conduct outreach to communities on a regular basis to update the database annually or semi-annually
- Develop metrics related to the Cuyahoga Greenways Plan implementation and report to the public and stakeholders on successes and challenges
- Document and report trail mileage added to the network

Prospective Implementation Approaches: Long-Term

- Explore additional means of communicating Cuyahoga Greenways data, including through mapping, websites, mobile applications, and other enhanced visualization techniques

LEVERAGE

With no single agency currently responsible for the development, construction, and maintenance of regional trails, implementation of plan recommendations will need municipal support, local buy-in, local partnerships, multiple agency coordination and funding from a wide variety of sources. CGP members could work to leverage and maximize funding throughout the region via education, collaboration, and plausible expansion of funding sources available for improving regional mobility. The CGP could work to position itself as the 'go-to organization' and established expert for information on the sources, methods, and capacity for applicable funding to implement plan priorities.

Prospective Implementation Approaches: Short-Term (or ongoing)

- Evaluate the capacity of existing funding sources and document historical use
- Develop funding guide as overview of all sources available for mobility improvements
- Explore creative funding strategies and sources, such as packaging multiple projects into one application (i.e. all critical gaps)

Prospective Implementation Approaches: Long-Term

- Provide aid and expertise in the form of grant application writing or developing project-specific funding strategies
- Continue to research long-term funding mechanisms used throughout the country
- Establish applicability of methods used in other regions and advocate for new dedicated funding streams

COMMUNICATE

The CGP could develop a strong messaging program aimed at educating the public, political leaders, business interests, and institutions about the benefits of a multimodal transportation system. The CGP could continue to be a common voice and regional advocate to help residents and other stakeholders better understand the changing transportation needs and demands in their communities. Its member can also serve as the accessible, helpful, and established expert on greenways and urban trails in the region.

Prospective Implementation Approaches: Short-Term (or ongoing)

- Create 'Seal of Approval' or other method to endorse/support funding for CGP-approved projects
- Develop consistent and common messaging and a marketing strategy around the benefits of the Cuyahoga Greenways Plan
- Utilize the biannual Greater Cleveland Trails and Greenways Conference and practitioner workshops to educate stakeholders and the public about progress towards the Cuyahoga Greenways Plan implementation

Prospective Implementation Approaches: Long-Term

- Develop and maintain a website at www.cuyahogagreenways.org
- Work to fill gaps and expand a common wayfinding system by collaborating with local governments and other groups



Image Credit: Cleveland Metroparks

4.4 ADDITIONAL INFORMATION

ROUTES OF NOTE

The projects highlighted below are noteworthy routes designated as Critical Gaps or Regional Links. These proposed connections have project champions, were identified in previous plans, and have acquired or have applied for project funding. While some projects in the Prioritization Plan may represent longer-term ambitions, others are smaller in scope and may more easily be accomplished with directed effort and community leadership.

This list is to be used only as a starting point and is included to illustrate examples and characteristics of various types of greenway and urban trail projects that have been proposed, along with a brief description of the kinds of resources still needed to implement each. The intent is to highlight these projects, as well as to provide ideas and prompt further discussion regarding others that will continue to require study, public input, support, and coordination.

The Greenways Plan is flexible, and it should be noted that additional analysis, new development proposals, funding availability, and other factors may cause Greenways routes not included here to ascend to higher priority status or become slated for immediate implementation based on this readiness factor. At the same time, routes currently highlighted may fall back due to lack of investigation, land available, funding, and/or demand.

KEY CRITICAL GAPS (CG)

CG-04 - LOWER BIG CREEK GREENWAY - UPLAND TRAIL

This 0.9 mile route will link existing trails in the Cleveland Metroparks Zoo and Brookside Reservation to the Treadway Creek Trail and Towpath Trail through Cleveland's Old Brooklyn neighborhood.

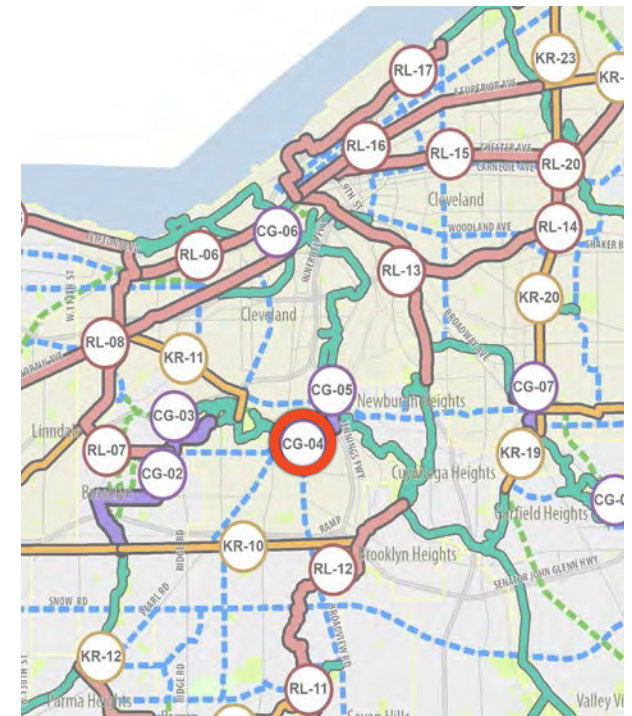
This project, also known as the Henninger Trail, is an adaptive reuse of fallow land. Part of the site was once occupied by a landfill but remained underutilized for decades after its closure. While there were many ideas suggested for the land over the years, it was not until the 2008 Lower Big Creek Greenway Redevelopment & Restoration Plan that an implementable vision was identified.

With support of a grant from the Clean Ohio Conservation Fund program in 2015, the Western Reserve Land Conservancy was able to acquire the 28 acre site. Through the required conservation easement that the funding program requires, 1,015 linear feet of Lower Big Creek will be permanently protected, which in turn will support the improvement and ultimate delisting of the Cuyahoga River as an Area of Concern (AOC).

Project leaders include Western Reserve Land Conservancy and Old Brooklyn Community Development Corporation. Additional funding awards from the Clean Ohio Conservation Fund

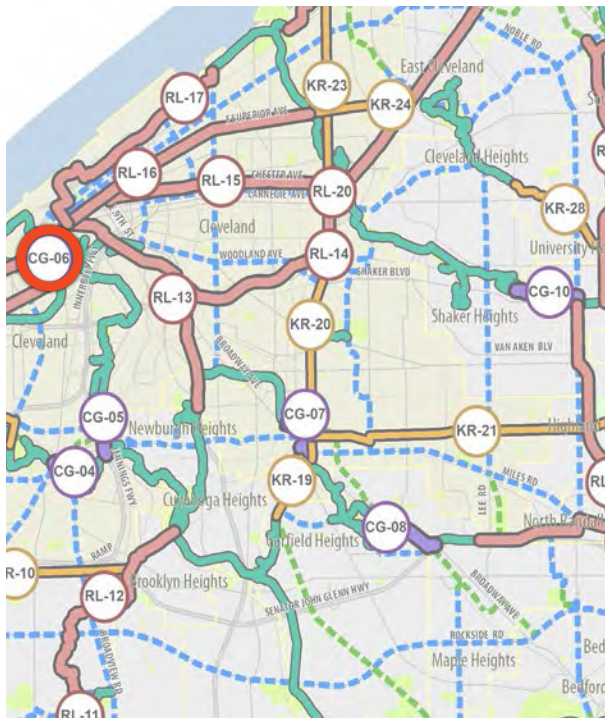
program and Cuyahoga County's Community Development Supplemental Grant program were announced in 2019 to enable trail construction. The trail utilizes real estate already acquired for the project, as well as existing public right of way. Cleveland Metroparks is providing technical assistance and will oversee construction of the project.

While the trail project is largely funded, additional support is needed for site restoration and an endowment to maintain the trail in perpetuity.



CG-06 - CLEVELAND FOUNDATION CENTENNIAL LAKE LINK TRAIL - IRISHTOWN BEND

Irishtown Bend is a 0.5 mile critical gap in the Cleveland Foundation Centennial Lake Link Trail being constructed through Cleveland's Cuyahoga River Valley. When complete, it will provide a continuous connection from the Towpath Trail at Scranton Flats to the lakefront at Wendy Park, and will serve the existing and growing number of residents in the Flats and surrounding neighborhoods.



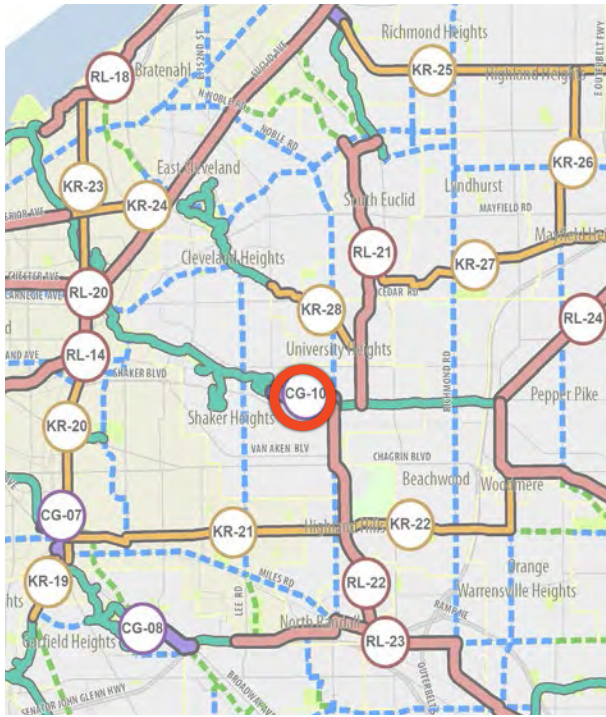
This project is representative of pairing construction of a regionally significant trail with a large-scale, multi-jurisdictional infrastructure project. The Cuyahoga River shipping channel is critical to local industry and has an annual economic impact of \$3.5 billion. For decades there has been concern about the stability of the Irishtown Bend hillside, and the catastrophic impact a slip would have on the Cuyahoga River shipping channel. Following on geotechnical studies performed in recent years by the US Army Corps of Engineers and the Port of Cleveland, the Irishtown Bend Vision Plan TLCI was completed in 2018. This plan provides the framework for redesigning a section of W. 25th Street at the top of the hill and developing a new park with trail system on parts of the nearly 20 acres of hillside and existing city right-of-way in concert with the hillside's stabilization.

The idea for a trail connecting the Towpath Trail to the lakefront along an old railroad right-of-way along the Cuyahoga River was detailed in the Building Cleveland by Design project in 2008. This project developed into the Cleveland Foundation Centennial Lake Link Trail, and filling this section along Irishtown Bend will cap major public and private investments in trails recently constructed or currently underway, including the TIGER grant funded suite of projects, Towpath Trail, Cleveland Lakefront Bikeway, and the south and north

sections of the Cleveland Foundation Centennial Lake Link Trail that were completed in 2015 and 2017, respectively.

Partners including the City of Cleveland, NOACA, ODOT, the Port of Cleveland, Ohio City Inc., LAND studio, Cleveland Metroparks, and West Creek Conservancy have been meeting regularly to develop a funding strategy to move the hillside stabilization project and park development forward. LAND studio acquired much of the real estate necessary through Clean Ohio Conservation Fund grant awards for the trail corridor and the surrounding land from W. 25th Street down to the Cuyahoga River, making it a true greenway. Cleveland Metroparks also obtained federal Congestion Mitigation and Air Quality (CMAQ) funding for trail construction for 2021; however, the trail construction and larger park vision cannot proceed until larger slope stabilization along the Irishtown Bend hillside occurs.

Design of the needed bulkheading is currently underway through the Port of Cleveland. While there already is extensive coordination occurring and partial funding has been acquired for some of the bulkheading through agency partners and the State Capital program, full funding for this combined \$98.5 million project has not yet been obtained.



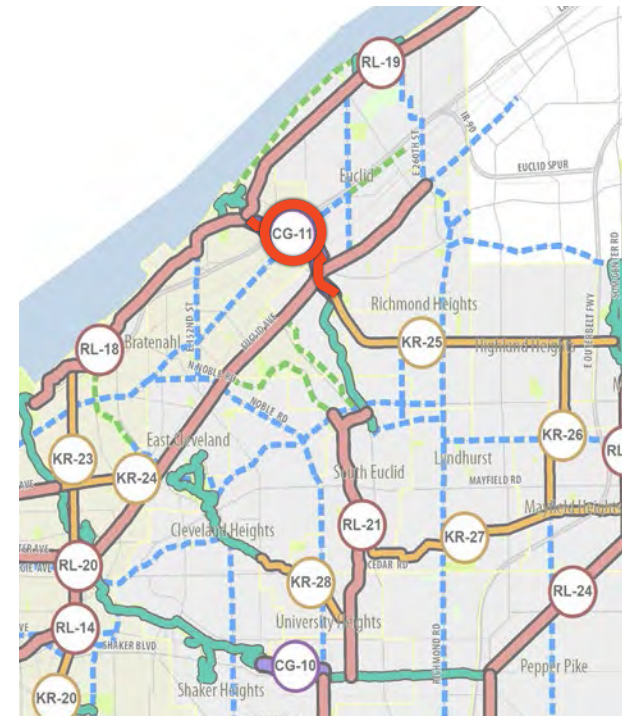
CG: 10 - SHAKER MEDIAN TRAIL TO SHAKER LAKES CONNECTOR

This short 1.2 mile section of proposed trail is the only remaining gap in what could be 6 miles of continuous trail spanning 4 cities and connecting several eastside neighborhoods to Lake Erie. **This project represents a local incremental trail building effort between several adjacent communities that over time has created a significant multi-jurisdictional system.** This project was named as a near-term priority project in the 2014 Eastside Greenway TLCI Plan and was included in the Lake to Lakes Trail Wayfinding and Connections 2019 TLCI Planning application (not awarded funding). In addition, the City of Shaker Heights was recently awarded \$200,000 in 2019 TLCI implementation funds for intersection improvements at Shaker Boulevard and Warrensville Center Road. The proposed intersection improvements could potentially provide room for easier and safer route connections moving forward.

CG-11 - EUCLID CREEK GREENWAY

The 2.4 mile Euclid Creek Greenway will connect the Cleveland Lakefront Bikeway and the lakefront portion of Euclid Creek Reservation to the lower portion of the reservation at Highland Road and the existing trails in the main portion of the park.

This project is an example of pairing greenway trail construction with ecological restoration of an urban riparian corridor. It is also representative of the strategy of phasing a project into multiple implementable segments. The greenway was envisioned in the Cuyahoga



County Soil & Water Conservation District's Lower Euclid Creek Greenway Plan in 2007. Since the plan's conclusion, the Euclid Creek Watershed Partners have successfully implemented a number of ecological projects outlined in the study, including restoration of the historic oxbow in Wildwood Park.

Partners in the restoration and trail building efforts include the cities of Euclid and Cleveland, Euclid City Schools, Euclid Creek Watershed Partners, and Cleveland Metroparks. In 2020, the Euclid Central Middle School property along Euclid Avenue will be demolished as part of the city's school rebuilding bond issue, and the site, which had originally belonged to Cleveland Metroparks, will be returned for passive park use. This is an opportunity to perform restoration work along the channelized section of the creek and develop the next phase of the greenway.

Cleveland Metroparks has obtained CMAQ funding for 2022 for construction of an initial 0.5 mile phase on the Park District's property in the lower section of Euclid Creek Reservation. The remainder of the greenway route, however, is complicated by major obstacles, including two railroad corridors, I-90, and dense urban development. Additional study, including detailed analysis of real estate needs, is required to advance future phases of the project. A strategy for assembling the needed restoration and trail funding should also be included in this study.

CG: 12 – SOUTH CHAGRIN RESERVATION TO BEDFORD RESERVATION

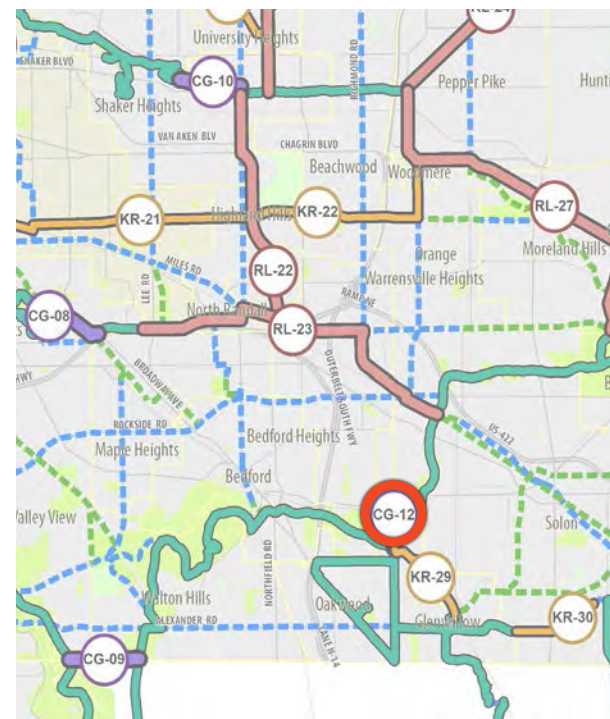
This project will close a short 0.3 mile gap along Richmond Road to provide a continuous connection in the all-purpose Emerald Necklace trail between South Chagrin Reservation and Bedford Reservation. The new trail segment will also connect to an existing trail in the Village of Oakwood and the proposed Tinker's Creek Trail in the Village of Glenwillow.

