1. Introduction & Background

2. Greenway Framework

3. Evaluation Process

4. Core Factor Analysis

5. Next Steps
INTRODUCTION + BACKGROUND

Cuyahoga Greenways
CUYAHOGA COUNTY

- Population: 1.25 million (Cleveland: 385,000)
- 460 square miles
- 59 cities, villages, and townships + County-wide park district
• Develop a strategic plan describing a series of interconnected greenways and urban trails across Cuyahoga County.

• Build on the existing trail network and fill in the major missing links.

• Establish a regionally significant network of routes to serve all ages and abilities.
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1 – Project Initiation
• Steering Committee #1 June 2017

2 – Current Conditions
• Steering Committee #2 July 2017 (3 meetings)
• Community Meetings #1 August 2017 (3 meetings)
• Public Web Survey August – December 2017

3 – Shaping the Vision
• Steering Committee #3 November 2017 (3 meetings)
• Community Meetings #2 January 2018 (3 meetings)

4 – Concept Development
• Steering Committee #4 May 1 & 2 (3 meetings)
• Community Meeting #3 May 22-23, 2018 (3 meetings)

5/6 – Draft Master Plan & Final Report
• Final meetings TBD Summer 2018
GREENWAY FRAMEWORK

Cuyahoga Greenways
DATA DRIVEN, COMMUNITY LED

Data and analysis used to inform the decision-making process.

Where are the opportunities?

- Greenways
  - Off-Street
  - Open Space
- Urban Trails
  - On-Street
  - Constrained

Identification of “CANDIDATE ROUTES”

- Engagement
  - Known opportunities
  - Gap Identification
  - Planning projects
- Technical Analysis
  - Availability of: Rights-of-Way
  - Land Properties

How well do candidates meet our goals?

- Framework Plan
  - Priorities
  - Alignment with CIP/other projects
  - Funding
  - Implementation

Development of “EVALUATION CRITERIA”

- Equity
- Connectivity
- Economic
- Ecology

Engagement
- What are the priorities & critical issues/factors?

Technical Analysis
- Metrics and maps
COMMUNITY INPUT TO SHAPE ROUTES

2,200+ map points
103 questionnaire responses

https://arcg.is/1WDTHPO
Q1a: How comfortable are you using SHARROWS? Sharrors are shared lane or share the road markings.

Q1c: How comfortable are you using CONVENTIONAL BIKE LANES on HIGHER traffic streets?

Q1b: How comfortable are you using CONVENTIONAL BIKE LANES on LOWER traffic streets?

Q1d: How comfortable are you using BUFFERED BIKE LANES on HIGHER traffic streets?
Q1e: How comfortable are you using PROTECTED BIKE LANES (e.g. cycle tracks) on major streets?

89 responses

Q2: What is the longest bicycle trip (time-wise) you would be willing to accept for COMMUTING to work or school?

87 responses

Q1f: How comfortable are you using SIDE PATHS (i.e. wider sidewalks or trails) adjacent to major roadways?

90 responses

Q3: What is the longest bicycle trip (time-wise) you would be willing to accept for accessing a RECREATIONAL destination or amenity?

90 responses
#1 – Existing key trails
GREENWAY NETWORK

#2 – Regional Network

Determined via public, technical, and steering committee input

Regional network intended to provide:

- Critical linkages to major destinations
- Extend and close gaps in the existing trail network
- Be designed for a broader range of users and abilities
- Provide cross-county linkages
Proposed regional routes include new trail connections as well as higher level on-street facilities, such as:

- Complete sidewalks
- Intersection improvements
- Protected / separated bicycle lanes (cycle tracks, midway, etc.) or other appropriate facilities
Also determined via public, technical, and steering committee input

- Some on-street routes may include an existing bike facility – but may require additional enhancement.
- Extend and close gaps in the existing trail network
- Be designed for a broader range of users and abilities
GREENWAY NETWORK

Overall Network

= 811 miles

Regional network
• 120 miles of existing trail
• 50 miles of proposed trail
• 125 miles of proposed on-street routes

Supporting network
• 58 miles of existing trail
• 104 miles of proposed trail
• 354 miles of proposed on-street routes
#5 – Defining “Projects”

Routes are defined in terms of logical project start and end points, given a distinct name and ID number.

