



Lowell

Pedestrian & Bicycle Plan

February 2020





Acknowledgments

Thank you to all of the citizens, stakeholders, bike enthusiasts, and City staff that contributed to the creation of the Lowell Pedestrian and Bicycle Plan. Thank you specifically to the members of the steering committee, listed below.



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Table of Contents

Table of Contents	1
Executive Summary	2
Introduction	4
Overview	5
Vision and Goals	7
Community Benefits	8
Existing Conditions	10
Demographics	11
Mobility Considerations	15
Outreach	28
Plan Review	34
Facility Recommendations	36
Recommendations	37
Spotlight Projects	43
Implementation	50
Prioritization	51
Policies and Programs	56
Funding	58
Measuring Success	60
Design Guidelines	61
Conclusion	63

Executive Summary

Lowell city officials recognize that the creation of quality transportation choices are integral to achieving the community vision outlined in the City's 2017-2022 Strategic Plan. In that document, Lowell envisions a future that is defined by well-connected neighborhoods, with a comprehensive sidewalk network and high-quality recreational assets. This plan builds on that high-level vision and creates a roadmap to fulfilling the vision.

Planning Process

The planning process for the pedestrian and bicycle plan followed the following planning philosophy:

- ▶ Make better places by creating better transportation options
- ▶ Value the voices of strategic stakeholders and local citizens
- ▶ Use current plans as a starting point for future strategies
- ▶ Create solutions customized to fit the needs of our community

In order to carry out this philosophy, the planning team conducted a three-phase planning process that relied heavily on public outreach, local leadership, and national best practices.

*Lowell's pedestrian and bicycle network will feature **safe, convenient, and comfortable** sidewalks, trails, and on-street accommodations that link residents and visitors of **all ages and abilities** to where they want and need to travel.*

Recommendations & Implementation

The pedestrian and bicycle network recommendations were developed by layering existing condition data with the needs, input, and feedback of the outreach efforts. This process is essentially a formula where the appropriate data points, analysis, and input are entered, and the results are the recommendations of the plan.

In addition to foundational analysis (existing conditions, engagement) that helped to develop the facility recommendations, a quantitative process was conducted to help prioritize the identified projects. This prioritization process was developed in conjunction with the steering committee and the City of Lowell. The goal of the prioritization is to provide the City with a guide and timeline for project implementation and allocation of resources. A detailed scoring process was created that assessed each project on a variety of criteria.

The implementation section also includes a detailed examination of possible project funding sources, priority program and policy recommendations, and ways to measure the plan's success over multiple years.

Prioritization Table

The table below highlights the prioritization process for the recommended projects. Based on public input from the previous open house and the online survey, and in conjunction with the City and the Project Steering Committee, a quantitative analysis of the recommended projects were conducted, yielding an overall weighted score for prioritization.

Note: the table below does not include standalone sidewalk projects, due to the number of sidewalk segments recommended. Sidewalk construction should be an ongoing priority for the City, and should be completed in conjunction with roadway projects as opportunity arises.

The projects shown below are sorted into: Short-Term (0-3 years) Mid-Term (3-10 years) Long-Term (10+ years)

Project ID	Facility Name	Extent	Length (miles)	Facility Type
1	North Main Street & Rogosin Boulevard	Intersection	-	Safe Crossing
2	North Main Street & Park Circle/Caroline Avenue	Intersection	-	Safe Crossing
3	South Main Street Railroad Crossing	Intersection	-	Safe Crossing
4	North Main Street & McAdenville Rd/W 3rd Street	Intersection	-	Safe Crossing
5	W 1st Street & Phillips Street	Intersection	-	Safe Crossing
6	Phillips Street Railroad Crossing	Intersection	-	Safe Crossing
7	Third Street/McAdenville Rd Road Diet	Hemlock Lane to city limit	0.9	On-Street Bike Lane
8	North Lowell Neighborhood Trail	CTT extension to new development	0.6	Multi-Use Path
9	Third Street Greenway	Third Street Extension Multi Use Path	1	Multi-Use Path
10	Franklin Square Greenway*	Railroad Street to Lineberger Road and Main Street	1.6	Multi-Use Path
11	First Street Road Diet	City limit to Main Street	1.3	On-Street Bike Lane
12	South Main Road Diet	First Street to city limit	0.8	On-Street Bike Lane & Sidewalk
13	North Main Road Diet	Third Street to Lineberger Street	0.7	On-Street Bike Lane
14	Phillips Street Improvements	First Street to Church Street	0.4	Sharrow & Sidewalk
15	Carolina Thread Trail Extension	From existing trailhead to NW city limit	1.1	Multi-Use Path
16	Power Drive & McAdenville Rd	Intersection	-	Safe Crossing
17	Downtown shared lane network	Downtown	0.7	Sharrow
18	Lineberger Street	North Main to Lowell Elementary	1.0	Sharrow
19	Church Street improvements	S. Main Street to city limit	0.9	On-Street Bike Lane & Sidewalks
20	Aberdeen Blvd Extension	I-85 ramps to Cox Rd in Gastonia	-	Multi-Use Path
21	South Main Street & 1st Street	Intersection	-	Safe Crossing
22	North Main Street at Poston Park	Intersection	-	Safe Crossing
23	Rogosin Boulevard Improvements	N. Main Street to city limit	0.5	Sharrow & Sidewalk
24	Westover St & Wilkinson Boulevard	Intersection	-	Safe Crossing
25	Groves Street & Wilkinson Boulevard	Intersection	-	Safe Crossing
26	Redbud Drive & Wilkinson Boulevard	Intersection	-	Safe Crossing
27	North Main Street/Lowell Spencer Mountain Rd Sharrow	Lineberger Rd to George Poston Park	-	Sharrow
28	Power Drive/Saxony Road Improvements*	Third Street to Lowell Elementary	1.1	On-Street Bike Lane & Sidewalk
29	E 1st Street & Mill Street/Grove Street	Intersection	-	Safe Crossing
30	Hemlock Lane	Third Street to First Street	0.1	Paved Shoulder
31	Groves Street	First Street to US-29	0.8	Paved Shoulder

INTRODUCTION



Overview

Lowell is located in eastern Gaston County between Charlotte and Gastonia. In recent years, the City has placed a significant emphasis on downtown revitalization efforts and the redevelopment of its major corridors. Three years ago Lowell joined with other towns in Gaston County on a marketing and branding campaign that focused on outdoor recreation assets. Over time this has been embraced by the citizens and noticed by surrounding counties. Cycling and other outdoor activities have increased exponentially as a result and this pedestrian and bicycle plan will continue this growth.

Background

Lowell city officials recognize that the creation of quality transportation choices are integral to achieving the community vision outlined in the City's 2017-2022 Strategic Plan. In that document, Lowell envisions a future that is defined by well-connected neighborhoods, with a comprehensive sidewalk network and high-quality recreational assets. This plan builds on that high-level vision and creates a roadmap to fulfilling the vision.