This project is representative of a small, but critical gap in the larger trail system that could be paired with planned roadway infrastructure investments within the right-of-way. This trail segment falls within the right-of-way of Richmond Road, which has been identified by the Village of Glenwillow and Oakwood Village to be in need of roadway and rail crossing improvements.

The villages have recently partnered together to pursue funding to realign and improve the geometry and drainage of Richmond Road, and with Cleveland Metroparks to concurrently advance development of the trail segment on the east side of the roadway between the offset intersections of Hawthorn Parkway and Richmond Road. This missing trail segment was profiled in the 2019 Emerald Necklace Trail Bicycle and Pedestrian Crossing Improvements Study completed by NOACA for Cleveland Metroparks

to determine the optimal interventions to create a safe and effective connection across Richmond Road.

While an initial application to the District One Public Works Integrating Committee (DOPWIC) for roadway funding and the NOACA TLCI implementation program were unsuccessful, the partners are committed to continue to pursue funding in the near term.



IMPORTANT REGIONAL LINKS (RL)

RL - LAKEFRONT GREENWAY (RL-04, RL-05, RL-17, RL-18, RL-19)

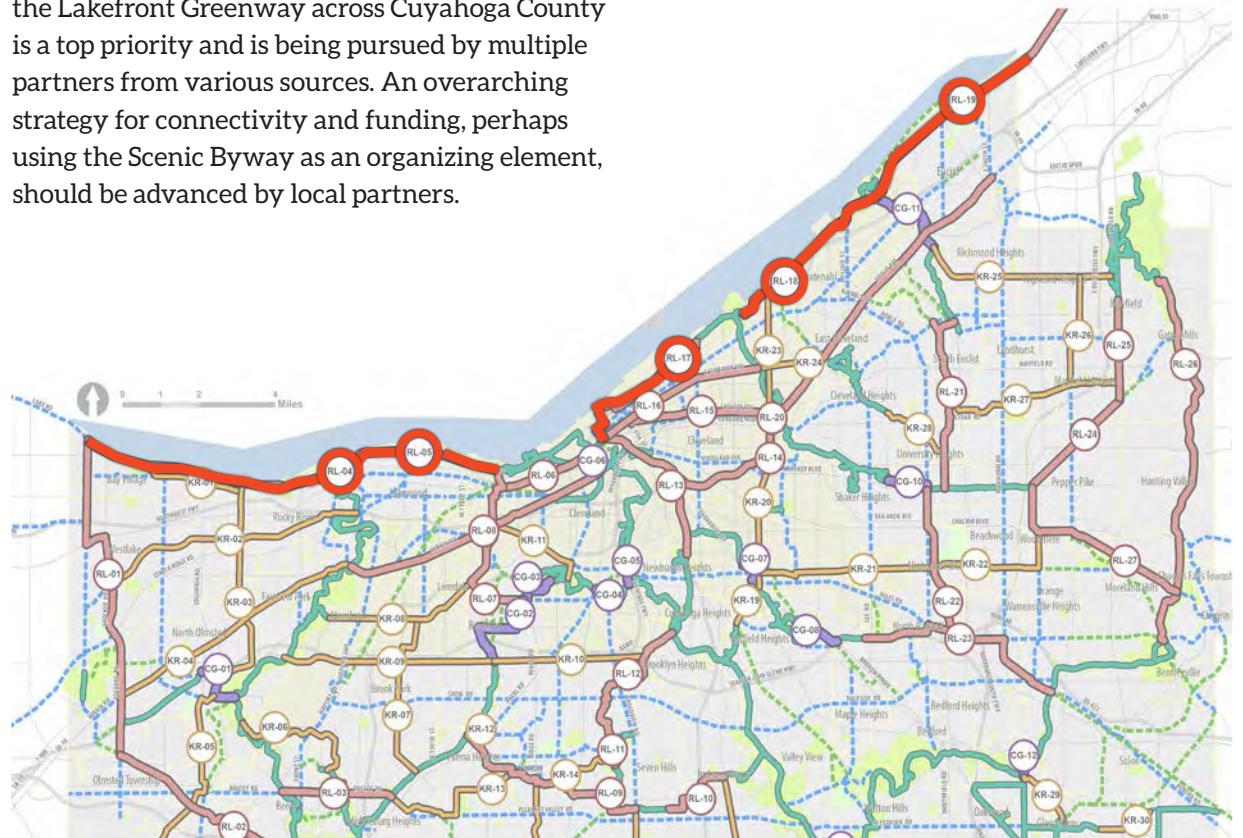
Bike and pedestrian access along Cuyahoga County's 30 miles of Lake Erie waterfront is a regional priority. The route is recognized by two national designations: U.S. Bike Route 130 and 30 and the Lake Erie Coastal Ohio Trail National Scenic Byway.

This project is representative of combining multiple jurisdictional initiatives and plans to develop a regionally significant route. NOACA is guiding implementation of the byway's corridor management plan, and byway partners are working to expand bicycle and pedestrian access along the 293 mile route. Further, ODOT's support of the U.S. Bike Route designations to improve walking and bicycling conditions as essential transportation options further illustrate the importance this route has not only regionally, but also statewide and nationally.

Other champions of improved access along Lake Erie include the working group of the Northeast Ohio Regional Park Districts, the City of Cleveland and their work on the Cleveland Lakefront Bikeway, and the Industrial Heartland Trail Coalition's Cleveland to Erie trail effort. Recent connectivity improvements along the lakefront include segments of the Cleveland Lakefront

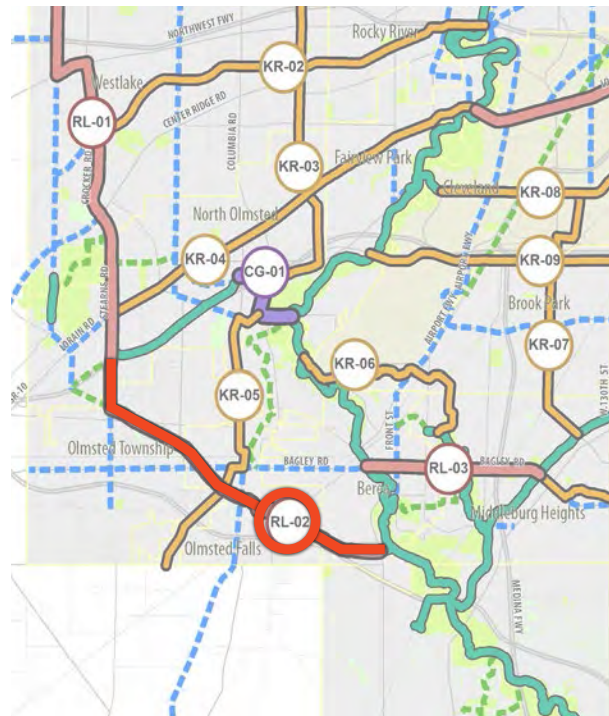
Bikeway completed as part of ODOT's Edgewater Parkway project. The city of Euclid is spending nearly \$7 million obtained from more than half a dozen sources for the current phase of a lakefront trail and shoreline stabilization project.

Funding to implement additional links to complete the Lakefront Greenway across Cuyahoga County is a top priority and is being pursued by multiple partners from various sources. An overarching strategy for connectivity and funding, perhaps using the Scenic Byway as an organizing element, should be advanced by local partners.



RL-02 - NORTH OLMSTED 480 TRAIL TO MILL STREAM RUN RESERVATION

This proposed 4.5 mile regional link provides an off-road greenway through the south west corner of Cuyahoga County by utilizing an existing utility corridor. The proposed trail would connect the communities of Olmsted Township, Olmsted Falls, and Berea, linking them to Mill Stream Run Reservation and the Emerald Necklace trail on the east and to Stearns Road, a north-south arterial roadway, to the west.



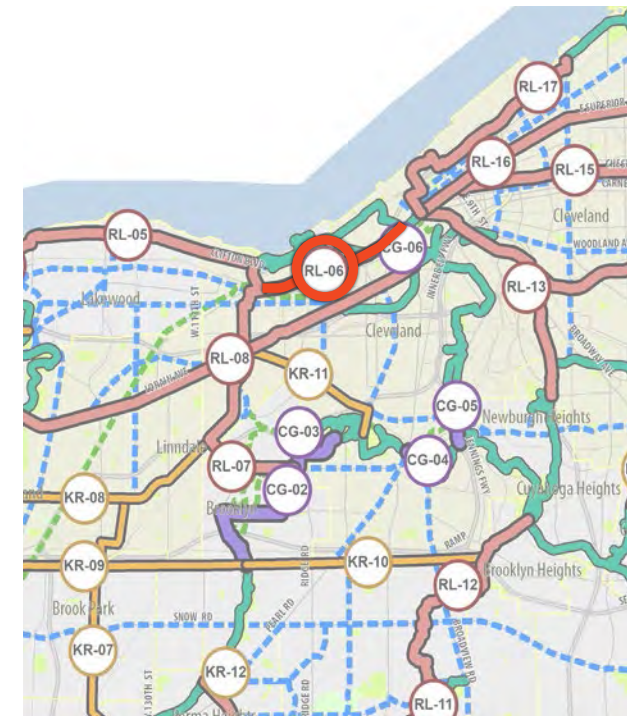
This project is representative of co-locating a trail along an existing utility corridor. The route would take advantage of the corridor to connect various area parks, neighborhoods, businesses, and schools.

Partners include City of Olmsted Falls, Olmsted Township, and Cleveland Metroparks, all of which have included the project in their respective planning documents. Olmsted Township included this link in their 2015 Complete Streets Plan, as well as calling for bike and pedestrian improvements as part of their Comprehensive Plan. Olmsted Falls' 2016 Community Master Plan calls for enhanced connections into the region's network of parks, open spaces, and trails, particularly the Emerald Necklace Trail. Cleveland Metroparks includes this link in the 2018 Mill Stream Run Reservation Master Plan.

To advance this project, partners would need to gain agreement and property rights, most likely through easements, to construct the trail within the existing utility corridor. Once agreements are obtained, funding could be pursued for the project.

RL-6 - DETROIT AVENUE

This proposed 2.5 mile on-street regional link provides access to some of Northeast Ohio's fastest growing and most densely populated neighborhoods: Downtown Cleveland; Ohio City; Detroit Shoreway; Edgewater; and Lakewood. This highly popular route, with bike lanes from West 25th Street to Lake Avenue, is representative of a project that could have its existing lanes extended further or potentially upgraded to an all ages and abilities facility.



RL-08 - LORAIN AVENUE CYCLE TRACK

The Lorain Avenue Cycle Track will be 1.7 mile protected bike lanes from West 20th Street to West 65th Street in the city of Cleveland.

This project is representative of an innovative reuse of excess road right-of-way. Lorain Avenue, on the near westside of Cleveland, is one of many streets with expansive width, a holdover from the days when the major city arterials also included streetcar lines. The Lorain Cycle Track will utilize a portion of this excess space to provide protected bike lanes down this corridor.



This project was proposed as part of a feasibility study conducted for Ohio City Inc. and the Detroit Shoreway Community Development Corporation that received Cleveland Planning Commission conceptual approval in 2015. The route was later incorporated into Cleveland's Midway Cycle Track Plan, a TLCI published in 2017. The citywide Midway plan proposes a network of similar facilities, including a route along Superior Avenue (RL-16).

The City of Cleveland and Ohio City Inc. have continued to partner on the project and obtained \$6.1 million in CMAQ funding for construction in 2022 from NOACA. To advance, the project still needs to be engineered and designed.

RL-10 - WEST CREEK GREENWAY (SOUTH)

The full 5.25 mile south route of the West Creek Greenway, parts of which are already constructed, is a regional link that will connect West Creek Reservation to Cuyahoga Valley National Park and the Towpath Trail, providing access to residents of Parma, Seven Hills, and Independence.

This project is representative of how grassroots efforts and the work of conservancy partners can advance trails. The West Creek Greenway concept for 25 miles of trails and protected stream corridors originated more than 20 years ago through the efforts of a group of citizens that ultimately grew into the West Creek Conservancy,

a nonprofit that now works in numerous communities conserving lands throughout Northeast Ohio.

West Creek Conservancy is spearheading implementation of the Greenways Plan, which was originally detailed in the 2007 The West Creek Greenway Trail Master Plan TLCI. The Conservancy has acquired most of the property necessary for the trail, and is working with the communities of Parma, Seven Hills, and Independence as well as Cleveland Metroparks to continually advance the project.

Construction of the West Creek Greenway has occurred segment by segment. Hemlock Creek Trail, the easternmost 1.7 mile segment of the south connector, will open in 2019. The \$3 million-dollar project is financed by a various funding sources, including a line item from the 2005 Federal Transportation Bill, the state of Ohio's Clean Ohio Trails Fund, and Independence's Selig Road Tax Increment Financing (TIF) fund. A segment of the trail was also constructed by the City of Seven Hills near Broadview Road and the Seven Hills recreation center. The City of Parma was awarded \$560,000 in CMAQ funds to construct a portion of the remaining south section; however, significantly more funding is needed to complete this route.

RL-13 - SLAVIC VILLAGE DOWNTOWN CONNECTOR

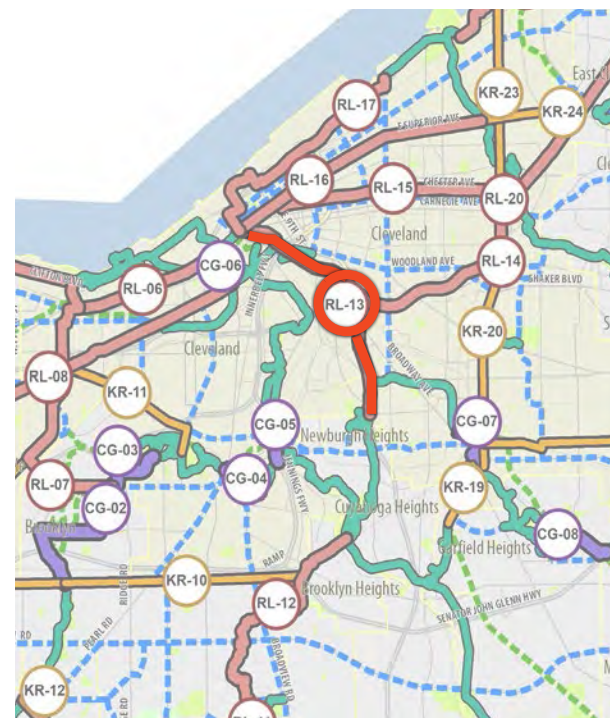
The proposed Slavic Village Downtown Connector is a 3.5 mile all-purpose trail that would connect the Slavic Village neighborhood and the existing Morgana Run Trail to Washington Reservation to the south and to Downtown at E. 9th Street to the north.

This project is representative of the Cuyahoga Greenway Plan's goal to increase equity by highlighting routes that increase neighborhood access to trails/parks, jobs, and transit through alternative mobility options. The Slavic Village neighborhood was the epicenter of the mortgage foreclosure crisis; it now continues to stabilize and rebuild itself as a thriving community.

The Downtown Connector Trail: Washington Reservation Metropark to East 9th Street conceptual plan was completed in 2010 and updated in 2012 for City of Cleveland and Slavic Village Development. It was a follow up to the Slavic Village Greenway: Bike/Pedestrian/Transit Connections, a TICI study, and provided a more detailed look at how proposed greenways and urban trails within the neighborhood could be extended to provide a key commuting corridor to Downtown as well as to Washington Reservation and on to the Towpath Trail.

Partners in the Downtown Connector Trail are the City of Cleveland, Slavic Village Development, ODOT, and Cleveland Metroparks. The first phase of the project, construction of the trail from Pershing Avenue to Broadway Avenue, is under construction by ODOT as part of its larger Innerbelt project. In 2019, the City of Cleveland committed funding for preliminary engineering of a portion of the trail from Fleet Avenue to Pershing Avenue as part of initial steps to access \$1.5 million in construction 2021 Transportation Alternative Program funds from NOACA. Cleveland Metroparks is also involved in the project to connect residents of the neighborhood to nearby Washington Reservation.

The Slavic Village Downtown Connector project will still need funding to complete detailed design on the section from Fleet to Pershing, and no funds have been allocated for preliminary engineering or detailed design on the complex phase from Broadway Avenue to Downtown. This section of the trail entails traversing over or under highways and rail lines, including significant grade challenges and pinch points.





RL-16 - SUPERIOR AVENUE MIDWAY CYCLE TRACK

This is a 2.5 mile initial pilot of a larger plan for a system of protected bike lanes throughout the city of Cleveland. It will run along the middle of Superior Avenue, linking Public Square in Downtown to East 55th Street.