309 Projects Named
Factors affecting bicycle traffic stress:

1. Type and size of bicycle facility (lanes width, protection, etc.)
2. Number of vehicle lanes
3. Vehicle speeds
4. Vehicle volume (Average Daily Trips or ADT)
5. 1-way vs. 2-way roads
6. Type of intersection and crossing treatments

These criteria can also relate to pedestrian comfort and safety.

**BICYCLE LEVEL OF TRAFFIC STRESS (LTS)**

**LOW STRESS TOLERANCE**

**Highly Confident**

4-7% of the total population

Comfortable riding with traffic; will use roads without bike lanes.

**Somewhat Confident**

5-9% of the total population

Generally prefer more separated facilities, but are comfortable riding in bicycle lanes or on paved shoulders if need be.

**Interested but Concerned**

51%-56% of the total population

Often not comfortable with bike lanes, may bike on sidewalks even if bike lanes are provided; prefer off-street or separated bicycle facilities or quiet or traffic-calmed residential roads. May not bike at all if bicycle facilities do not meet needs for perceived comfort.

**BICYCLIST DESIGN USER PROFILES**

**LOW STRESS TOLERANCE**

LTS 1 (children) – Low Stress

LTS 2 (adults) – Moderately Low Stress

**HIGH STRESS TOLERANCE**

LTS 3 – Moderately High Stress

LTS 4 – High Stress

May 2018
LTS 1 & 2 FACILITIES

Shared Street design w/ Advisory Bike Lanes

1-way Protected Bike Lane

2-way Protected Bike Lane (cycletrack)
EVALUATION PROCESS

Cuyahoga Greenways
Step 1:
Map census Population Data (Block-level)

TOTAL POPULATION (Census Block)
- 0 - 62
- 63 - 177
- 178 - 410
- 411 - 939
- 940 - 2310
Step 2:
Translate into quarter-mile grid to determine population density (total population per grid cell)

TOTAL POPULATION (1/4 Mile Grid)
- 0 - 89
- 90 - 228
- 229 - 407
- 408 - 643
- 644 - 1731
Step 3:
Overlay candidate routes

<table>
<thead>
<tr>
<th>Route Type</th>
<th>TOTAL POPULATION (1/4 Mile Grid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-Street: Existing</td>
<td>0 - 89</td>
</tr>
<tr>
<td>Off-Street: Planned; Off-Street: Planned</td>
<td>90 - 228</td>
</tr>
<tr>
<td>On-Street: Existing</td>
<td>229 - 407</td>
</tr>
<tr>
<td>On-Street: Planned; On-Street: Planned</td>
<td>408 - 643</td>
</tr>
<tr>
<td></td>
<td>644 - 1731</td>
</tr>
</tbody>
</table>
Step 4:
Determine total population along a route based on intersected grid cells.
Calculate totals based on the route length to get average population density along the route.
Step 5:
Identify routes scoring in the top 20%.

*Note that population density is used as one input into many of the core factor analyses.*
CORE FACTOR ANALYSIS

1. REGIONAL TRAILS ACCESS (ACS 2016 + Greenways Partner Data Set)
   - Density of trails within 1-mile

2. PARK & RECREATIONAL ACCESS FACTOR (ACS 2016 + CPC Land Use)
   - Walkable/bikeable access to parks and recreational spaces

3. HABITAT FACTOR (National Land Cover Data)
   - Preservation/protection opportunity
   - Restoration opportunity
   - Sewer District Watershed Planning related projects / LEAP Data

4. SOCIOECONOMIC FACTOR (ACS 2016)
   - Median Income
   - % of households, poverty rate
   - Unemployment rate
   - # unemployment /grid

5. PERSONAL MOBILITY FACTOR (ACS 2016)
   - Car ownership rate (people per car)
   - % of people commuting to work by walking/biking

6. TRANSIT FACTOR (RTA Transit Data)
   - Access to transit (areas with greater access prioritized) – ½ mile walk to bus stops
   - Priority transit corridors
   - Rail stations (½ mile walk)