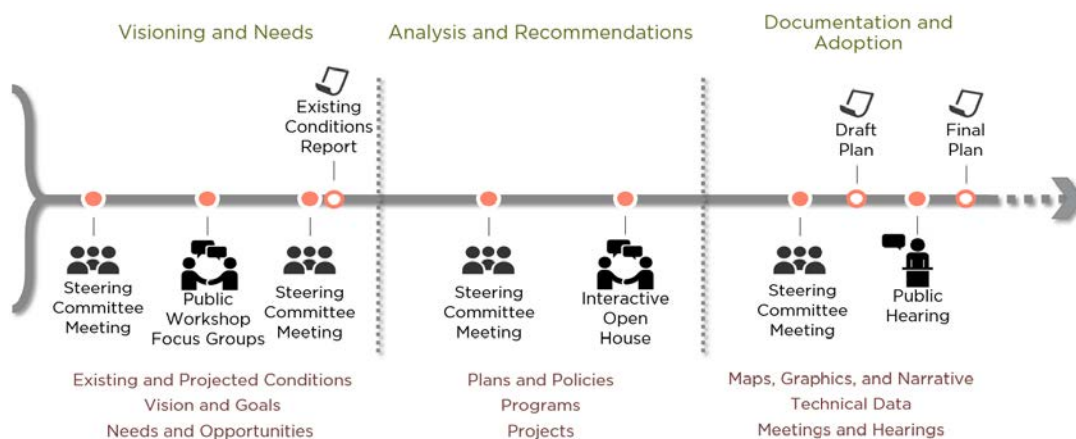
The development of the City of Lowell Pedestrian and Bicycle Plan was funded through a grant awarded by the North Carolina Department of Transportation Division of Pedestrian and Bicycle Transportation (NCDOT-DBPT) through its Planning Grant Initiative and a local match. The funds are not for one specific project but have been used to create a comprehensive strategy that moves the city one major step closer to the development of a comprehensive active transportation system that is safe and comfortable for all users.

Planning Process

The planning process for the pedestrian and bicycle plan followed the following planning philosophy:

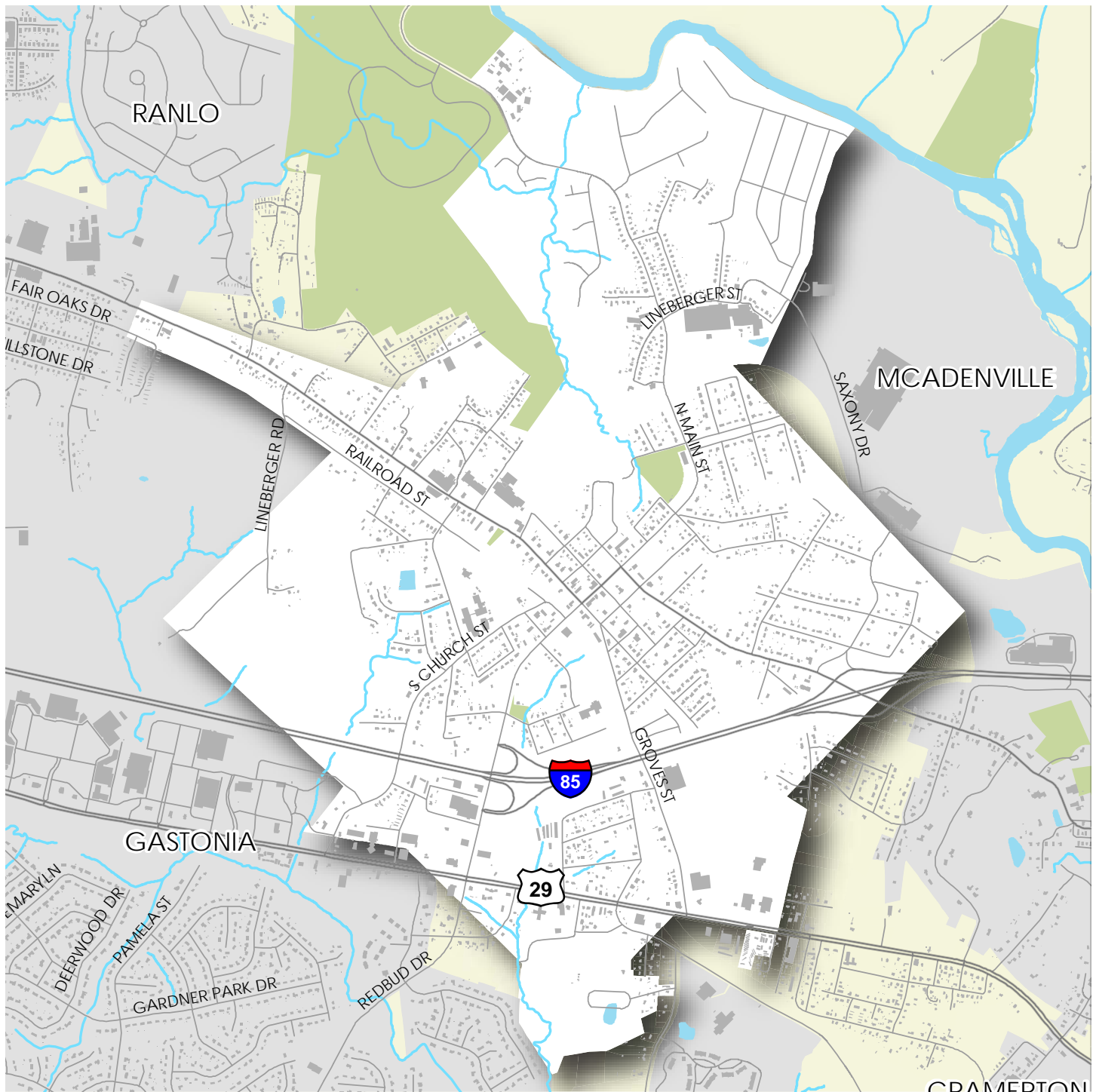
- ▶ Make better places by creating better transportation options
- ▶ Value the voices of strategic stakeholders and local citizens
- ▶ Use current plans as a starting point for future strategies
- ▶ Create solutions customized to fit the needs of our community

In order to carryout this philosophy, the planning team conducted a three-phase planning process that relied heavily on public outreach, local leadership, and national best practices.



Study Area

Lowell is located along Interstate 85 in Gaston County, between Charlotte and Gastonia. The official City limits cover approximately 2.6 square miles.



Vision and Goals

To make the Lowell Pedestrian and Bicycle Plan successful for the community, it was imperative to develop a vision and set of goals that are consistent with the needs of the people in Lowell. This involved a collaboration between City officials, the Steering Committee, and public input gathered from the first workshop. The set of goals developed through consensus permeate throughout the document to ensure that all analysis and recommendations relate back to these critical elements.

Lowell Bicycle & Pedestrian Plan Vision Statement

*Lowell's pedestrian and bicycle network will feature **safe, convenient, and comfortable** sidewalks, trails, and on-street accommodations that link residents and visitors of **all ages and abilities** to where they want and need to travel.*

The Lowell Pedestrian and Bicycle Plan shows a commitment to improving active transportation by emphasizing links to:



Our parks and natural areas



Our downtown and the places we shop



Our neighborhoods, new and old



Our regional pedestrian and bicycle network



Our schools, library, and civic sites



Our neighboring communities

Community Benefits

The promotion and use of pedestrian and bicycle infrastructure has a wide variety of direct and indirect benefits for any community. These high-level impacts are briefly explained in this section.

Health

Walking and bicycling are forms of physical activity that can be accomplished by residents and visitors of all abilities. Regular practice of these types of exercise are well-known to help prevent or reduce the risk of heart disease, obesity, high blood pressure, type 2 diabetes, osteoporosis, and mental health problems such as depression. In 2015, the Center for Disease Control (CDC) reported that 30.1% of North Carolina adults were obese. Additionally, in 2012 North Carolina medical costs related to physical inactivity accounted for \$3.67 billion.¹ Making biking and walking accessible forms of physical activity have the potential to support health outcomes and reduce strains on the health system. A 2005 study completed by CDC researchers in Atlanta, Georgia found there was an average \$2.94 medical savings return for every \$1 spent on pedestrian and bicycle infrastructure.²

Quality of Life

The walkability and bikeability of a community is an indicator of its livability. This factor has profound impact on attracting businesses and workers as well as tourism. In cities and towns where people can regularly be seen out walking and biking, there is a sense that these areas are safe and friendly places to live and visit. By providing appropriate pedestrian and bicycle facilities, communities enable the interaction between neighbors and other citizens that can strengthen relationships and contribute to a healthy sense of identity and place.