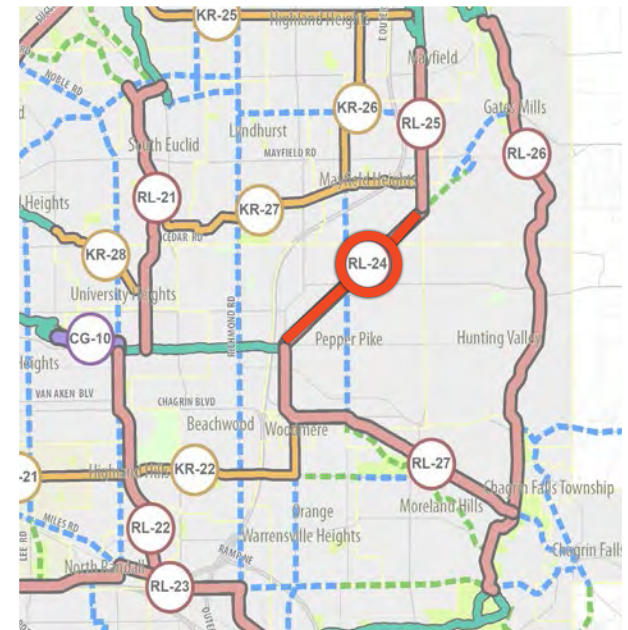
This project is representative of an innovative reuse of excess road right-of-way. The Midway approach is supported by Bike Cleveland and other advocates and is similar to the Lorain Avenue Cycle Track (RL-08).

Part of Cleveland's Midway Cycle Track Plan, a TLCI published in 2017, the Superior Midway is a proof-of-concept for a larger vision to run protected bike lanes down the middle of roadways through a series of streets in the city, largely following old streetcar lines. This project embraces the excess capacity that exists on these wider than needed roadways and repurposes the space to provide corridors that better serve diverse users.

The first leg of the Midway Cycle Track will be constructed in 2020 through an award of \$8.3 million in CMAQ funds from NOACA. Additional funds will be needed to build out future Midway facilities.

RL-24 - GATES MILLS BOULEVARD TRAIL

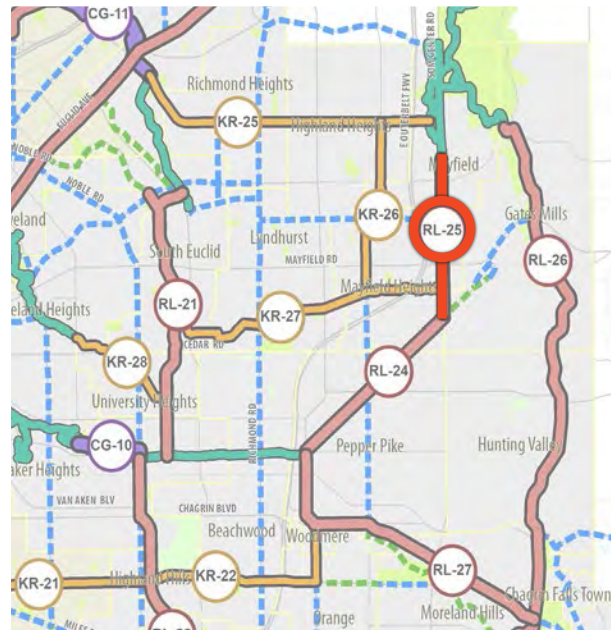
The Gates Mills Boulevard Trail will be a 3.1 mile off-street trail. This heavily used, divided four-lane roadway contains no existing bike facilities or sidewalks. **This project is representative of a contemporary redesign of an existing median to provide both bicyclists and pedestrians a safe local and regional recreational facility.** With potential connections to the Shaker Median Trail to the west, and SOM Center Trail to the east, this project also provides a significant opportunity to continually expand the existing off-street network while providing park and trail access to underserved areas.



RL-25 – SOM CENTER ROAD

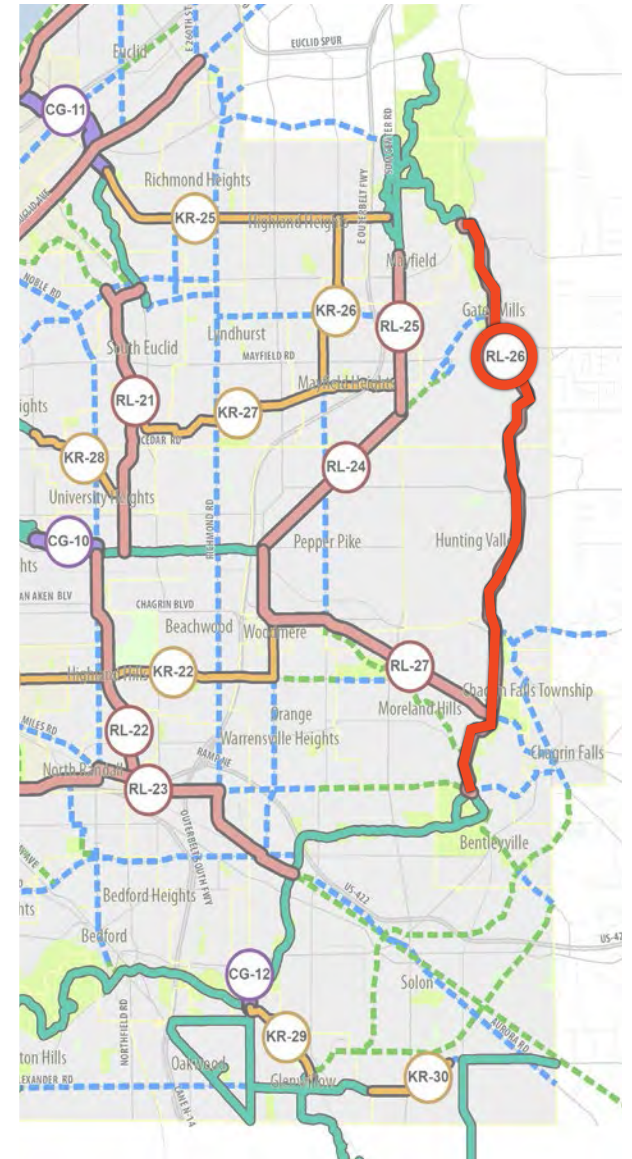
This 2.4 mile connection is one of the routes that showed up twice in the hybrid ‘connections’ analysis, providing opportunities to connect residents both to existing parks/trails and to jobs.

This project represents a transformational opportunity for the project’s long-term approach to changing transportation and corridors within the region. This five-lane corridor just south of the ‘Bruce G. Rinker Greenway’ provides another opportunity to link and expand the existing network across multiple jurisdictions and increases local access to jobs and amenities.



RL-26 – CHAGRIN RIVER ROAD

The Chagrin River Road project is a 9.9 mile corridor between Cleveland Metroparks North and South Chagrin Reservations. It is a popular cycling route that is limited in space due to roadway width, property ownership, and adjacency to the Chagrin River. **This project is an example of where, due to site constraints and community preference, an on-road route serves as an important regional link in the overall network.** Slated to remain an on-street facility with limited sightlines and improvements, this project remains a strong regional link and represents an opportunity to upgrade facilities when the needs and perceptions and the regions bend towards increased connectivity and safer alternative mobility options. Incremental opportunities for widened pavement and improvements at key pinch points can help provide short-term improvements for regional access.



WAYFINDING

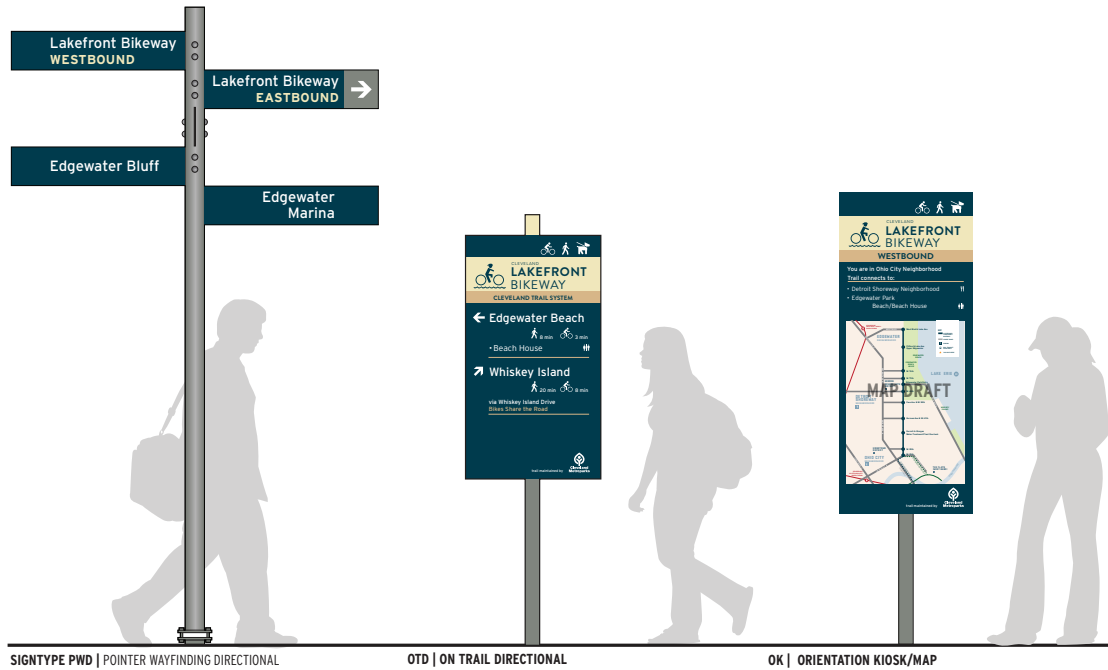
Wayfinding is a key element in implementing the Cuyahoga Greenways Plan. Wayfinding signage not only reinforces identities and locations, it also provides information that allows travelers to navigate without the use of local knowledge, mobile phones, or maps. Legibility and clarity are essential to knowing where you are in an environment, knowing where your desired location is, and knowing how to get there from your present location. In the context of the Cuyahoga Greenways Plan, wayfinding takes on special significance considering the scale, time, complexity, and various trails encountered throughout the county. Increasing accessibility and confidence while traversing this large and diverse area not only improves the users experience, but also boosts the potential for return trips leaving residents and guests with a favorable view of the region's expanding active transportation and recreation network. Much of the existing on-street and off-street signage used remains inconsistent and isolated, giving the county and the Greenways Plan a unique opportunity to advance a regional program that helps users, regardless of location, recognize all existing and future trails as part of this system.

Many users of the network will be local and will certainly understand their location and destination; however, thought must be given to the level of detail and messaging to be provided for those visitors who may not be familiar with the area. Signing local and regional trails consistently, and with a unified graphic theme or logo, will help guide users in their travels and create a sense of continuity throughout the region. This theme should also be carried over to print, web, and mobile based content so that users can learn about the system, plan routes, find trails, share experiences, and increase awareness of Cuyahoga Greenways. The Cleveland Off-Road Trails Wayfinding Master Plan, currently being piloted and tested by Guide Studio and Destination Cleveland in partnership with the City of Cleveland, Cuyahoga County, NOACA, and the Cleveland Metroparks, has the potential to provide all users with a clear and coherent sign program for trails and bikeways indicated in Cuyahoga Greenways Plan.

The Cleveland Off-Road Trails Wayfinding Master Plan includes potential design standards (maps, colors, look layout of the system, guidelines for content, criteria for naming/nomenclature, information/logo hierarchy, and storytelling). It also emphasizes the importance of collaboration.

This gives it enormous potential to outline best practices for integrating the existing hierarchal system of individual trails, brands, names, and signage into a new reliable system. This potential new system would supply municipal leadership established best practices for integrating existing trail names, brands, logos, colors, and locally distinctive destinations into a well-defined and regionally recognized system. This will help maintain regional consistency while highlighting trail/neighborhood individuality and the contributions of project champions. The Wayfinding Master Plan (which will be updated when the pilot is completed in Fall 2019) could create a sense of unity and connectivity throughout the region by supporting seamless transitions across trails and neighborhoods while emphasizing local character through unique destinations, landmarks, names, and logos. Incorporating these critical elements will allow residents and visitors to view the Greenways system of trails and bikeways as a major asset that helps them connect with the diverse array of neighborhoods, trails, parks, and destinations in the region.

Figure 4.4a - Cleveland Trail Sign Program Examples



CLEVELAND TRAIL PILOT SIGN PROGRAM

SCALE: 1/2" = 1'-0"

PLEASE NOTE: This pilot of the Cleveland Off-Road Trails Wayfinding Master Plan will be tested through Fall 2019, at which point these guidelines may be updated.



COLORS CAN BE CUSTOMIZED / ADAPTED FOR OTHER TRAIL SYSTEMS

Image Credits: Cuyahoga County Planning Commission

SIGNS SHOULD ANSWER:

What can I do on the trail?
Where am I?

Standard Symbols

Established Naming

Simplified Trail Name
(drop Donor Names, etc)

Programming:
• Destinations & Landmarks within a mile
• Distance in minutes not miles
• Amenities available

Name or Logo of organization that maintains trail

Where can I go?
How do I get there?
How long will it take me?

TRAIL SIGN PROGRAM INFORMATION STANDARD

- Trail brand may be customized via color/graphics style and logo
- Content/Information Hierarchy is the same throughout the system
- Structure/build and sign types are the same across the system

PRINCIPLES OF WAYFINDING

Connect people to place.

Wayfinding programs are developed for the purpose of helping people understand how to effectively move from place to place in support of the greater experience.

Consistency is key.

Shape, color, naming, symbols, placement, etc. used consistently from one place to another help to ensure trust and confidence in the information presented. These visual cues provide strong connections for the people who encounter them.

Present information inclusively.

Present information for multiple levels of knowledge and experience. Use best practices for signage and wayfinding information which have been studied and tested for this purpose.

Keep it simple.

Too many choices for someone who is new and unfamiliar to an area can overwhelm and foster confusion and mistrust. Use best practices for signage information to help prioritize the information that will mean the most to new users.

PROPERTY & REAL ESTATE CONSIDERATIONS

Many of the proposed routes outlined within the Cuyahoga Greenways Plan align with public lands, rights-of-way, and properties which are preserved through the efforts of non-profit organizations such as Western Reserve Land Conservancy and West Creek Conservancy. However, real estate acquisition is commonly necessary for trail and greenway projects. When acquiring land interests necessary for greenways, there are few important considerations that must be made throughout the acquisition process.

GENERAL PROVISIONS

When evaluating property interests, it is important to complete all the proper due diligence necessary to obtain clear title for a property. Incomplete due diligence may lead to major problems for a project. Real estate disputes cause expensive project disruptions and may even bring a project to a complete standstill. The following considerations should be made with the assistance of a real estate attorney to ensure that proper real estate interests are secured prior to trail and greenway development:

- **Property Evaluation:** Make sure all the necessary land interests for a project are being acquired for a project. This requires extensive property research, landowner contact, site visits, and preliminary planning and design of trail alignments. Thoughtful evaluation helps determine the best source of funding for land acquisition as well as the appropriate real estate interest to acquire (fee vs. easement) and avoids costly delays.
 - **Title Research:** Obtain a title search of the property through a title agency and review it thoroughly with a real estate attorney. These records may contain valuable information that greatly impact a trail project including, but not limited to, reversionary rights, deed restrictions, utility easements, mineral interest leases, and environmental liens. Encumbrances such as utility easements should be mapped and reviewed to inform the design of the project and help evaluate if additional land negotiations, releases of encumbrances, or acquisition of real estate interests are required.
 - **Appraisal:** Many funding sources for real estate acquisition and trail development require an appraisal to be completed by an appraiser certified with the Ohio Department of Transportation (ODOT) or the Ohio Department of Natural Resources (ODNR) if public funds are used for land acquisition.
 - **Survey:** Much as with an appraisal, if a lot split is required for real estate acquisition as part of a publicly funded trail project, it must be completed by a surveyor certified with ODOT (or other appropriate agency as directed by the funding source).
 - **Environmental Site Assessment (ESA):** Obtaining a phase I ESA helps identify potential hazards and environmental liens upon the property, inform the design of the project, provide peace of mind during construction, and is an added measure for the safety of trail and greenway visitors.
- Many funding sources for greenspace acquisition such as Clean Ohio Conservation Fund allow for reimbursement of costs incurred while completing due diligence for land acquisition.



Image Credit: Cleveland Metroparks

FUNDING REQUIREMENTS

There are several funding sources for trails and greenways development, and each has their own requirements for land acquisition and certifying right-of-way clearance for construction. Be sure to review the funding source's latest requirements thoroughly and ensure that all provisions are being met both when applying for funds and prior to project bidding and construction. For many state and federally funded projects, ODOT provides educational resources through their Local Technical Assistance Program (LTAP) which extensively review these requirements. Other agencies that administer grant funds such as ODNR provide staff to assist with questions and ensure compliance with real estate requirements.

PROJECTS WITHIN EXISTING RIGHTS-OF-WAY

As previously stated, many of the proposed alignments in this plan fall within existing public or private rights-of-way. For public right-of-way, if the municipality, county, or state that controls the right-of-way is not the project sponsor or implementor, then all provisions must be followed to acquire necessary rights to construct the trail. These may come in the form of encroachment permits, leases, easements, or other administrative approvals. Municipalities such as the City of Cleveland may grant easements or encroachment permits through a thorough administrative and legislative approval process. Agencies such as ODOT may grant long-term leases or easements

after thorough administrative review and approval. When planning a project, make sure that coordination with right-of-way owner is initiated early and that the necessary processes are clearly identified and followed.

When planning a project within a utility right-of-way, special care must be taken related to the infrastructure in place within the corridor. While trail and greenway projects within these corridors often provide improved access for utility managers, they must also complement the existing infrastructure and not cause safety conflicts. Utility companies will often request detailed maps and drawings showing the proposed trail as

it relates to their infrastructure including poles, guy wires, access points, manholes, and other structures necessary for the utility's operations. With all projects located in rights-of-way, time is a major factor to consider as each managing agency will often require extensive review prior to granting real estate interests necessary for trails and greenways.