7. JOB CENTERS FACTOR (BLS OnTheMap 2015 Data)
   - Focused around the places people are trying to commute to for work/school
   - Job / employment counts

8. COMMERCIAL-CIVIC FACTOR (CPC Land Use + ESRI Business Point Data)
   - Retail/entertainment destinations
   - Culture centers, venues, School destinations

PROCESS PER FACTOR:
1. Base data re-aggregated into ¼ mile grid cells
2. Sub-criteria scored on a 1-5 scale based on quantiles (20% ranges of data)
3. Sub-criteria combined at equal weighting (%’s) into factor score.
4. Factor scores computed for candidate route segments based on averaging overlapping grid cells.
1. REGIONAL TRAILS ACCESS

- Proximity and access to existing trails, side paths, and protected bike facilities.
- “trail density” within 1-mile distance of each zone

Data Source: ACS 2016 + Greenways Partner Data Set

- Underserved routes
- Good access routes
2\ PARK & RECREATIONAL ACCESS FACTOR

- Walkable/bikeable access to parks and recreational spaces
- Filtered by population density

Data Source: ACS 2016 + CPC Land Use

- Underserved routes
- Good access routes
3\ HABITAT FACTOR

- Preservation/protection opportunity
  - Natural land patch size
  - Density of riparian corridors
- Restoration opportunity
  - Proximity to natural land and riparian corridors

Data Source: National Landcover Dataset 2011, Greenprint Streams
4. SOCIOECONOMIC FACTOR

- Median Income
- % of households poverty rate
- Unemployment rate
- Filtered by population density

Data Source: ACS 2016
5\ PERSONAL MOBILITY FACTOR

- Car ownership rate (people per car)
- % of people commuting to work by walking/biking
- Filtered by population density

Data Source: ACS 2016
6\ TRANSIT FACTOR

- Access to transit (areas with greater access prioritized) – \( \frac{1}{2} \) mile walk to stops
- Rail stations
- Priority transit corridors

Data Source: RTA Transit Data
7. JOB CENTERS FACTOR

- Focused around the places people are trying to commute to for work/school
- Job / employment counts

Data Source: BLS OnTheMap 2015 Data
8\ COMMERCIAL-CIVIC FACTOR

- Retail/entertainment destinations
- Culture centers, venues, School destinations

Data Source: CPC Land Use + ESRI Business Point Data
FINDINGS

Cuyahoga Greenways
POPULATION SERVED

Change of served population before and after full regional network built-out

- Total population within 1-mile of existing regional corridor: **280,453** (120 regional trail miles)

- Total population within 1-mile of the full existing + proposed regional network: **508,091** (295 regional trail miles)

May 2018
EMPLOYMENT AREAS SERVED

Change of nearby jobs before and after full regional network built-out

- **Total jobs** within 1-mile of existing regional corridor: **355,159** (120 regional trail miles)

- **Total jobs** within 1-mile of the full existing + proposed regional network: **528,564** (295 regional trail miles)

May 2018
• High population area routes (RED) connected to high job density routes (GREEN) & utilizing existing trail network.

• Both high job and high population density routes (PURPLE).
• Good access to transit (RED) routes connected to routes with both high job density and low transit access (PINK).
CONNECTIONS: PEOPLE TO PARKS

- Good access to parks (RED) routes connected to routes in underserved park areas (GREEN)
- Underserved park area routes (PURPLE) that connect to existing trails.
- Good access to parks (RED) routes connected to routes in high habitat value (GREEN) areas
- Routes in high habitat value and that have good access to parks (PURPLE)
Map shows all routes (102) that show up in the four “Connections” analyses