Mobility

Mobility is the equitable availability of transportation options for everyone. By providing the appropriate facilities, communities allow people to choose how they want to travel. For example, many youth and seniors might not have the option to drive. Lack of choice in transportation creates an inconvenient and socially unjust barrier to mobility. Effective walking and biking networks provide an alternative to driving and promotes equitable mobility. In 2017, the National Household Travel Survey showed that 40% of all trips, both commute and noncommute, taken by Americans are less than two miles,³ equivalent to a 10-minute bike ride or 30-minute walk; however, just 13% of all trips are made by walking or bicycling nationwide.⁴ Bicycling can be an attractive travel mode for short trips that would otherwise be made by driving.

Environment

Environmental stewardship holds the community accountable in protecting natural resources. More people walking and riding bikes can result in lower levels of motor vehicle emissions, cleaner air, and stronger preservation of streams and natural spaces. A research article in the Journal of the American Planning Association found a 5% increase in walkability to be associated with a 32.1% increase in active travel (biking or walking), 6.5% fewer vehicle miles traveled, 5.6% fewer grams of oxides of nitrogen emitted, and 5.5% fewer grams of volatile organic compounds emitted per capita.⁵ In addition to air pollution, more individuals opting to bike and walk can reduce noise pollution.

1. Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity. Data, Trend and Maps, <https://www.cdc.gov/nccdphp/dnpao/data-trendsmaps/index.html>

2. "A Cost-Benefit Analysis of Physical Activity Using Bike/Pedestrian Trails," HealthPromotion Practice, Volume 6, Issue 2, pp. 174 - 179, 2005

3. <https://nhts.ornl.gov/>

4. Biking and Walking in the United States: 2012 benchmarking report, Alliance for Biking and Walking, 2012

5. Many Pathways from Land Use to Health: Associations between Neighborhood Walkability and Active Transportation, Body Mass Index, and Air Quality, Journal of the American Planning Association, Volume 72, Issue 2, 2006

6. <https://www.ghsa.org/issues/bicyclists-pedestrians>

7. "Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts," Political Economy Research Institute, University of Massachusetts, Amherst, 201

Safety

Safe travel conditions result from effective design, enforcement, and education. While Lowell residents reported feeling relatively safe walking and biking in Town even given the limited infrastructure, steps can be taken to further improve safety. In 2018 the Governors Highway Safety Association reported over 6,200 pedestrians fatalities on U.S. Roadways, up from 4,100 a decade earlier.⁶ The City of Lowell police department has noted many “close calls” in the downtown area and the lack of facilities increases the likelihood of more traffic fatalities in Lowell.

The presence of bike infrastructure and people on bicycles naturally calms traffic, and fully separated facilities provide safe travel ways. Currently, the minimal presence of infrastructure underscores the safety concerns voiced by many members of the public during the public engagement process for this plan.

Economy

Walking and cycling are affordable modes of transportation. When safe facilities are provided for pedestrians and cyclists, people can walk more and spend less on transportation, meaning they have more money to spend on other things. Additionally, the growth of bicycle tourism offers the City of Lowell the opportunity to attract bicyclists and in turn increase the sales revenue of local businesses. The Political Economy Research Institute at the University of Massachusetts reports that investments in pedestrian and bicycle infrastructure yield higher levels of job creation than improvements to roadway infrastructure alone.⁷ Since the City of Lowell joined other towns in Gaston County on a marketing and branding campaign that focused on promoting outdoor recreation assets, these activities have increased exponentially. As the City of Lowell invests more in infrastructure through this plan, these increases in activity will have important economic gains. Improving bikeability can be a benefit to homeowners and business owners, as bicycle investments can increase property values and retail sales, increase tourism, and lead to the creation of new jobs.



EXISTING CONDITIONS



Demographics

The demographic makeup of the community is a key consideration when planning for the future of active transportation in Lowell. This section utilizes the 2017 American Community Survey 5-year estimates from the US Census Bureau to gather relevant data from the community. This data helps to better inform and illustrate the needs of the people in Lowell, thereby helping to more appropriately tailor the recommendations of the final plan to those needs.



Median Age

40.7

(Gaston County, 40.7)

Median Income

\$48,969

(Gaston County, \$46,626)

Bachelors Degree or Higher

10.2%

(Gaston County, 20.5%)

Minority Population

14.1%

(2010)



17.4%

(2017)

Population Below Poverty Level

17.4%

(Gaston County, 20.5%)