FUNDING METHODS

Communities around the country are using a variety of ways to pay for bicycle and pedestrian facilities. One advantage of greenways and urban trails is the potential to leverage funding from a wide range of different sources due to the significant and multiple benefits they provide. Funding for greenways and urban trails can come from many of the following sources: Regional/State/Federal grant programs aligned with economic development; habitat and natural resource preservation; storm water management; community health and welfare; and non-motorized transportation improvement programs. Local, county, or regional capital improvement funds also may provide opportunities to direct funding towards greenways and urban trails, especially if coordinated with other concurrent infrastructure investments. Lastly, philanthropic groups, foundations, and public-private partnerships may also help promote their stated missions of improving conditions for residents and

businesses in the region by closing funding gaps in park, greenway, and urban trail construction. Unfortunately, with no single dedicated funding stream for this type of work, several sources will often be used within a given project. The choice of funding depends on the availability of particular funds, the nature of the projects, and timing. Examples of funding sources for greenway facilities include:

FEDERAL

- (BUILD) Better Utilizing Investments to Leverage Development Transportation Grants program
- (INFRA) Infrastructure for Rebuilding America Discretionary Grant Program
- (TIFIA) Transportation Infrastructure Finance and Innovation Act
- (FTA) Federal Transit Administration Capital Funds
- (ATI) Associated Transit Improvement (1% set-aside of FTA)
- (CMAQ) Congestion Mitigation and Air Quality Improvement Program
- (HSIP) Highway Safety Improvement Program
- (NHPP) National Highway Performance Program
- (STBG) Surface Transportation Block Grant Program

- (TA) Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)
- (RTP) Recreational Trails Program
- (SRTS) Safe Routes to School
- (FLTTP) Federal Lands and Tribal Transportation Programs
- (CDBG) Community Development Block Grants

STATE

- Clean Ohio Trails Fund
- Clean Ohio Greenspace Conservation Fund
- ODNR Recreation Trails Program
- ODNR Nature Works
- ODNR Land & Water Conservation Fund

LOCAL & REGIONAL

- Cuyahoga County Public Works Programs (50/50 - 80/20 - Pavement Maintenance Plan)
- NOACA TICI Implementation Awards
- Tax Increment Financing (TIF)

PRIVATE & NON-PROFIT

- Cleveland Foundation

CONCEPTUAL COSTS

The estimated unit price cost information is provided below to help develop general planning level cost estimates for the recommendations identified in the plan. The estimated unit price costs are based on current year information (2019) and reflect typical, standard costs associated with each treatment; however, the amounts provided are not all-inclusive. Site-specific elements and issues associated with each project need to be considered and incorporated together with verification of projected construction year cost information, as appropriate.

BUFFERED BIKE LANE

\$290,000 per mile for both sides of the road. This estimate includes provision of edge lines, bike symbols and arrows placed every 400 feet, diagonal transverse lines placed at 10 foot intervals, and an assumed 4 feet for buffer width. It does not include provision of any sort of physical barrier. It includes minor construction contingencies and allowances for utility, paving, or minor curb adjustments. Includes special pavement parkings and enhancements at intersections.

Add an additional \$100,000 per mile if delineator posts are utilized, which is recommended in urban contexts.

TWO-WAY PROTECTED BIKEWAYS (CYCLETRACKS)

\$720,000 per mile for a two-way protected bikeway. This estimate includes provisions for a 4 foot buffer with striping, delineator posts (10 foot spacing), small curb islands near intersection approaches, green pavement markings in mixing zones, and intersection enhancements. This does NOT include dedicated bike signals. It includes minor construction contingencies and allowances for utility, paving, or minor curb adjustments.

MULTI-USE (OFF-ROAD) TRAILS & SIDEPATHS

10 feet paved in 15 foot ROW - \$750,000 per mile - This estimate is for a 10 foot wide asphalt path within 15 feet of right-of-way. It includes clearing/grading, asphalt pavement, pavement marking, signage (regulatory and route markers) and revegetation. It includes minor construction contingencies and allowances for utility, paving, or minor curb adjustments. The estimate does not include property acquisition, security, lighting, fencing, road crossings or utilities.

BIKE LANE

\$52,000 per mile for both sides of the road. This estimate includes provision of edge lines and bike symbols and arrows (placed every 400 feet on average). Estimate includes minor construction contingencies and allowances for utility, paving, or minor curb adjustments.

ADVISORY BIKE LANES

\$80,000 per mile for installing advisory bike lanes on both sides of a roadway. This estimate includes dashed advisory lines, parking lane "T" marks, intersection pavement markings, bike symbols and arrows, and signage. Estimate includes minor construction contingencies and allowances for utility, paving, or minor curb adjustments.

PEDESTRIAN ENHANCEMENTS AT INTERSECTIONS

\$75,000 per intersection - This estimate is based on the provision of 8 ADA ramps and 8 countdown pedestrian heads. It does not include pedestrian push buttons, conduit, wiring, or other signal or roadway related work.

SIDEWALK

\$300,000 per mile - This estimate is based on provision of a 5 foot sidewalk along a curbed roadway without right-of-way constraints, driveways, and/or removal of existing sidewalk. It includes general provisions for embankment and guardrail, manholes adjusted to grade, and limited tree removal.

TRANSIT WAITING ENVIRONMENTS

\$50,000-100,000 per TWE at single stop/direction - This estimate is based on experience from recent GCRTA TWE projects that provide significant upgrades from basic GCRTA shelters, and on estimates developed in 2017 for the City of Cleveland's Thrive 105 project, which proposes bus rapid transit (BRT) stations of various sizes along E. 93rd and E. 105th Streets in Cleveland. Improvements at the lower end of the range would include shelter pad and limited sidewalk extension or replacement, upgraded shelter, lighting, lighted totem sign with wayfinding map and static bus route information and trash receptacle. The higher end of the range would add additional sidewalk improvements and an expanded pad for a larger shelter and supplemental bench outside the shelter, additional lighting, bicycle rack, and real-time bus information on the lighted totem sign. The estimate does not include environmental permitting, design, construction management, right-of-way acquisition, or any improvements in the roadway including concrete bus stop pads.

GRADE-SEPARATED TRAIL CROSSING

\$3-7 million per crossing - This estimate includes both overpass and underpass grade separated crossings. The cost range is based on the use of a simple prefabricated structure for a bridge or tunnel with minimal landscaping or other enhancements; it does not include drainage pumps for a tunnel. Costs for a grade-separated crossing could be significantly higher for a custom bridge or tunnel design.

MAINTENANCE & OTHER FACTORS

Maintenance of roadways and bikeways is important for user safety and to make wise use of public funds invested in these facilities. Common maintenance concerns such as potholes, cracks and debris in the roadway cause problems not only for cyclists but for motorists as well. Well-maintained facilities minimize road hazards and promote increased usage. Roadways, bikeways, and trails should be maintained to accommodate all users and sustain a reasonable level of safety.

Maintenance should be based in part on an understanding of user needs, particularly concerning the roadway surfaces since ridges, cracks, drainage grates, and other issues can trap or damage bicycle wheels and become hazardous to users and cyclists. Debris such as wet leaves, rocks, gravel, sand, snow, ice, branches, and glass also present difficulties, often causing cyclists to use more of the travel lane or even swerve unpredictably in order to avoid these hazards. Responsive and appropriate levels of maintenance (to be performed on a continuous, scheduled basis) will help facilitate safe and responsible travel on roadways and bikeways.

- **Inspection:** Routine inspections are integral to all maintenance operations and should occur often based upon the amount of use, location, and age of facility. Documentation of inspections and the conditions of surfaces including railings, bridges, signage, and other features should be included in reviews and any correspondence with the city or local agencies associated with trail maintenance.
- **Surface Repairs:** Maintenance of roadways, bicycle lanes, and trail pavement surfaces to acceptable standards is vital to provide safe conditions for existing users and potentially attract new users. Major routes may require enhanced maintenance schedules and inspections to minimize freeze-thaw impacts and create reliable surfaces that minimize bump cracks, edges or drop-offs, ridges, and potholes.
- **Sweeping/Snow and Ice Removal (Seasonal):** Accumulated debris (on a trail) at the roadway edge in the bicycle lane is one of the most common obstacles to safe use of facilities by cyclists. The type of cleanup and sweeping necessary should be based upon facility type and location. Some on road lanes and other systems can be swept by machine. Others such as trails and buffered lanes might require

hand held blowers, smaller machinery, or a combination of methods. In Cuyahoga County and other northern climates, ice control is a key factor because of the frequent freeze-thaw cycle. Ice control can be especially important on curves and grade changes, and when ice has thawed or been eliminated any leftover gravel applied or other material within the pathway should be removed.

- **Trash Removal:** Trash removal from corridors is important for both safety and aesthetic appearance. This includes removing debris and emptying any trash receptacles as part of the project. Trash removal should take place on a scheduled basis, depending on facility use and location.
- **Vegetation Management:** Plantings near the curb or side of multi-purpose paths may encroach upon the corridor or cause sightline problems for motorists, cyclists, and pedestrians. Any encroachments may create pinch points in the pathway and cause cyclists to move further into the automobile travel lane to avoid vegetation or swerve unexpectedly. Obstruction of motorists' views may also cause them to move further into paths, sidewalks, or bike lanes when entering or exiting roadways creating unsafe crossings for pedestrians and bicyclists at intersections and driveways.

- **Drainage Facilities:** Roadway and path drainage must be designed and maintained with consideration of bicycle and pedestrian traffic. Over time, drainage grates may shift or separate from existing pavement. Replacement of previously installed inlets with a bicycle friendly design is critical for user safety. Such inlets typically contain longitudinal vanes that are perpendicular to the direction of travel.
- **Stripes, Buffers, and Bollards:** Pavement markings, bollards, buffers, and other signage may become damaged or fade as a result of time, weather, vandalism, changes in route, or excessive use. Inspection, maintenance, and updates to pavement markings are important to increase visibility, safety, knowledge, and expectations of drivers, cyclists, and pedestrians.
- **Wayfinding:** Signage and wayfinding can fall into two categories: safety and information. Users can be informed of where they are, where they are going, and how to use facilities safely. Safety for facility users and drivers is most important and should be considered first when dealing with potential maintenance related issues. Information signage enhances the users' overall experience (See Wayfinding, page 108). Safe, legible, and properly located signage informs all groups about their rights and responsibilities, and should be consistently maintained and updated as needed.

SAFETY & SECURITY

Providing safe and secure facilities is essential to ensure success and increase usage. Safety and security are considered in the design phase, implementation phase, and future management and maintenance phases of the project. With respect to design, providing adequate space, lighting, and sight lines will improve both perceived and actual physical conditions along the proposed trails and bike lanes. This allows users to better view their surroundings as well as supports the concept of "eyes on the trail" where residents and users can self-monitor safety. Security cameras and call boxes are sometimes used to further enhance actual and perceived safety. Like maintenance, management through policing will be a critical coordination component for the local jurisdictions' police and fire departments. Coordination among the local law enforcement agencies to determine appropriate policing of bike facilities and greenways is critical. Of equal importance is the level of policing required to keep the facilities secure. Like many issues in greenway operations, policing should be strategized before trail implementation and construction transitions to maintenance and operations. When local user groups know what authority is accountable, the response time to incidents and events can be more timely and more predictable, establishing a safe and trustworthy network regardless of location.

appendix



APPENDIX

A. FULL ANALYSIS FACTORS WITH ORIGINAL SUB-FACTOR DATA

B. DETAILED FEEDBACK AND SURVEY RESULTS

C. OTHER REFERENCE MAPS OR DATA

1. SOCIOECONOMIC FACTOR (American Community Survey (ACS) 2016)

- Scoring [socio_score]
 - 33% median income, 1-5 points, 5 for low median income, quantile
 - 33% poverty rate, 1-5 points, 5 for high poverty rate, quantile
 - 33% unemployment rate, 1-5 points, 5 for high unemployment rate, quantile
- Median Income [med_income]
 - \$ Median income / grid
 - ACS 2016 block group data to raster (cell size 100ft); ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: median
- % of households, poverty rate [poverty_num]/[tot_pop] = [poverty_percent]
 - # household under poverty line /grid divide households/cell
 - ACS 2016 block group data to raster (cell size 100ft); ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum
- Unemployment rate [unemploy_num]/[tot_pop] = [unemploy_rate]
 - # unemployment /grid divide people/cell
 - ACS 2016 block group data to raster (cell size 100ft); ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum

2. PERSONAL MOBILITY FACTOR (ACS 2016)

- Scoring [mobility_score]
 - 50% car ownership, 1-5 points, 5 for more people/car, quantile
 - 50% non-motorized commuter rate, 1-5 points, 5 for high rate, quantile
- Car ownership rate (people per car) [tot_pop]/[car_num] = [people_per_car]
 - # cars /grid divided by people/cell
 - ACS 2016 block group data (car ownership by tenure), sum of cars/household (both owner and renter; to raster (cell size 100ft), ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum
- % of people commuting to work by walking/biking [biking_num] + [walking_num] / [tot_pop] = [bike_walk_percent]
 - # people /grid divide people/cell
 - ACS 2016 block group data (means of transportation to work) to raster (cell size 100ft), ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum

3. PARK & RECREATIONAL ACCESS FACTOR (ACS 2016 + CPC Land Use)

- Scoring [park_score]
 - 1-5 points, 5 for more area of park per person, quantile
- Walkable/bikeable access to parks and recreational spaces [park_SUM_area_acre]/[tot_pop] = [acre_person]
 - Area of park per person /grid
 - ACS 2016 block group data for population, 2017 Cuyahoga County Open Data: Open space by type for park and recreational spaces
 - ½ mile buffer of park and recreational spaces; SPATIAL JOIN: grid as target, park buffers as join features, 'sum' statistics for total accessible park area; total area divided by population of the grid to get Area of park per person for each grid

4. REGIONAL TRAILS ACCESS (ACS 2016 + Greenways Partner Data Set)

- Scoring [trail_score]
 - 1-5 points, 5 for high density, quantile
- Proximity and access to existing trails, side paths, and protected bike facilities. [trail_density_MEAN]

- "trail density" within 1-mile distance of each zone
- Greenways Partner Data Set
- Rasterize ex. Trails at 100*100 ft cell (cell value: 1 for trails; 0 for no trail); focal statistics get the sum of cell value within 1 mile; zonal statistics get mean of cells within a ¼ mile grid as the measurement of accessibility to ex. Trails. Larger number means a higher trail density around.

5. TRANSIT FACTOR (GCRTA Transit Data)

- Scoring [transit_score]
 - 1-3 points for transit bus stops, 3 for more bus stops
 - +1 point if within ½ mile of priority corridor
 - +1 point if within ½ mile of rail station
- Access to transit (areas with greater access prioritized) - ½ mile walk to stops [COUNT_StopID]
 - # accessible bus stops /grid
 - GCTRA bus stop (downtown + non-downtown)
 - ½ mile buffer of all bus stops; SPATIAL JOIN: grid as target, bus stop buffers as join features, 'one to many' to keep all records

of bus stops for each grid, join when grids' centers are within the buffer; DISSOLVE by grid ID and use 'count' statistics for bus stop ID, to get # of accessible bus stops for each grid

- Priority transit corridors [priority_corridor]
 - If grids' centers are within ½ mile of priority corridors
 - NOACA
- Rail stations [railstop_score]
 - If grids' centers are within ½ mile of rail stations
 - GCTRA rail station

6. JOB CENTERS FACTOR (BLS OnTheMap 2015 Data)

Focused around the places people are trying to commute to for work/school

- Scoring [job_score]
 - o 1-5 points, 5 for more jobs, quantile
- Job / employment counts [job_num]
 - o # jobs /grid
 - o On the Map 2015 data (total # of jobs) SPATIAL JOIN to blocks; to raster (cell size 100ft), ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum

7. COMMERCIAL-CIVIC FACTOR
(CPC Land Use + ESRI Business Point Data)

- Scoring [commercial_score]
 - 33% retail, 1-5 points, 5 for more retail destinations, geometrical interval
 - 33% educational, 1-5 points, 5 for more educational destinations, geometrical interval
 - 33% arts/entertainment/recreation, 1-5 points, 5 for more destinations, geometrical interval
- Retail/entertainment destinations [retail_44_45] [culture_71]
- Culture centers, venues, School destinations [edu_61]
 - # destinations by type /grid
 - ESRI Business Point Data by NAICS code: 44-45 for Retail; 61 for Educational Services; 71 for Arts, Entertainment, and Recreation
 - SPATIAL JOIN to fishnet grid (1/4 mile), join when grids contain business points; statistics for each type of business: sum

8\ HABITAT FACTOR (2011 National Land Cover Data+ Greenprint Streams)