- 18 routes show up twice
- 84 routes show up once

**ROUTES THAT SHOW UP TWICE:**

- 20 Big Creek Connector Trail
- 34 Brookpark Rd East
- 35 Brookpark Rd West
- 48 Chagrin Valley Connector South
- 53 Commercial Rd Connector
- 62 Day Drive To Big Creek Connector
- 82 E 22nd St
- 97 Fowles Rd
- 102 Garfield Park Reservation
- 159 Normandy Connector
- 179 Rockcliff Dr
- 183 S Belvoir Blvd
- 195 Smith Road Greenway
- 202 Som Center Rd
- 218 Towpath Trail
- 219 Treadway Creek Trail
- 231 W Ridgewood Dr
- 235 Warrensville Center Rd
1. Critical regional gaps (9 routes & 13 miles)
2. Important regional links (19 routes & 88 miles)
3. Key Supporting Routes (21 routes & 70 miles)

Projects identified based on stakeholder (public + steering committee) input and results from the data analysis.
NEXT TECHNICAL STEPS

CORE ANALYSIS FACTORS

1. REGIONAL TRAILS ACCESS
2. PARK & RECREATIONAL ACCESS FACTOR
3. HABITAT FACTOR
4. SOCIOECONOMIC FACTOR
5. PERSONAL MOBILITY FACTOR
6. TRANSIT FACTOR
7. JOB CENTERS FACTOR
8. COMMERCIAL-CIVIC FACTOR

• Understand core factors for regional and support routes.
• Couple with community and stakeholder selected routes.
• For priority routes, explore implementation and design considerations in greater detail.

IMPLEMENTATION DESCRIPTORS

Basic Route Information
Land Access
Network Role
Project Cost
Parallel Projects
Champions / Partners
Funding
Phasing & Timing

DESIGN CONSIDERATIONS

Safety & Crime
Route Difficulty
Visual Character
Stormwater Opportunity

May 2018
FACILITY DESIGN – RESIDENTIAL / EXURBAN

Shared Street / Advisory Bike Lanes

Buffered / Protected Bike Lanes

Lane reduction and buffered lanes

Side Path or Widened Sidewalk
FACILITY DESIGN – COMMERCIAL / URBAN

Midway Cycle Tracks
- Two-way protected/separated bike lane w/ on-street parking

Slower streets / bike lanes / wide sidewalks with on-street parking

Sidepaths or widened sidewalks

Two-way protected/separated bike lane w/ on-street parking

May 2018
GREENWAY IMPLEMENTATION

- The Cuyahoga Greenways plan will serve as a framework to guide regional connectivity
- Communities can include trail routes in master plans and require implementation as a condition of site development or redevelopment

Local project champions will help:
- Assess routes
- Fine-tune alignments
- Determine the best configuration for bicycle and pedestrian improvements

Partnerships have demonstrated success. Responsibilities can be divided between organizations for land acquisition, engineering, implementation, and management

- Trail projects in northeast Ohio are funded by an array of sources
GREENWAY FUNDING

Cuyahoga County communities and organizations have implemented trails with capital improvement funds and outside sources including:

• Leadership and funding from non-profit organizations, developers, foundations, and individuals

• Cuyahoga County Community Development Supplemental Grants

• State of Ohio:
  • Clean Ohio Fund (Greenspace Conservation and Recreational Trails)
  • State Capital Improvement Program, etc.

• Federal agencies:
  • Federal Highways Surface Transportation Program Block Grant
  • TIGER (Transportation Improvements Generating Economic Recovery)
  • CMAQ (Congestion Mitigation Air Quality)
  • Environmental Protection Agency Great Lakes Restoration Initiative and others
  • USACE – United States Army Corps of Engineers
Data Driven/Community Led

- Use the results of the analysis to assist with decision-making

1. Are the analysis results consistent with your experience?
   - Anything missing?
   - Data not representative?

2. Are there important routes to highlight, even if they didn’t score high on the analysis?

May 2018
NEXT STEPS

• **Community Meetings #3**
  - WEST: May 22\(^{nd}\), Lakewood Woman’s Club, Lakewood, 6:30-8:30
  - CENTRAL: Canalway Center, Cleveland, 6:30-8:30
  - EAST: May 23\(^{rd}\), Goldhorn Brewery, Cleveland, 6:30-8:30

• **June→ Fall 2018**
  - Project Team Meeting #7
  - Steering Committee Meeting #5
  - Public Meeting #4
  - Final Report