Commuting Means

98.6% Car, Truck, or Van



84.6%

Drove Alone



14.0%

Carpooled

Top Occupations

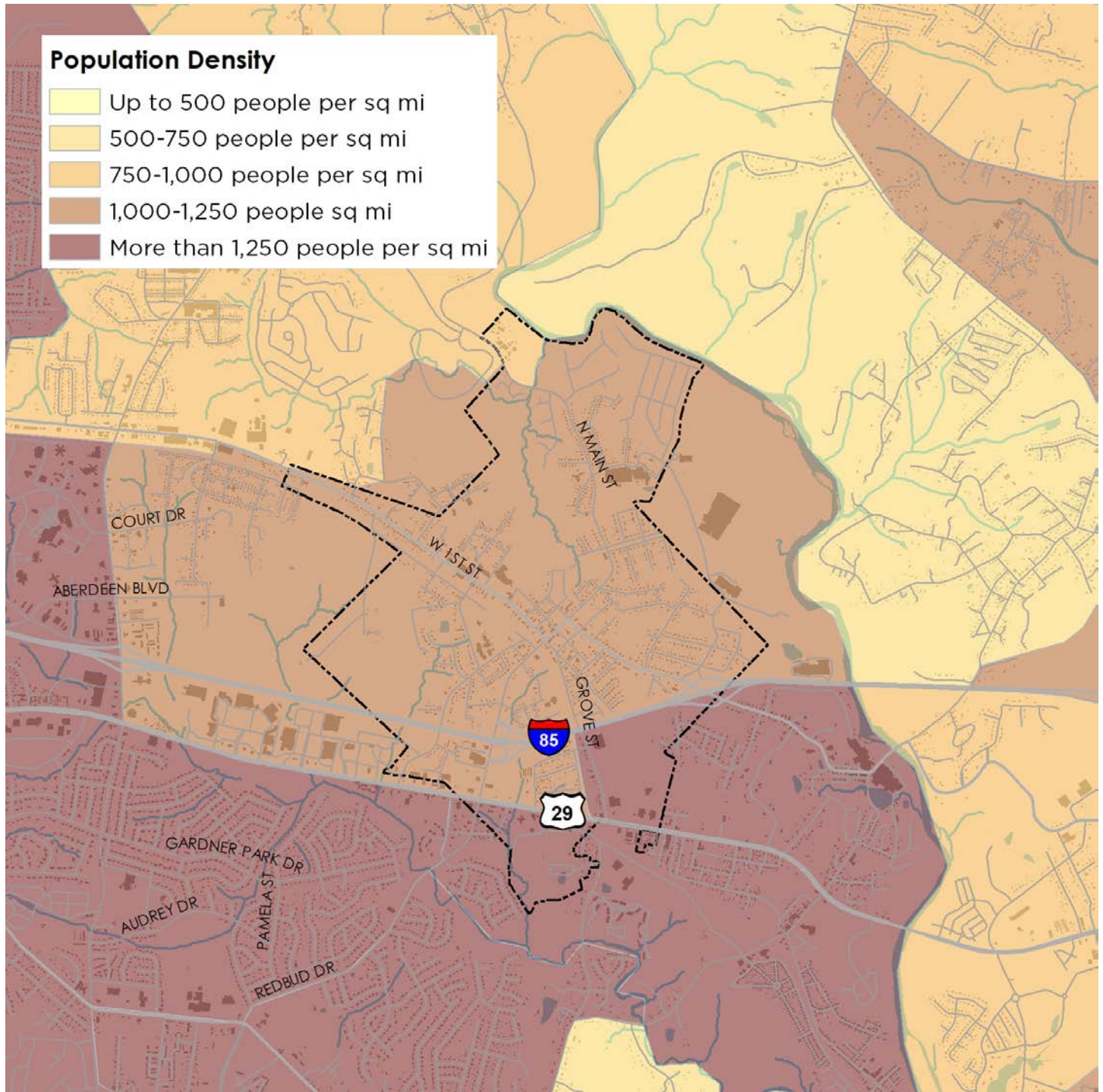
Management, business, science, and arts

Production, transportation, and material moving

Sales and office

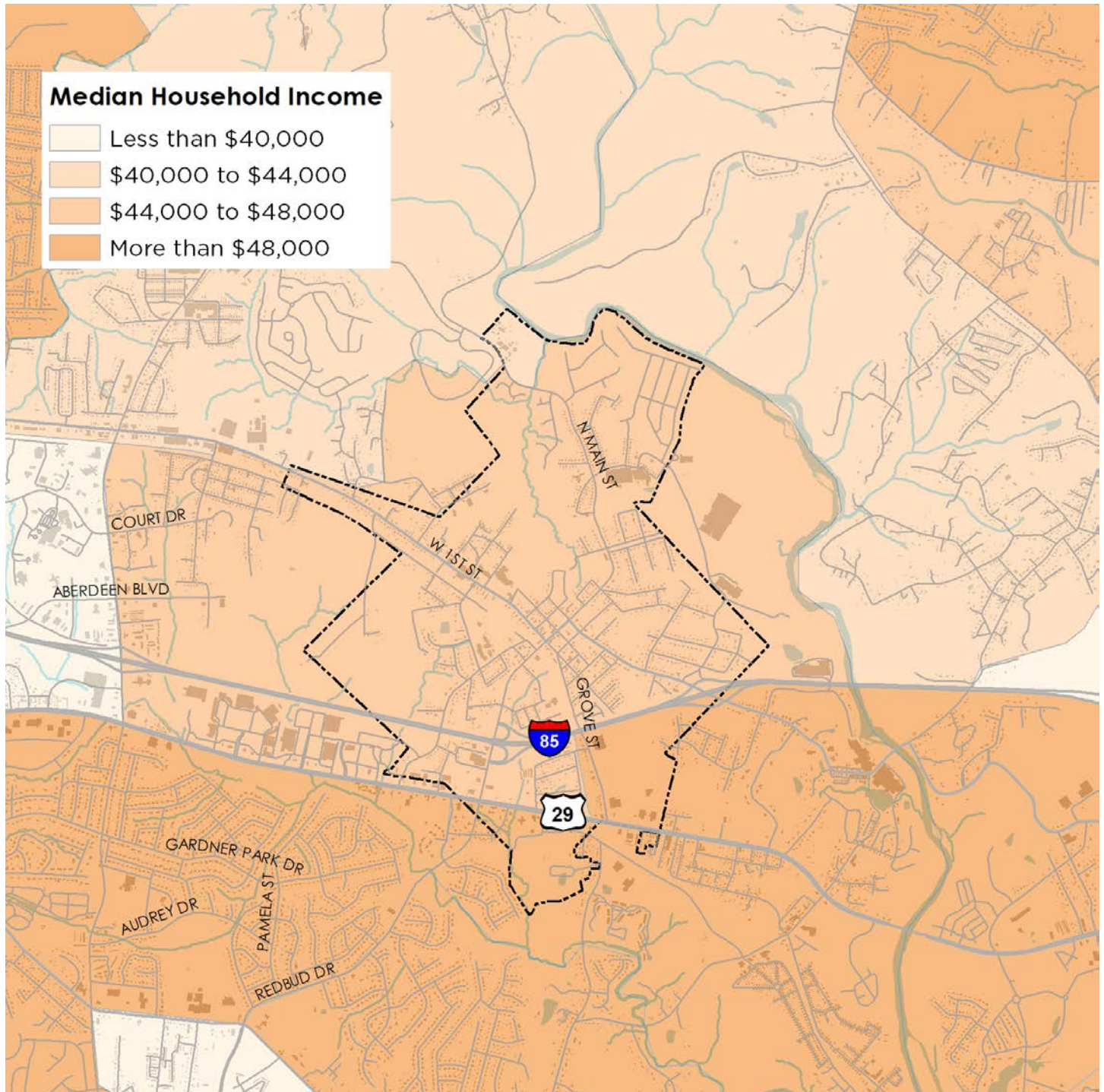
Population Density

Lowell is not as densely populated when compared to neighboring cities in Charlotte's metropolitan region, or compared to many other places within Gaston County. The most densely populated area within the city limits is to the southwest, where vehicular connectivity via I-85 and Highway 29 provide easy commute options throughout the metro area.