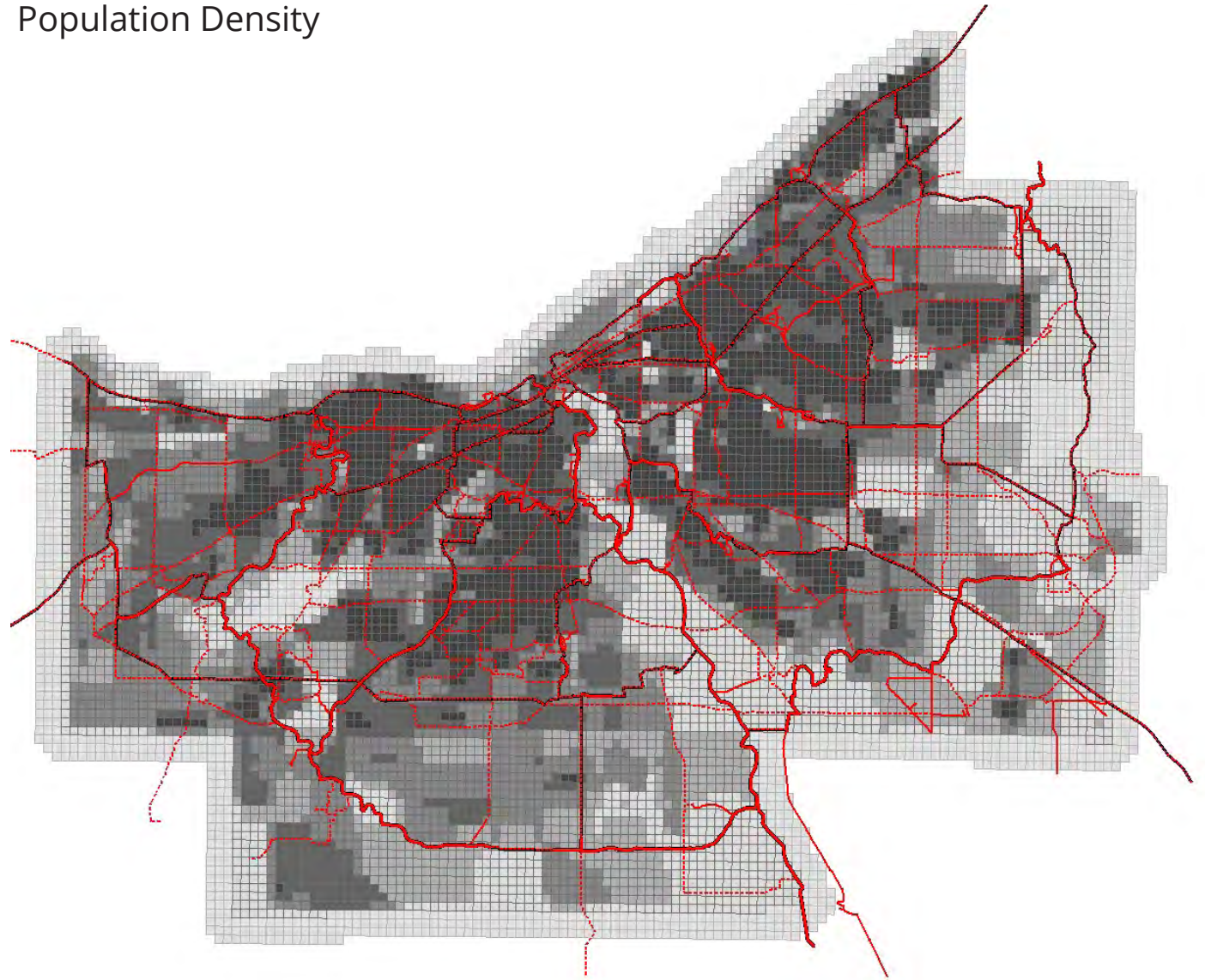
- Scoring [patch_score]
 - 33% natural land patch size
 - 33% density of riparian corridors
 - 33% proximity to potential habitats
 - Preservation/protection opportunity- natural land patch size [patch_size]
 - Average patch size /grid
 - National Landcover Dataset 2011. RECLASSIFY, assign 0 to (11Open Water, 21Developed, Open Space, 22Developed, Low Intensity, 23Developed, Medium Intensity, 24Developed High Intensity, 31Barren Land, 81Pasture/Hay, 82Cultivated Crops), assign 1 to (41Deciduous Forest, 42Evergreen Forest, 43Mixed Forest, 52Shrub/Scrub, 71Grassland/Herbaceous, 90Woody Wetlands, 95Emergent Herbaceous Wetlands). RASTER TO POLYGON to get patch size. FEATURE TO RASTER to assign size as cell value. ZONAL STATISTICS, mean of patch size for each grid
- Preservation/protection opportunity- density of riparian corridors [stream-density]
 - Density of riparian corridors

- Restoration opportunity – proximity to potential habitats [restore_proximity]
 - Proximity to potential habitats /grid
 - National Landcover Dataset 2011. RECLASSIFY, assign 0 to (11Open Water, 23Developed, Medium Intensity, 24Developed High Intensity, 41Deciduous Forest, 42Evergreen Forest, 43Mixed Forest, 52Shrub/Scrub, 71Grassland/Herbaceous, 90Woody Wetlands, 95Emergent Herbaceous Wetlands), assign 1 to (21Developed, Open Space, 22Developed, Low Intensity, 31Barren Land, 81Pasture/Hay, 82Cultivated Crops). FOCAL STATISTICS, sum of cells in a radius of 1/2mile. ZONAL STATISTICS, sum of cell focal value for each grid
- Sewer District Watershed Planning related projects / LEAP Data

A. FULL ANALYSIS FACTORS WITH ORIGINAL SUB-FACTOR DATA

Population Density is used in several Core Factor analysis as a filter

Population Density



SOCIO-ECONOMICS FACTORS

Sub Factors:

Median income, 1-5 points, 5 for low median income, quantile;

Poverty rate, 1-5 points, 5 for high poverty rate, quantile;

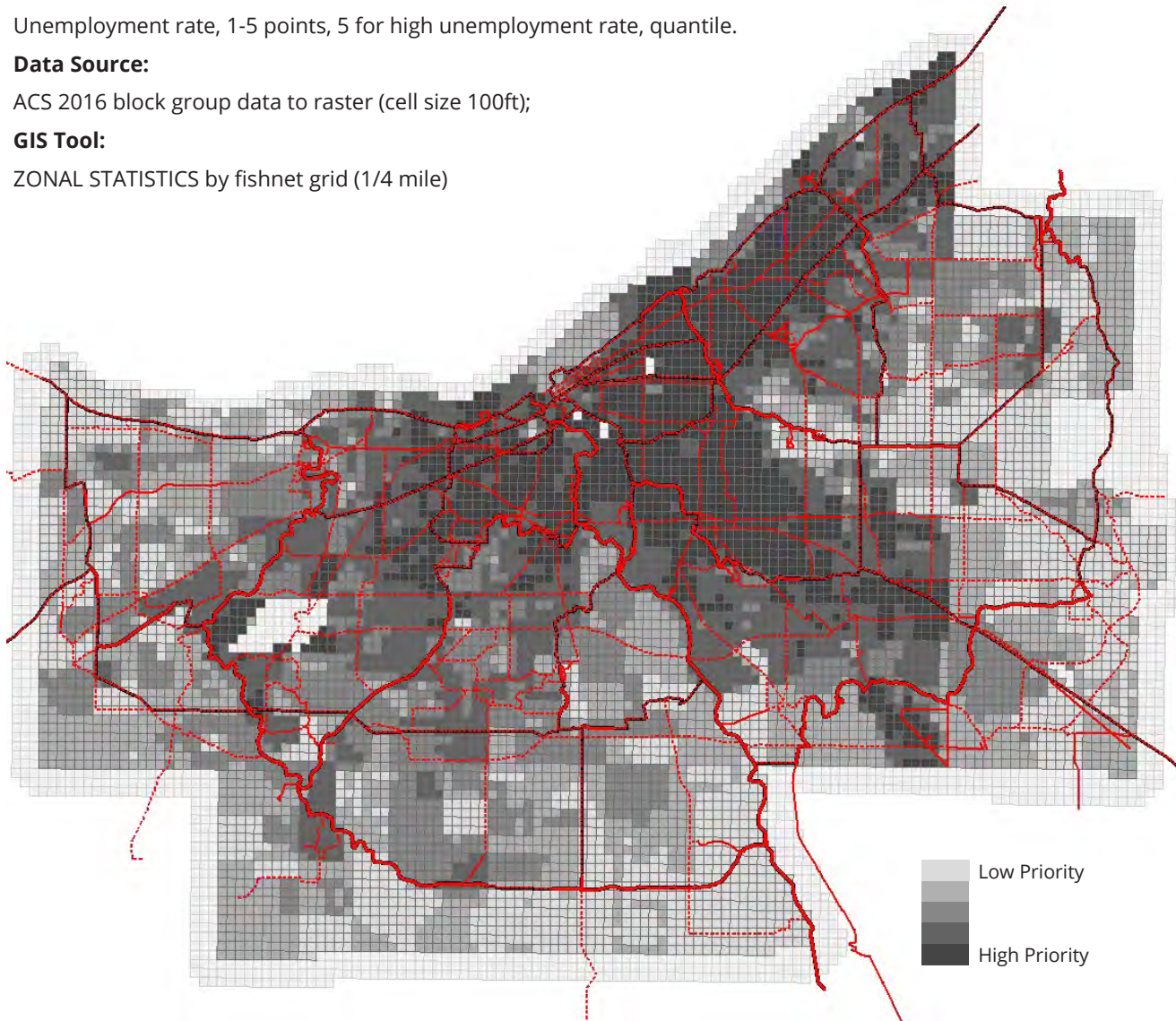
Unemployment rate, 1-5 points, 5 for high unemployment rate, quantile.

Data Source:

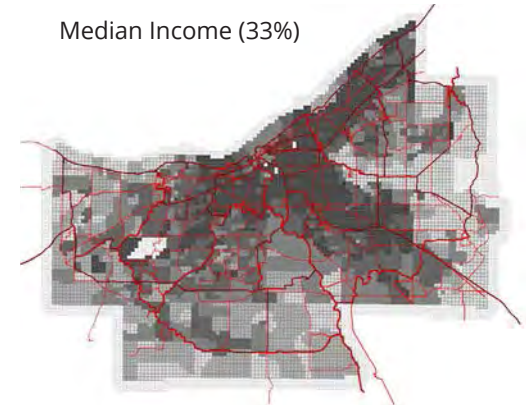
ACS 2016 block group data to raster (cell size 100ft);

GIS Tool:

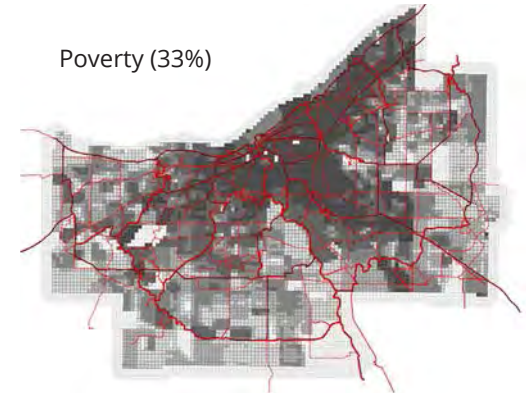
ZONAL STATISTICS by fishnet grid (1/4 mile)



Median Income (33%)



Poverty (33%)



Unemployment (33%)



MOBILITY FACTORS

Sub Factors:

Car ownership, 1-5 points, 5 for more people/car, quantile;

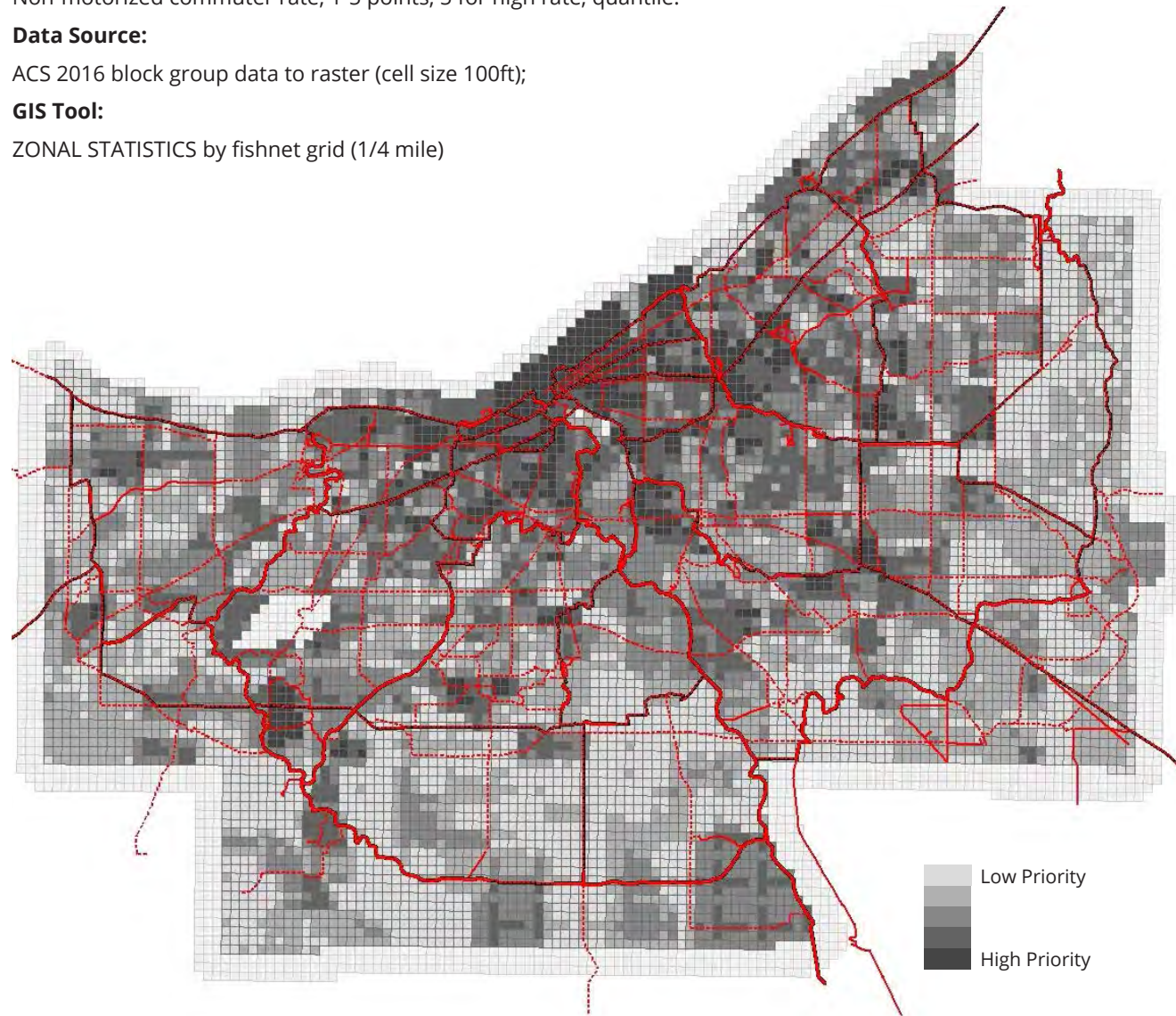
Non-motorized commuter rate, 1-5 points, 5 for high rate, quantile.

Data Source:

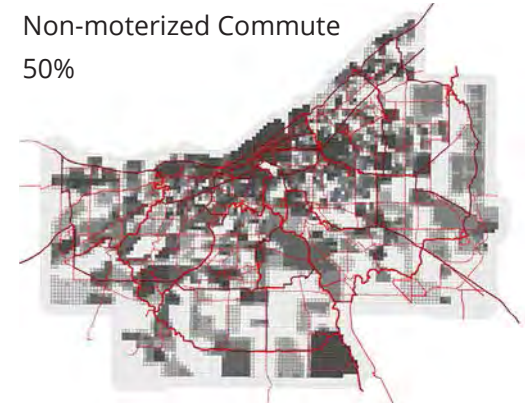
ACS 2016 block group data to raster (cell size 100ft);

GIS Tool:

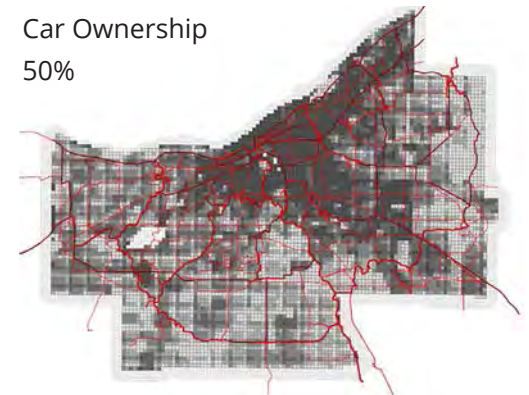
ZONAL STATISTICS by fishnet grid (1/4 mile)



Non-motorized Commute
50%



Car Ownership
50%



PARK ACCESS FACTORS

Sub Factors:

1-5 points, 5 for more area of park per person, quantile

Data Source:

ACS 2016 block group data for population

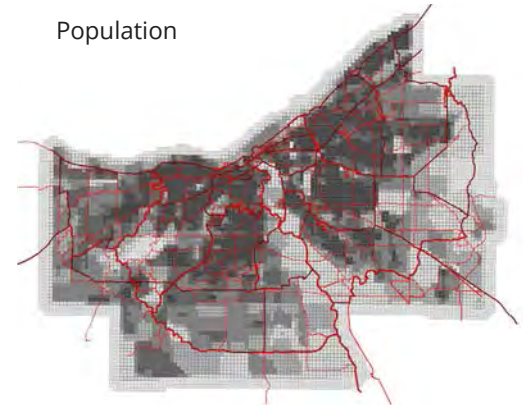
2017 Cuyahoga County Open Data

GIS Tool:

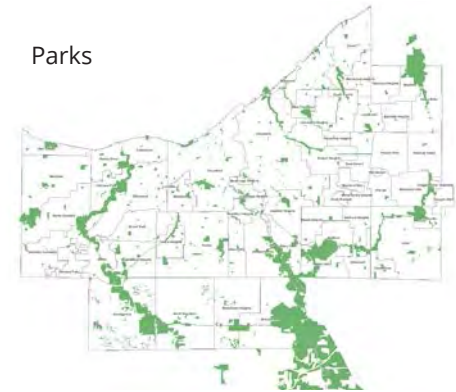
SPATIAL JOIN population grid as target, 1/2 mile park buffers as join features, 'sum' statistics for total accessible park area; total area divided by population of the grid to get Area of park per person for each grid



Population



Parks



TRAIL ACCESS FACTORS

Sub Factors:

Rasterize ex. Trails at 100*100 ft cell (cell value: 1 for trails; 0 for no trail)

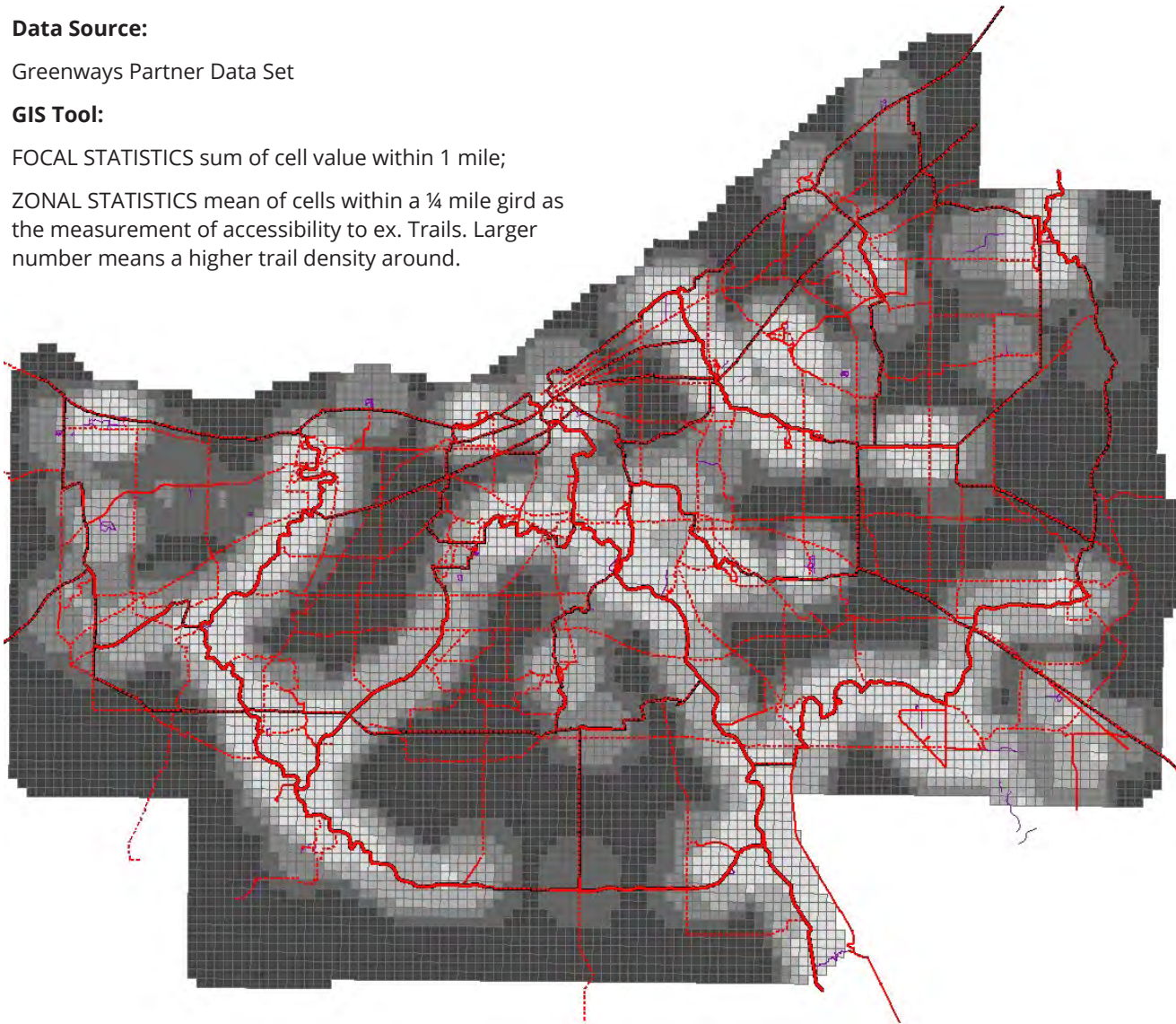
Data Source:

Greenways Partner Data Set

GIS Tool:

FOCAL STATISTICS sum of cell value within 1 mile;

ZONAL STATISTICS mean of cells within a ¼ mile gird as the measurement of accessibility to ex. Trails. Larger number means a higher trail density around.



TRANSIT FACTORS

Sub Factors:

1-3 points for transit bus stops, 3 for more bus stops

+1 point if within ½ mile of priority corridor

+1 point if within ½ mile of rail station

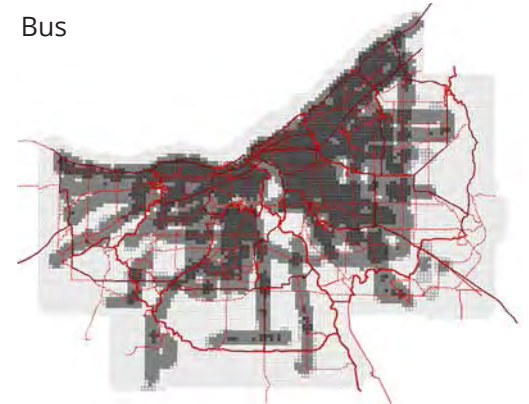
Data Source:

GCTRA Transit Data

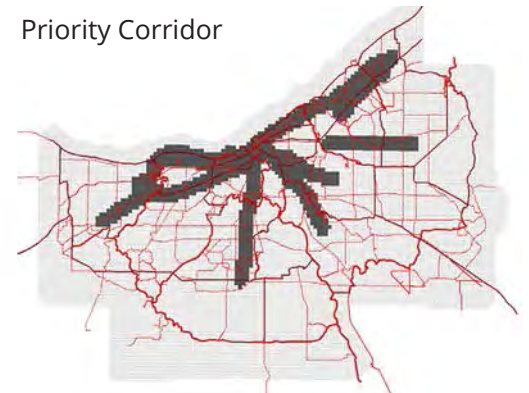
GIS Tool:

SPATIAL JOIN grid as target, 1/2 mile bus stop buffers as join features, 'one to many' to keep all records of bus stops for each grid, join when grids' centers are within the buffer; DISSOLVE by grid ID and use 'count' statistics for bus stop ID, to get # of accessible bus stops for each grid

Bus



Priority Corridor



Rail



JOB FACTORS

Sub Factors:

1-5 points, 5 for more jobs, quantile

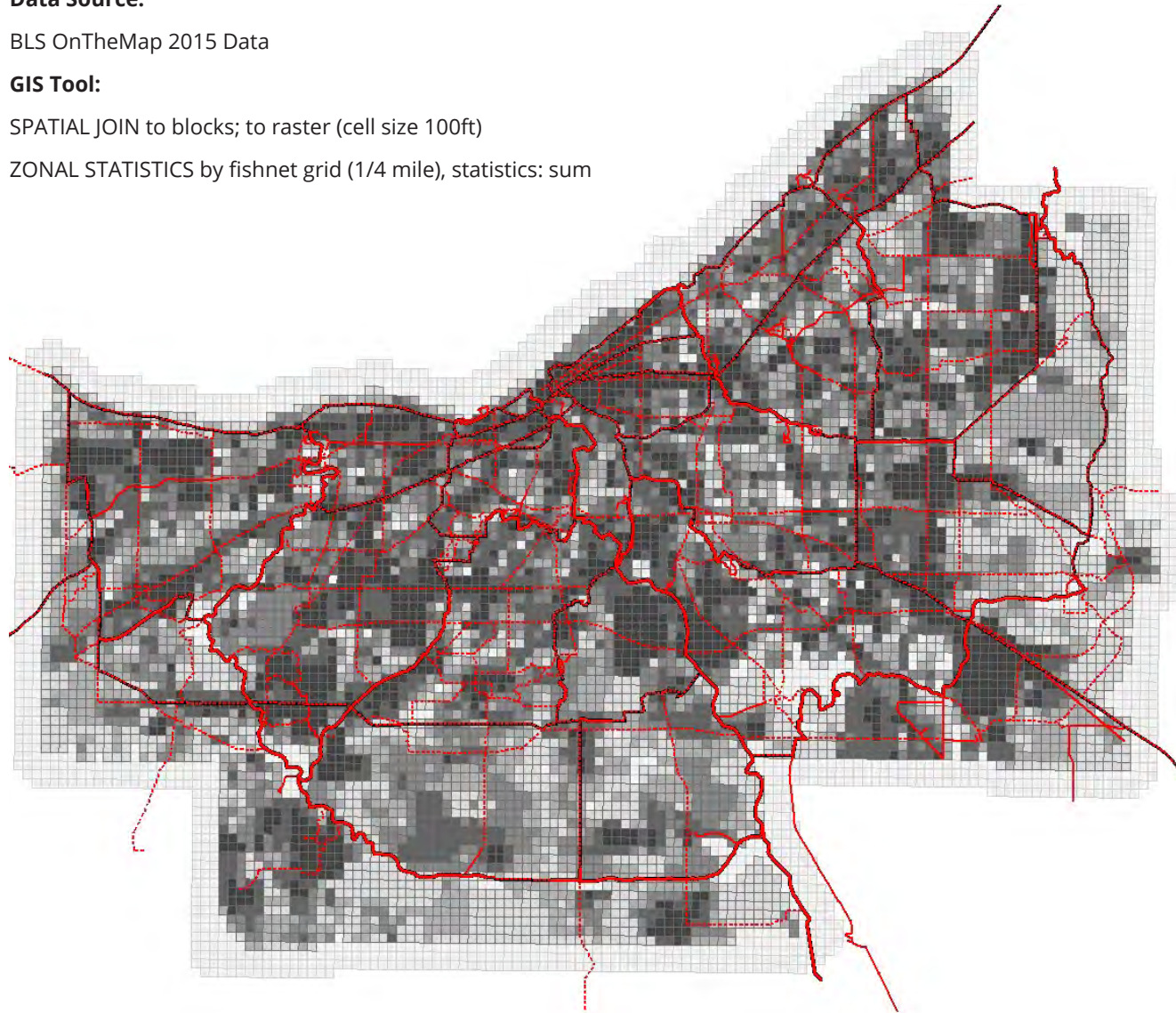
Data Source:

BLS OnTheMap 2015 Data

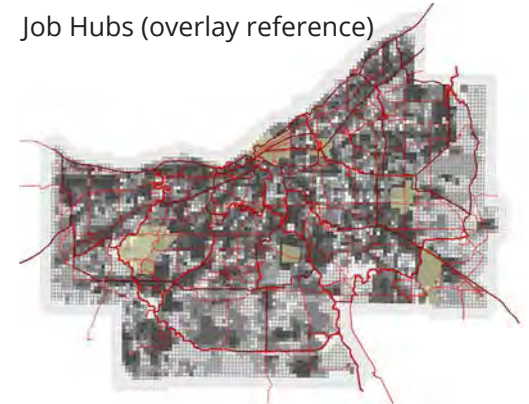
GIS Tool:

SPATIAL JOIN to blocks; to raster (cell size 100ft)

ZONAL STATISTICS by fishnet grid (1/4 mile), statistics: sum



Job Hubs (overlay reference)



CIVIC FACTORS

Sub Factors:

1-5 points, 5 for more area of park per person, quantile

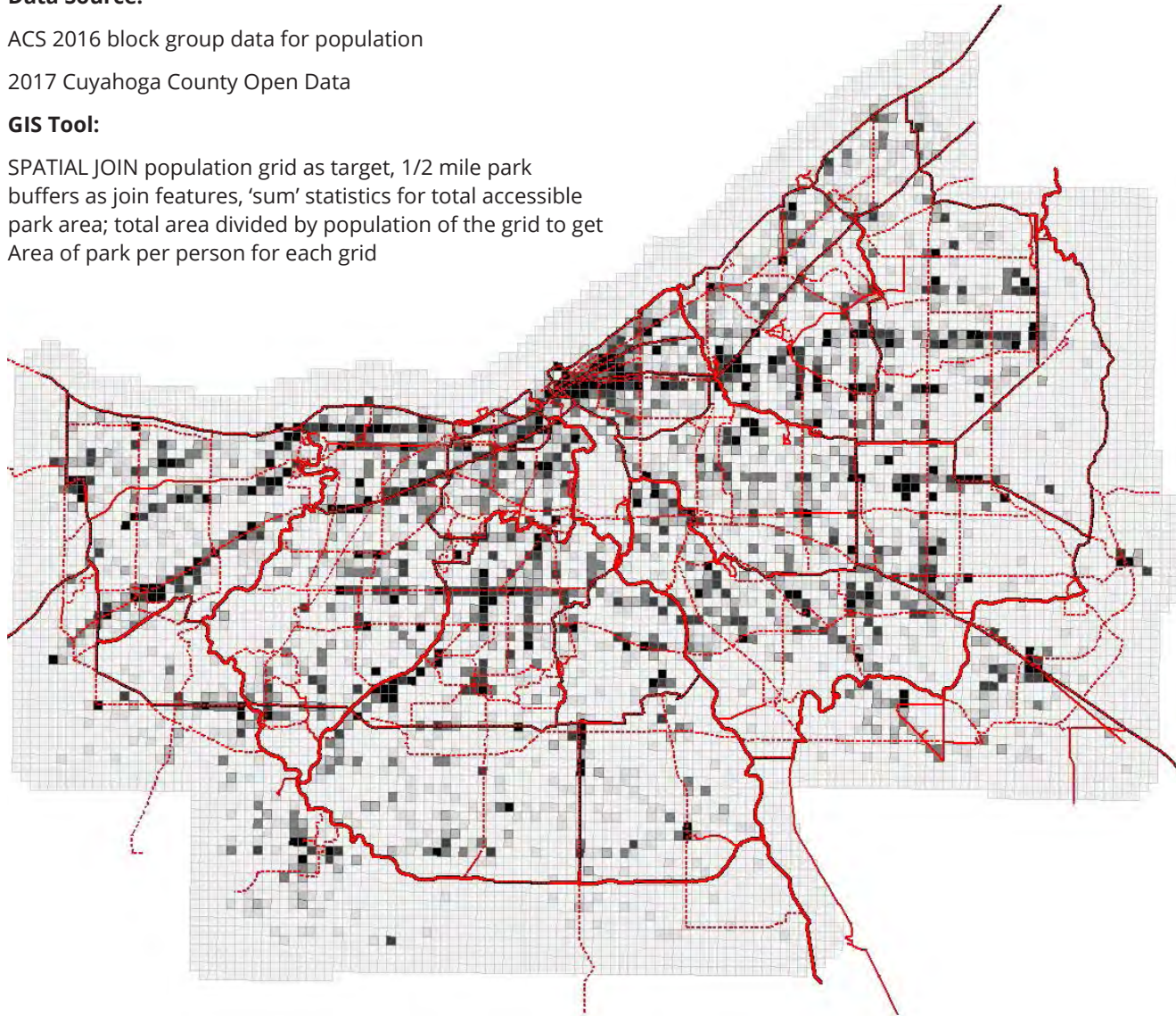
Data Source:

ACS 2016 block group data for population

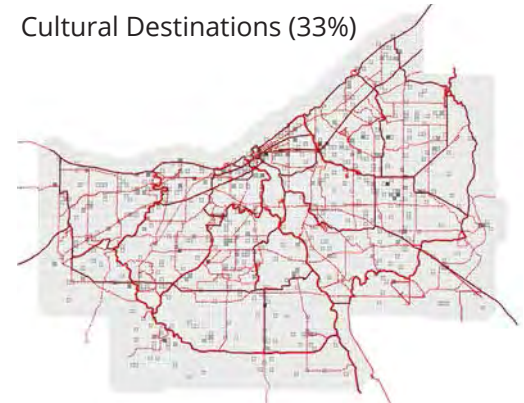
2017 Cuyahoga County Open Data

GIS Tool:

SPATIAL JOIN population grid as target, 1/2 mile park buffers as join features, 'sum' statistics for total accessible park area; total area divided by population of the grid to get Area of park per person for each grid



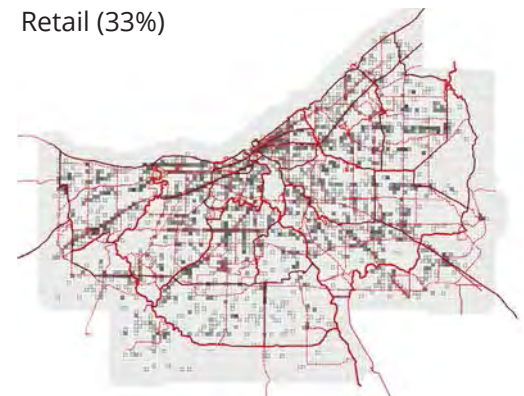
Cultural Destinations (33%)