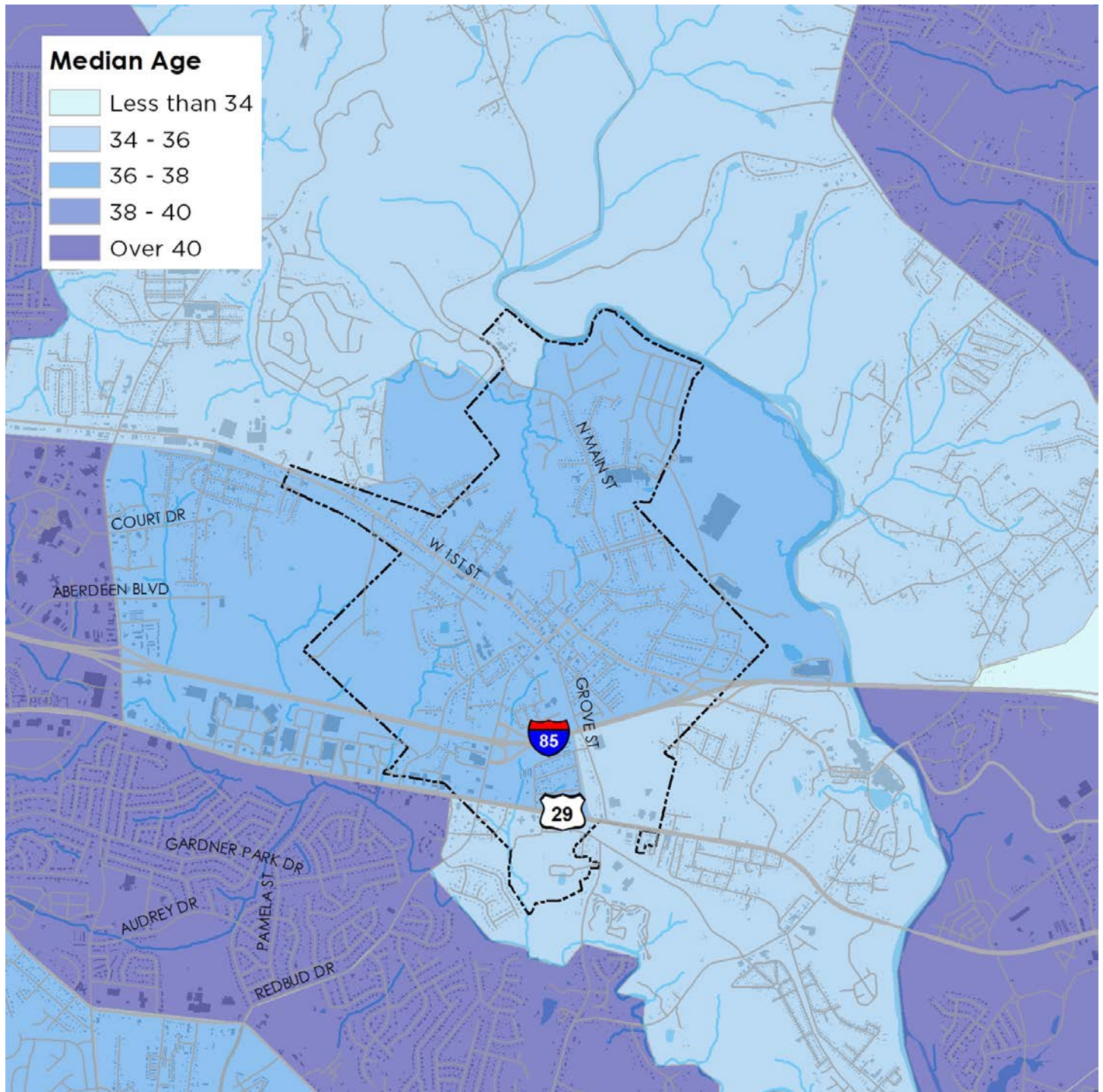
Median Income

Throughout Lowell, median income is relatively cohesive, ranging from \$45,000 to \$60,000 throughout the city, with variations existing to the north and south. North of the city, particularly north of the South Fork Catawba River, income drops to between \$30,000 to \$45,000, while south of the city in the residential areas median income rises to more than \$60,000. Awareness of these trends is paramount when approaching a pedestrian and bicycle system that is both connective and equitable.



Median Age

Lowell's median population is overwhelmingly between 32 to 38 years, and is largely consistent with surrounding more rural areas. Median age is higher south of Highway 29, where neighborhoods are slightly more developed and median incomes are also higher.

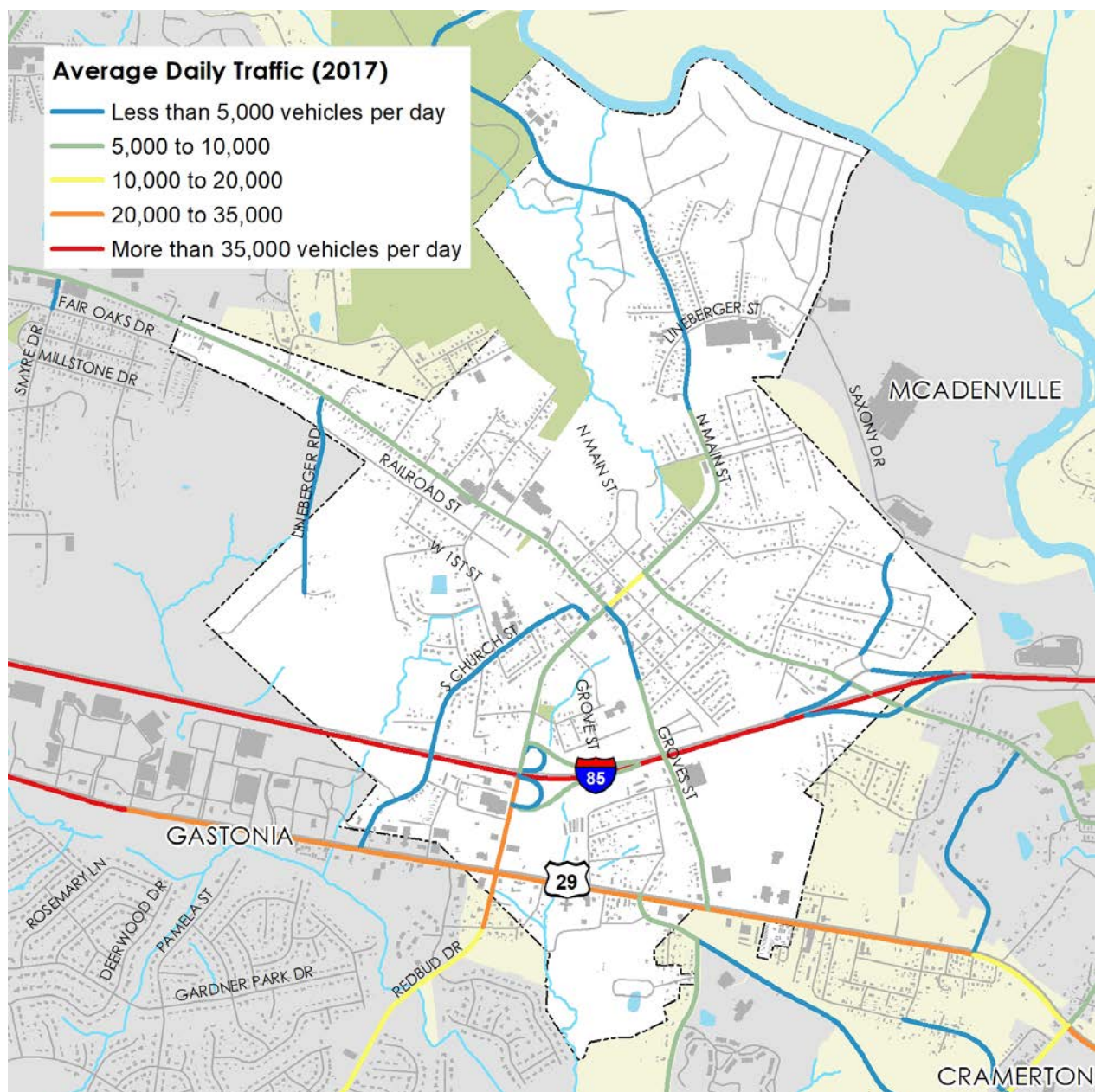


Mobility Considerations

The following pages display maps and spatial data that are crucial to understanding current pedestrian and bicycle conditions in Lowell. This data will help to create the foundation for future recommendations.

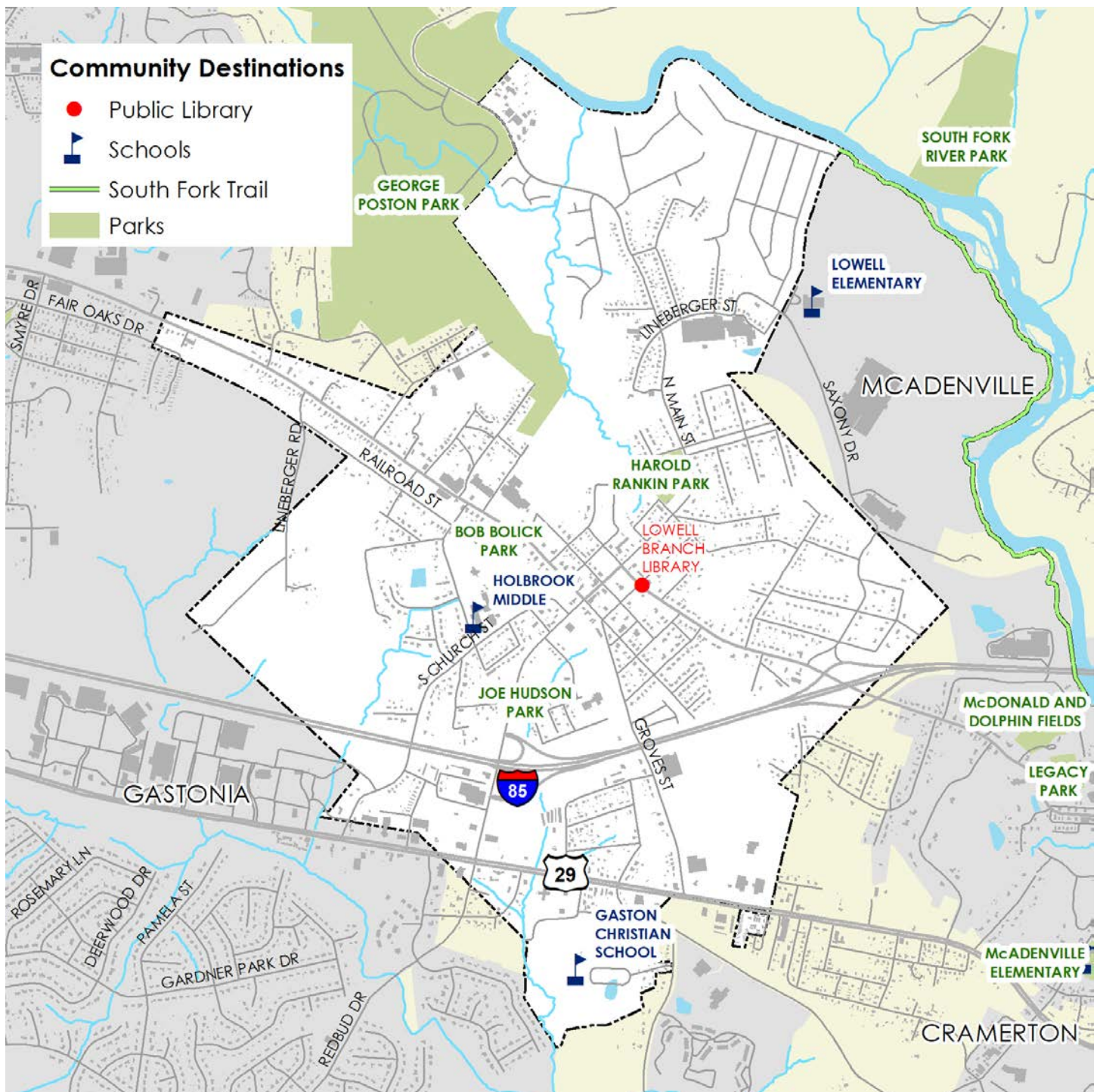
Average Daily Traffic

Most streets within Lowell are low-traffic neighborhood streets. Traffic volumes on these streets are not collected by NCDOT, but in most cases these areas are characterized by light traffic and low travel speeds. Even the city's major through streets, such as West 1st Street, North Main Street, and McAdenville Road, see less than 5,000 vehicles per day in most cases. Exceptions include the section of N Main Street downtown, and North Main Street as it approaches US 29.



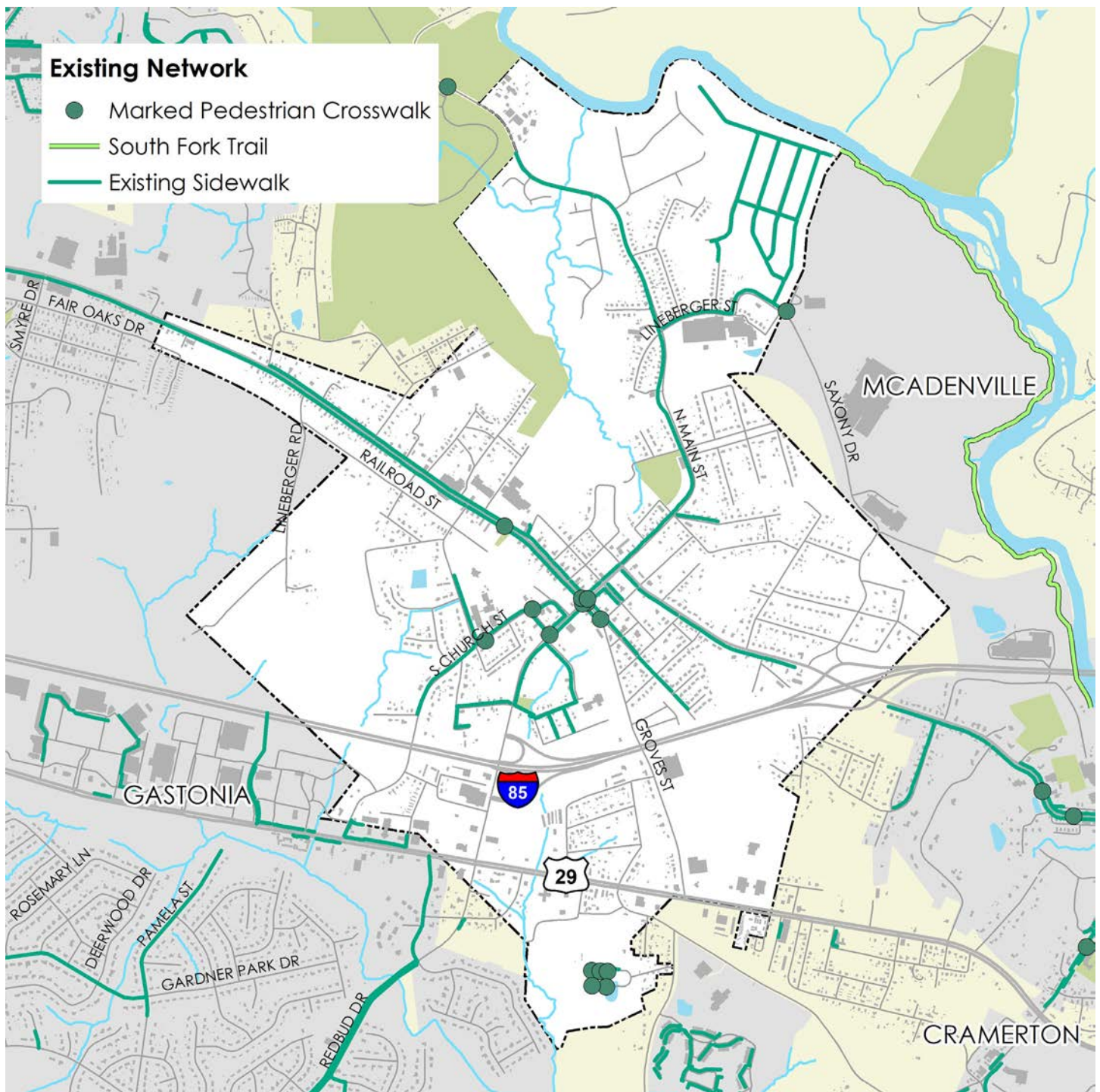
Key Destinations

Connecting key assets such as schools, parks, and economic and commercial nodes is an important goal of an effective pedestrian and bicycle plan. Lowell has reasonably well-distributed parkland, with the largest green spaces lying to the north along the waterways. The schools on the map are also located across the city, further reinforcing the importance of providing alternate connections to vehicular travel through a pedestrian and bicycle plan.