Educational Destinations (33%)



Retail (33%)



HABITAT FACTORS

Sub Factors:

Density of riparian corridors

Proximity to potential habitats

Preservation/protection opportunity- natural land patch size

Data Source:

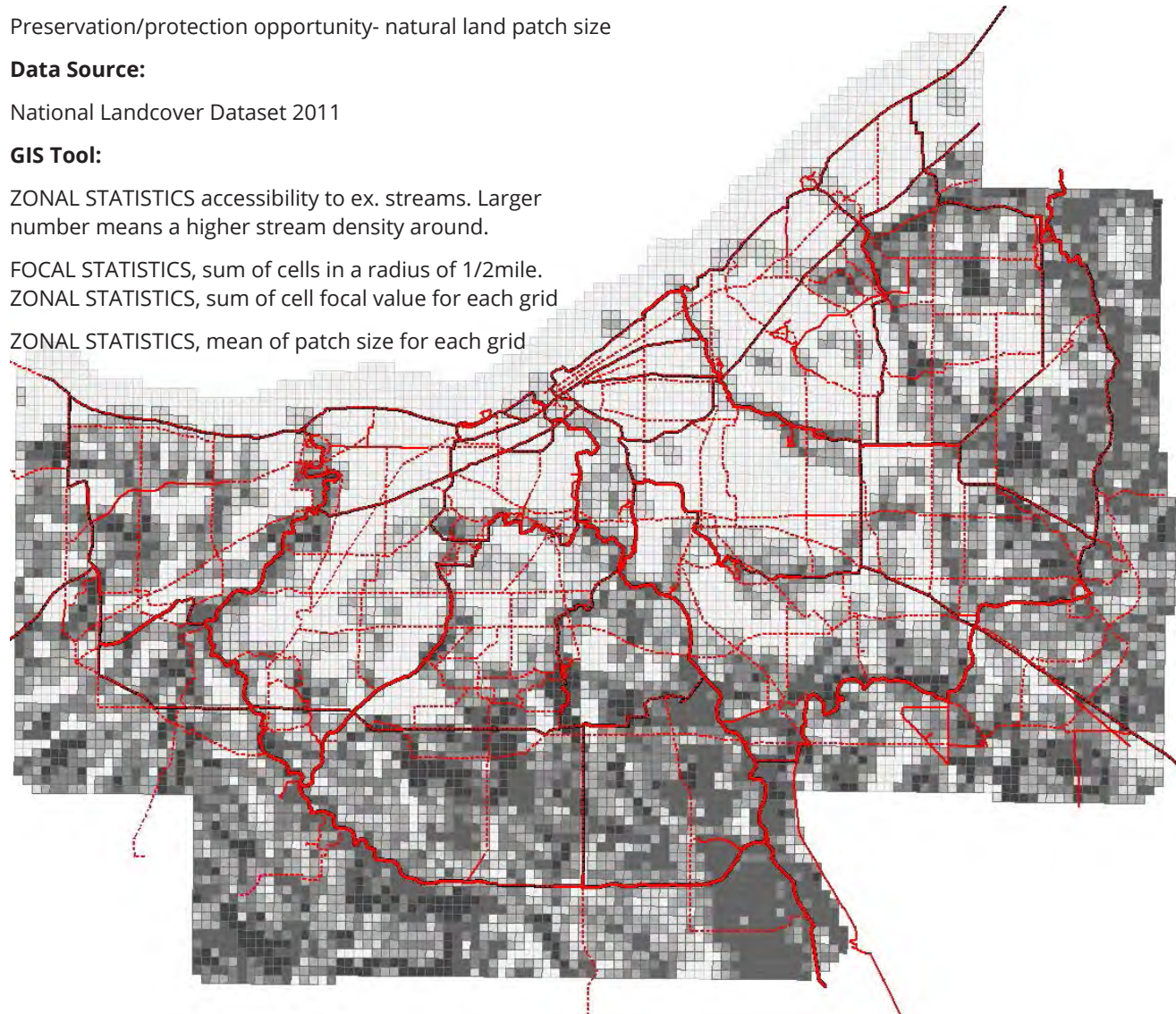
National Landcover Dataset 2011

GIS Tool:

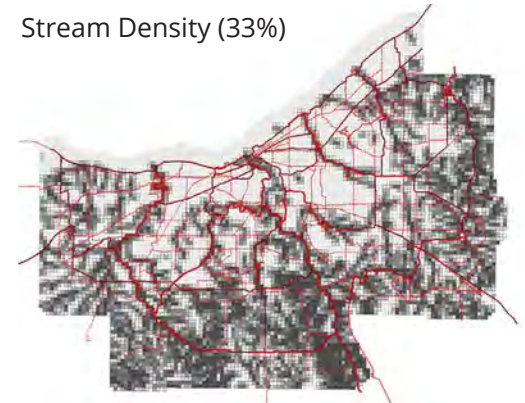
ZONAL STATISTICS accessibility to ex. streams. Larger number means a higher stream density around.

FOCAL STATISTICS, sum of cells in a radius of 1/2mile.
ZONAL STATISTICS, sum of cell focal value for each grid

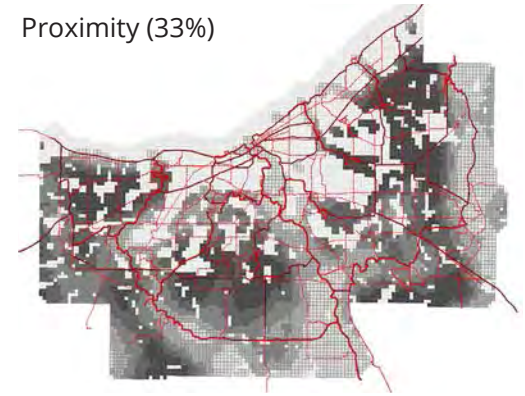
ZONAL STATISTICS, mean of patch size for each grid



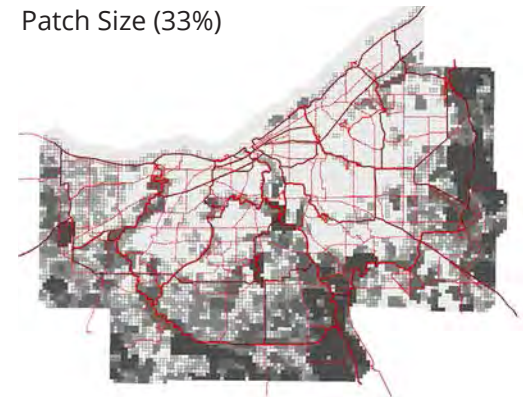
Stream Density (33%)



Proximity (33%)

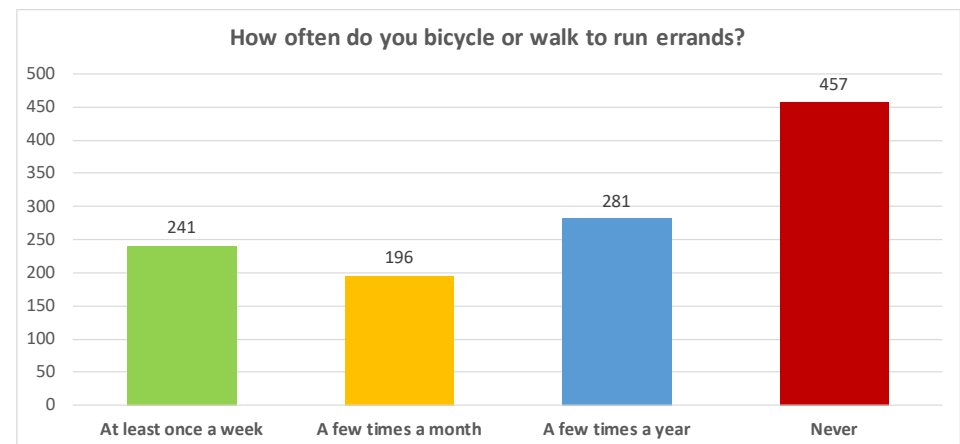
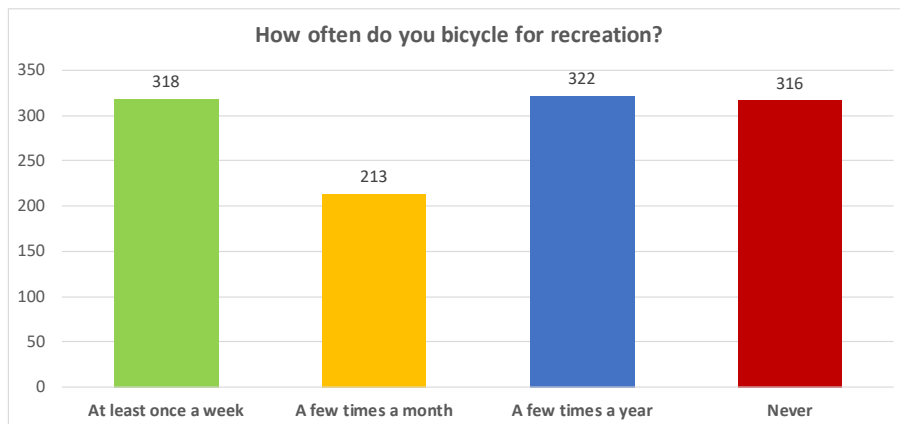
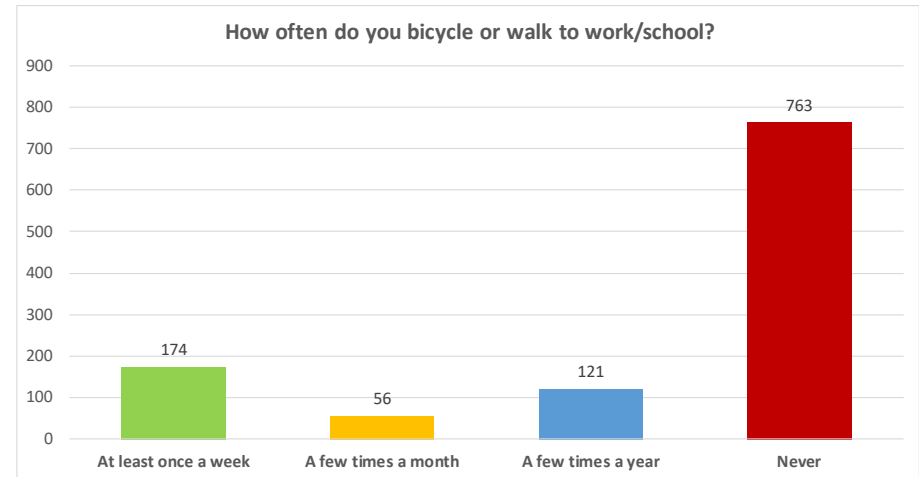


Patch Size (33%)