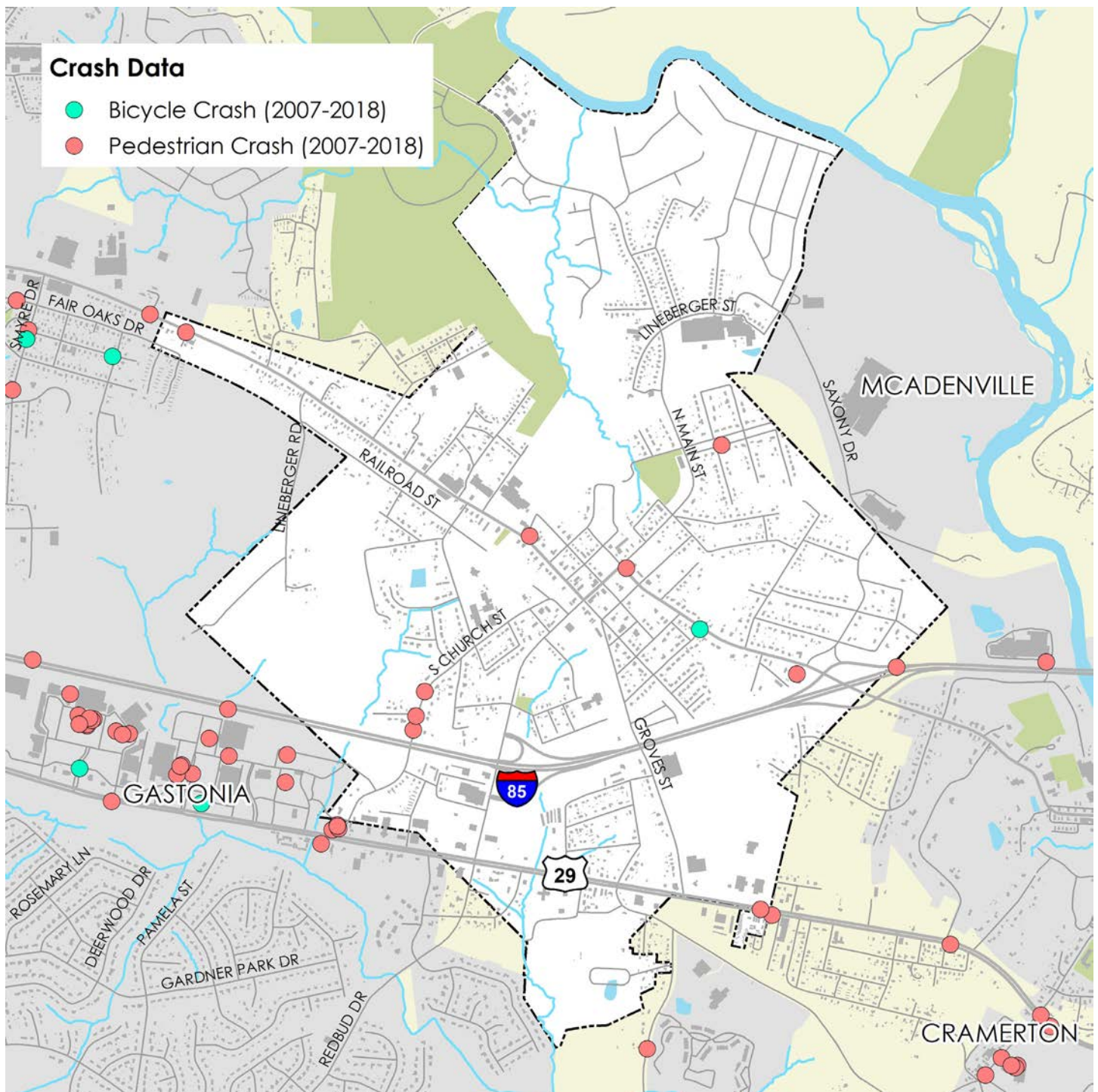
Existing Facilities

Pedestrian and bicycle facilities exist in two forms in and around the city. The South Fork Trail provides a multiuse path and recreation opportunities for Lowell residents. The trail follows the South Fork Catawba River to the northeast of the City and currently ends at the City limits. As an additional pedestrian option, sidewalks are located along the primary north-south and east-west thoroughfares, including North Main Street, West 1st Street, and McAdenville Road. One notable existing piece of infrastructure is the connection off North Main Street to Lineberger Street, which ties in a larger residential community located along the river, as well as connects the South Fork Trail into the larger existing system. Currently, no dedicated bicycle facilities exist within the City.