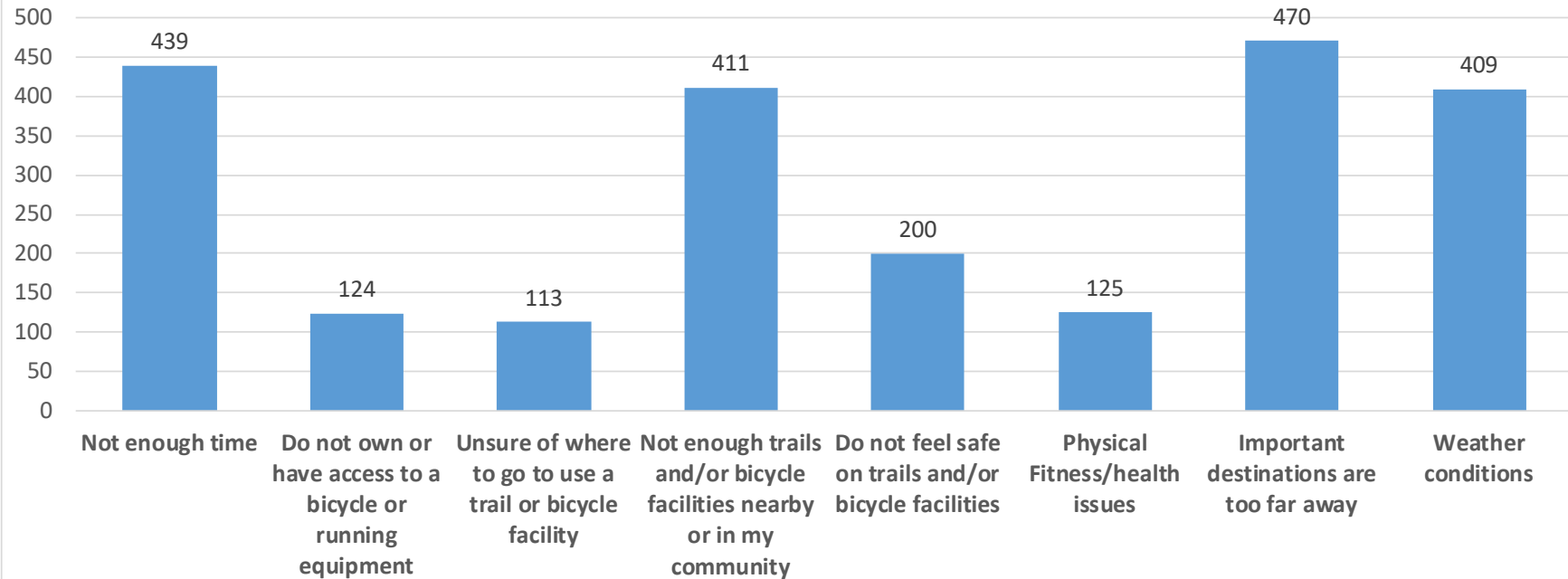


B. DETAILED FEEDBACK AND SURVEY RESULTS

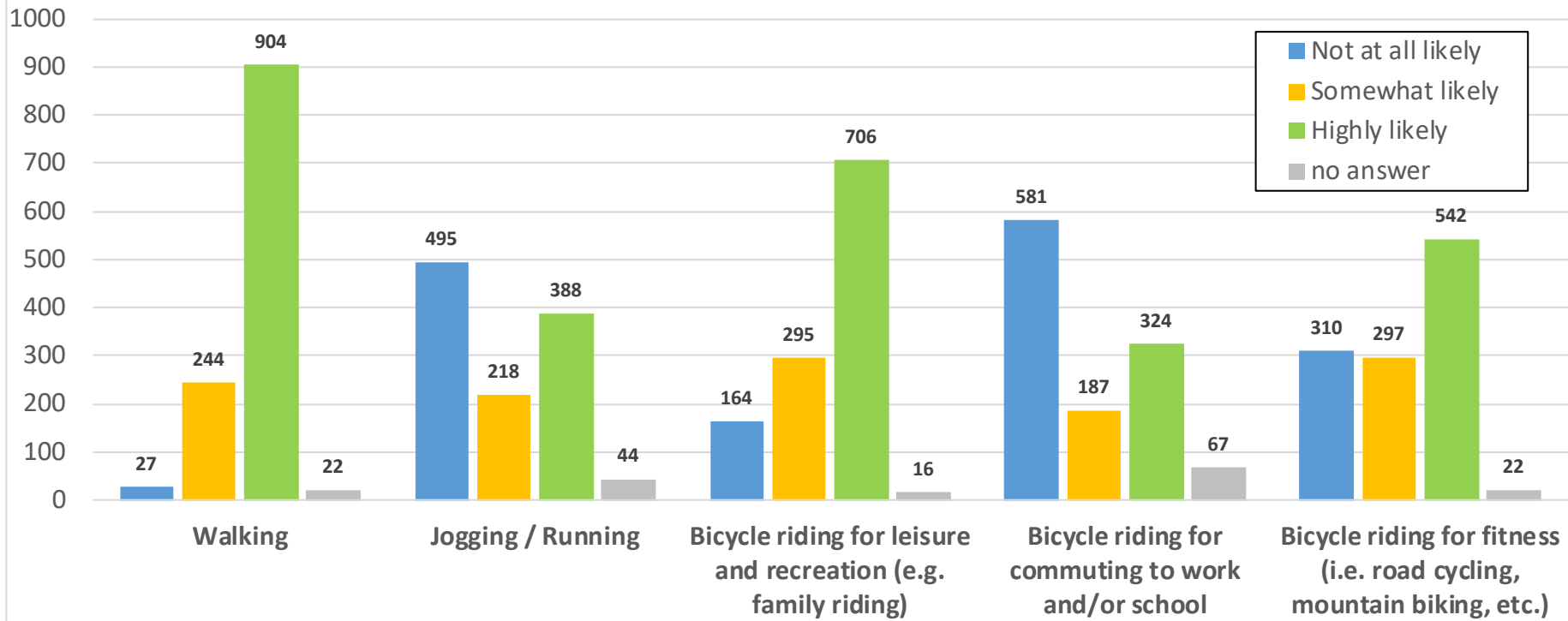
SURVEY RESULT - PUBLIC SURVEY



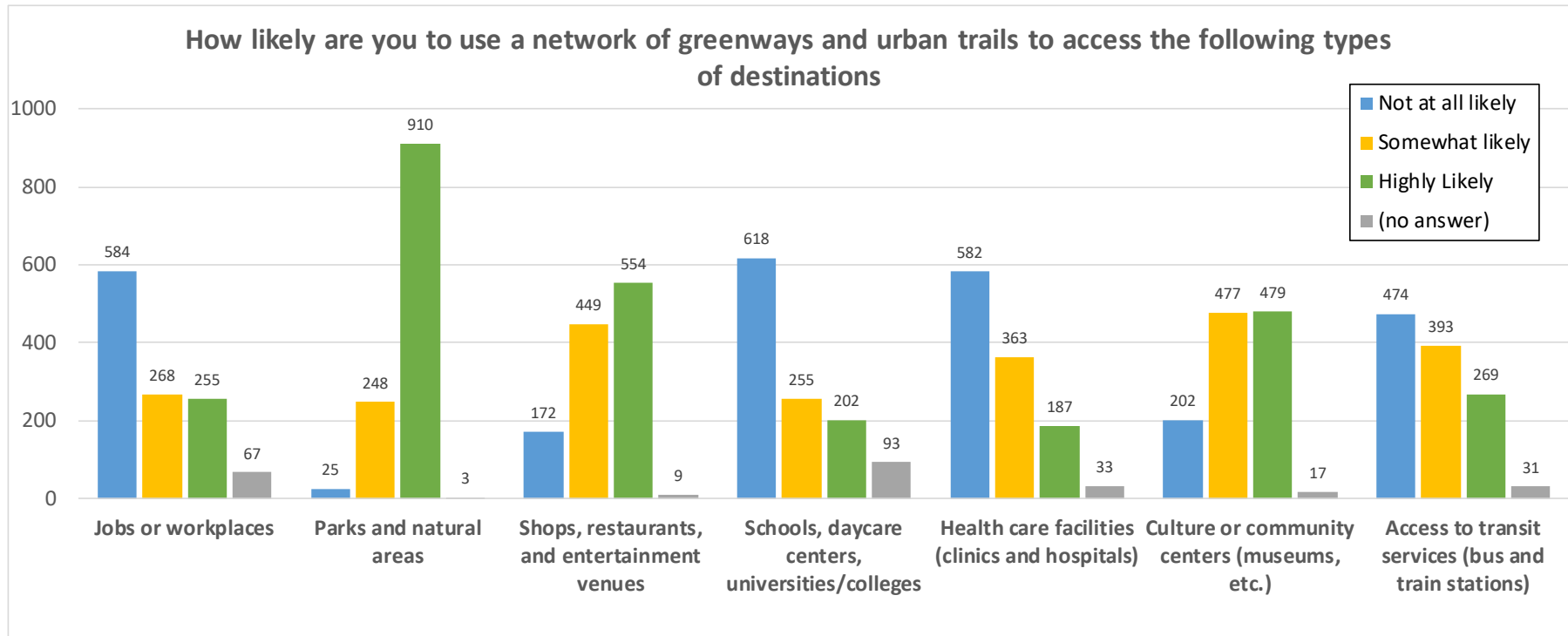
Please indicate which obstacles or barriers prevent you from walking, running, or biking more often (check all that apply)

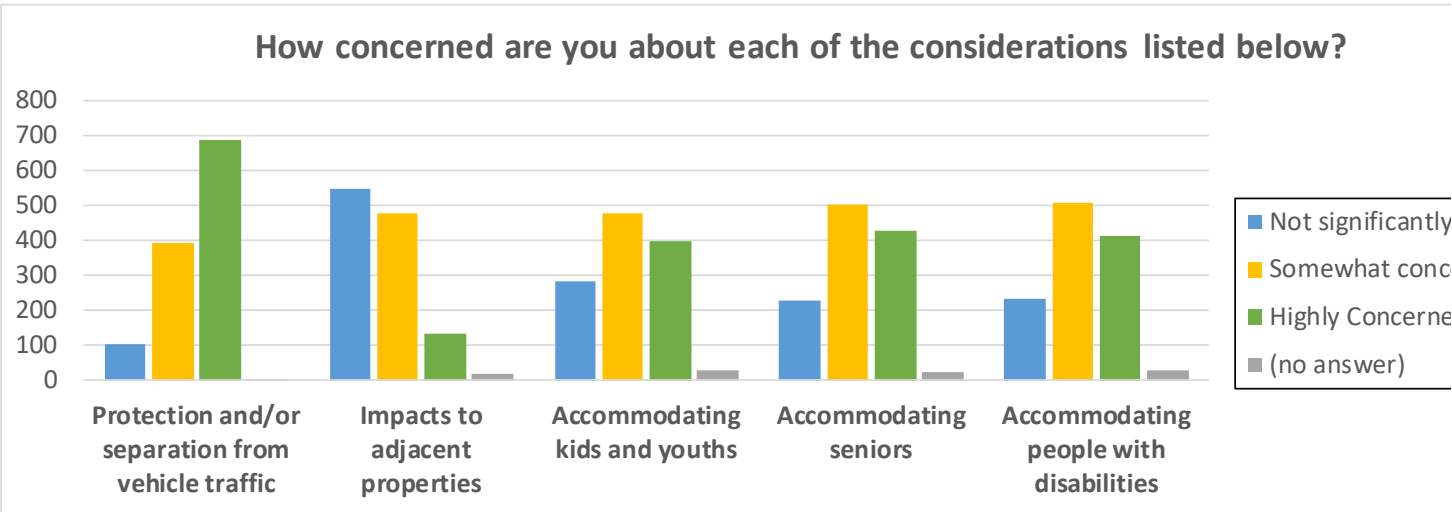
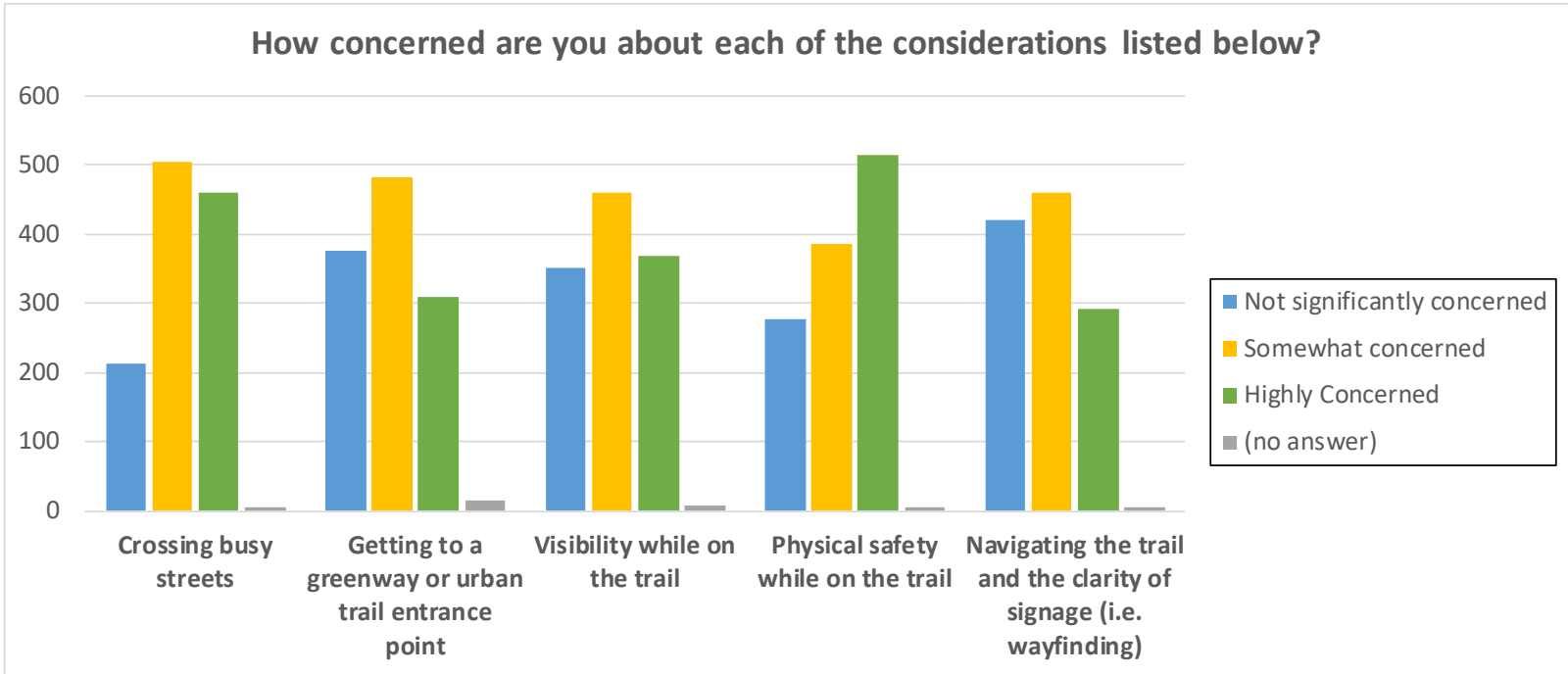


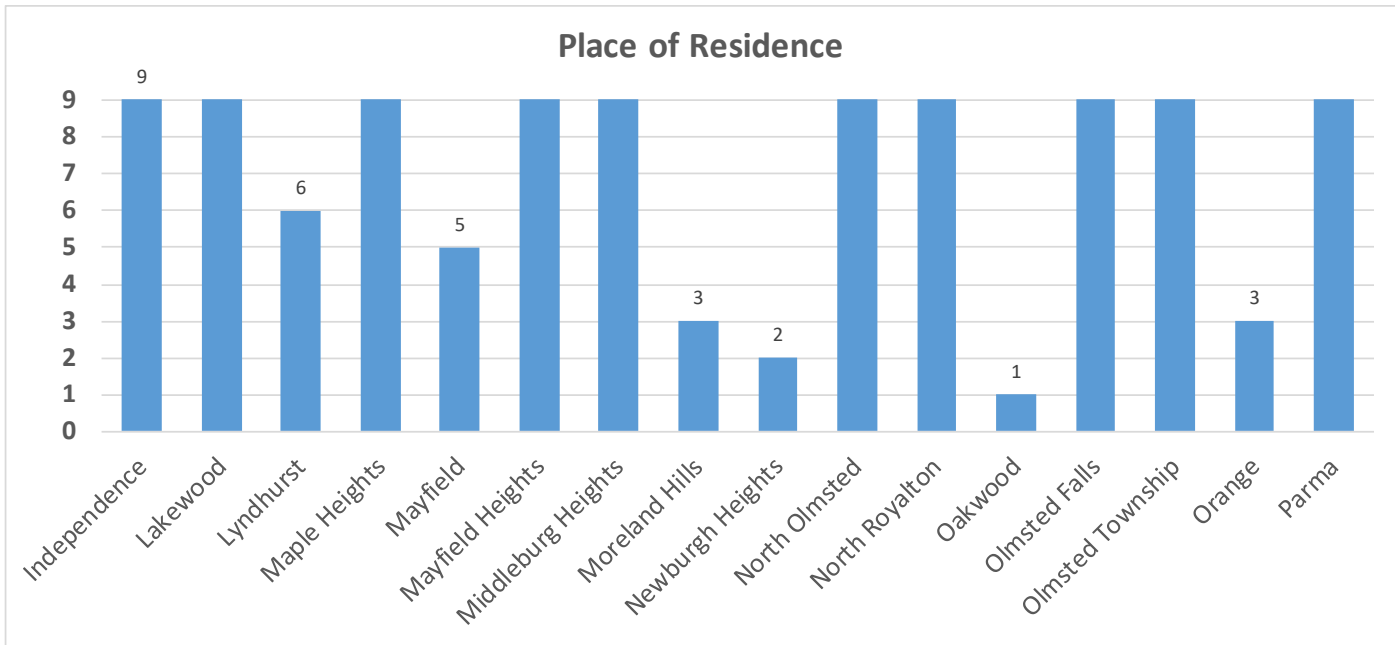
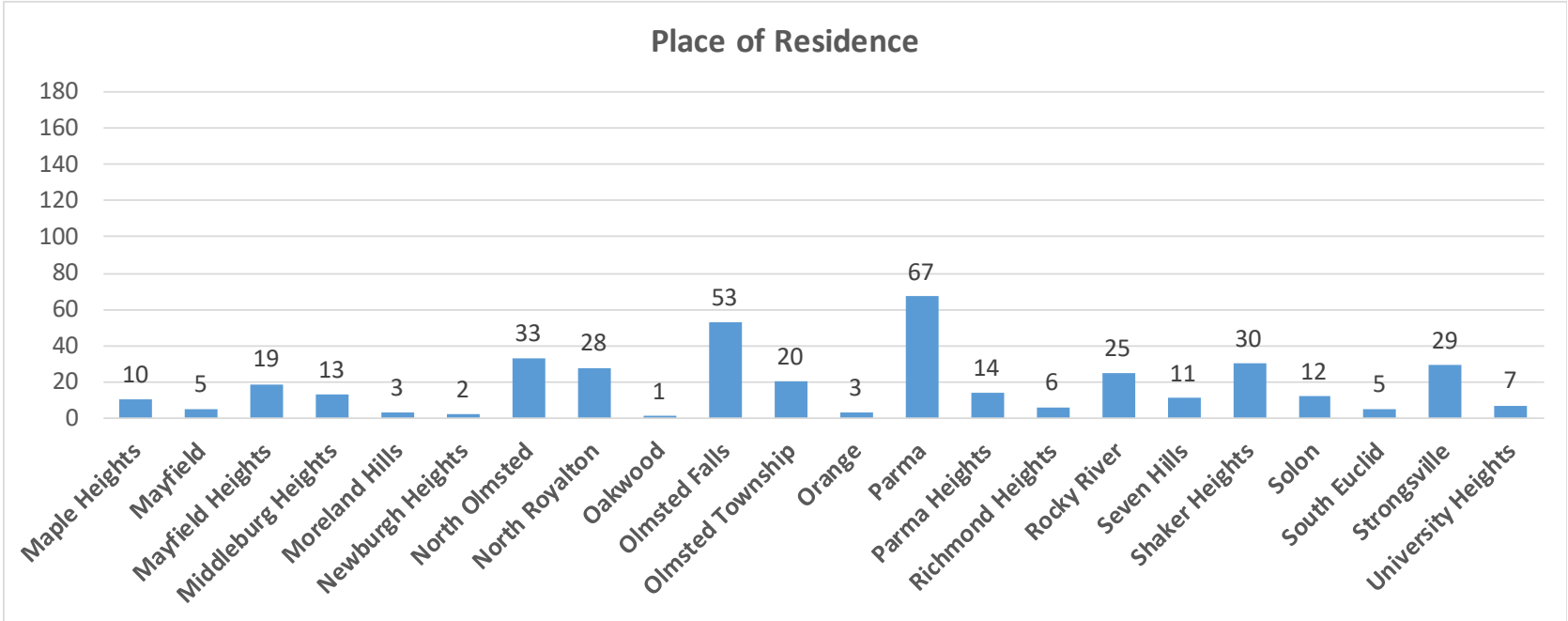
If there was a network of greenways and urban trails within your community, how likely are you to use it for the following activities?

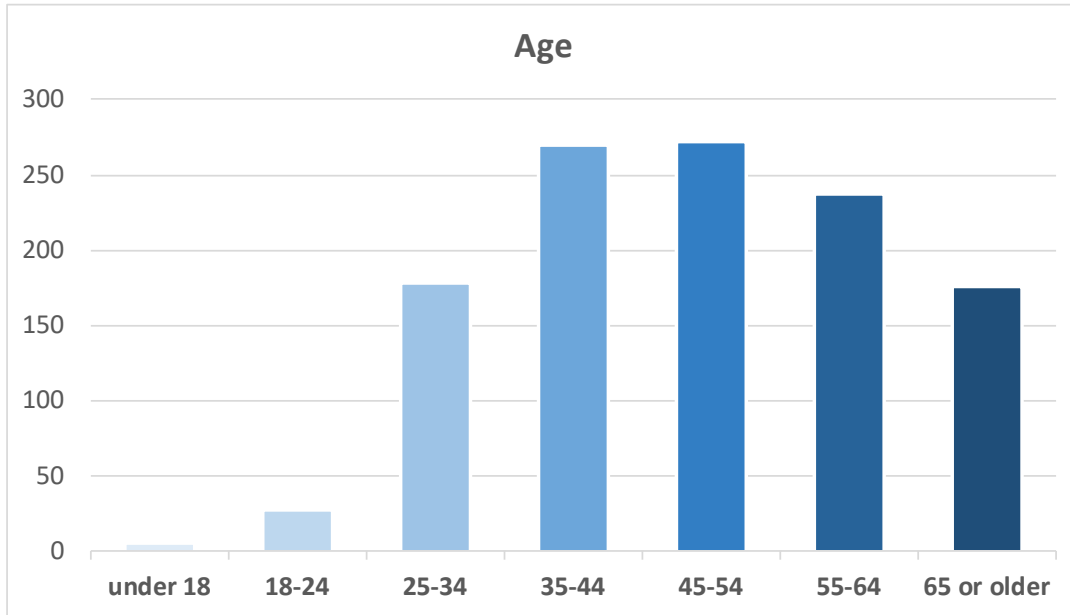


How likely are you to use a network of greenways and urban trails to access the following types of destinations









If there was a network of greenways and urban trails within your community, how likely are you to use it for the following activities?