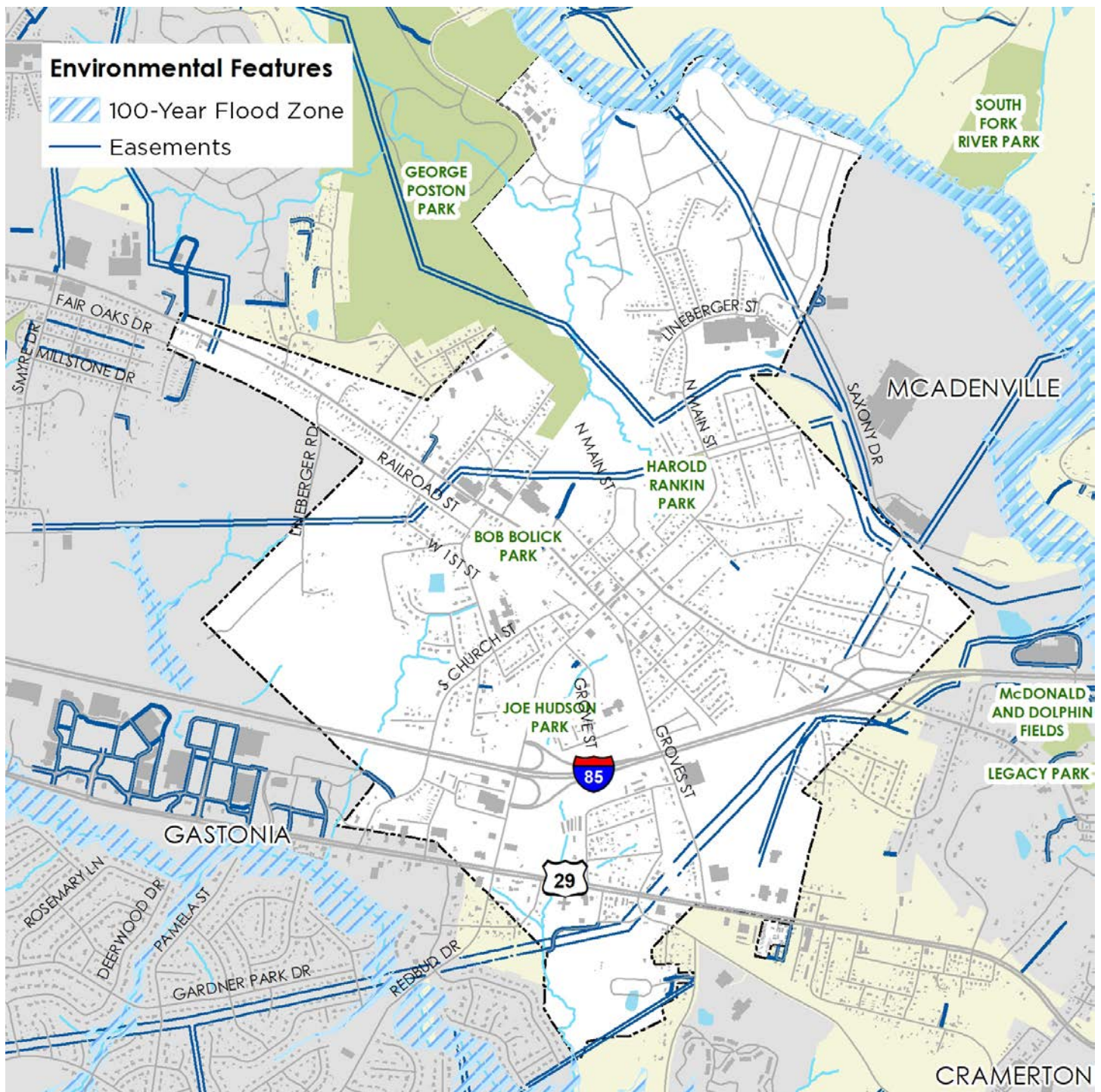
Bike and Pedestrian Crashes

Between 2007 to 2015, three pedestrian crashes have occurred on South Church Street, along with one in at the intersection of McAdenville Road and North Main Street. Both pedestrian and bicycle crashes are most concentrated just outside the city, located between I-85 and Highway 29 to the south. However, recent crashes inside City limits, showcase a need for additional safety measures. Identifying patterns and areas of risk are a key part of this plan's process, which will recommend safety improvements for areas of concern within the city.



Environmental

The FEMA 100-Year Floodplains follow South Fork Catawba River to the north of Lowell and Duharts Creek to the south. Although not as much of an issue within the city limits, floodplains present a challenge as well as an opportunity to find creative and unique solutions for additional infrastructure, particularly in this case when connecting Lowell to surrounding adjacent communities.



Assets and Opportunities

A key part of this planning process involves identifying assets to be leveraged and opportunistic ways to improve the bicycle and pedestrian system in Lowell. These characteristics were identified through a review of existing conditions, input from the steering committee, and guidance from City staff.

Assets

The City of Lowell boasts a variety of assets that can contribute to the maturation of the city's bicycle and pedestrian system. These assets include general characteristics of the community as well as a variety of local destinations.

Community Characteristics

- ▶ Small town vibe
- ▶ Sense of community
- ▶ Low crime rates
- ▶ Long-time residents
- ▶ Proximity to neighboring communities
- ▶ Proximity to local recreational opportunities
- ▶ Proximity to Gaston County Bike Share station (outside George Poston Park)

Local Places

- ▶ Downtown
- ▶ Schools
- ▶ Community Center
- ▶ George Poston Park
- ▶ Franklin Square
- ▶ Boys & Girls Club
- ▶ Library

Challenges

Every community has a set of unique challenges that must be overcome to allow its bicycle and pedestrian network to flourish. Current, active transportation in Lowell is limited, with usage confined mostly to recreational opportunities. The challenges facing Lowell include a combination of mobility barriers and physical characteristics.

Barriers to Mobility

- ▶ I-85
- ▶ Railroad
- ▶ Limited ADA features
- ▶ Car culture mindset
- ▶ Lack of public transportation
- ▶ Aging population
- ▶ Current lack of active transportation culture

Physical Characteristics

- ▶ Limited right-of-way
- ▶ Age and condition of sidewalks
- ▶ Poor access to community resources
- ▶ General accessibility
- ▶ Lack of safe crossing facilities

Opportunities

Corridors

The City of Lowell's street system includes several main corridors with various sizes and characteristics. While opportunity lies along each of these corridors, the unique features and circumstances must be understood to right-size bicycle and pedestrian improvements. This section highlights the prominent corridors in the local transportation system. The bicycle and pedestrian opportunities shown here represent an initial step in the exploration of recommended improvements.

South Main Street		
<p>Corridor Characteristics</p>	<p>South Main Street is a major corridor that connects downtown Lowell with I-85 and US 74/29. Continuous sidewalk exists on at least one side of the road, but are narrow in places and lack accessibility. Crossing the five-lane roadway can be a challenge due to a lack of delineated crossings, and no bicycle facilities currently exist. The corridor is a major connection to Gastonia and the commercial development along Wilkinson Boulevard.</p>	
<p>Bicycle and Pedestrian Opportunities</p>	<ul style="list-style-type: none"> ▶ Enhanced crossings ▶ Possible road diet ▶ Sidewalk improvements ▶ Streetscape enhancements 	

McAdenville Road

Corridor Characteristics

McAdenville Road is a major connection to downtown Lowell from I-85. The two-lane roadway includes wide vehicle lanes with excess capacity compared to the relatively low traffic volumes, leading to high traffic speeds. This provides an opportunity to create bicycle facilities through re-striping, both improving bicycle safety and narrowing the travel lanes to slow vehicle speeds. A lack of safe crossings also create challenges, and the narrow sidewalk is in disrepair in many locations.

Bicycle and Pedestrian Opportunities

- ▶ Striped bicycle lanes
- ▶ Enhanced crossings
- ▶ Sidewalk improvements



North Main Street (W 1st Street to McAdenville Road)

Corridor Characteristics

North Main Street through downtown features two vehicle lanes plus on-street parallel parking on both sides. Sidewalks and streetscaping are available on both sides, along with newly improved pedestrian crossings. Grade changes between the street and sidewalk on the west side of Main Street presents accessibility challenges. In other areas, little-to-no buffer between pedestrians and vehicle traffic makes the corridor less pedestrian-friendly. This corridor presents the greatest opportunity in terms of pedestrian destinations and walkability in Lowell.

Bicycle and Pedestrian Opportunities

- ▶ Enhanced crossings
- ▶ Reconfigure parking
- ▶ Sharrows
- ▶ Sidewalk improvements
- ▶ Enhanced accessibility



North Main Street (McAdenville Road to Boys & Girls Club)	
Corridor Characteristics	<p>North Main Street currently provides four lanes of vehicular capacity in this area along this segment before transitioning to a, though the road changes to two-lane cross section at the bridge over the railroad just north of the Boys' and Girls' Club. Modest traffic volumes might suggest may provide an opportunity to reimagine this cross section to be more consistent throughout the corridor's length while providing additional bicycle and pedestrian safety features. The bridge over the railroad will remain a constraint. Current sidewalks are narrow and do not provide a buffer from vehicle traffic, making for an uncomfortable walking experience.</p>
Bicycle and Pedestrian Opportunities	<ul style="list-style-type: none"> ▶ Possible restriping or road diet opportunity ▶ Enhanced crossings ▶ Sidewalk improvements ▶ Streetscape enhancements



North Main Street (Boys & Girls Club to George Poston Park)	
Corridor Characteristics	<p>North Main Street connects downtown Lowell to George Poston Park and other communities in north Gaston County. Once outside of downtown. North Main Street becomes a two-lane roadway, with continuous sidewalk on one side of the street. High traffic speeds are a concern on this roadway due to a lack of signalized or stop-controlled intersections. These speeds contribute to , pedestrian and bicycle safety is a concerns. This corridor presents a major opportunity to connect to George Poston Park.</p>
Bicycle and Pedestrian Opportunities	<ul style="list-style-type: none"> ▶ Enhanced crossings ▶ Designated bicycle facility ▶ Sidewalk improvements and additional construction ▶ Signage and traffic calming



West 1st Street (Downtown)

Corridor Characteristics

West 1st Street in Downtown is a four-lane corridor that provides vehicular connectivity to and from downtown Lowell and to the major highways that provide connectivity throughout the region. Sidewalks are currently available on both sides of the roadway, with some pedestrian improvements provided. No bicycle facilities are available. Crossing the roadway on foot is difficult due to a lack of delineated crossings outside of downtown. The corridor is constrained, but opportunities may be available to reconfigure the existing cross section to provide additional safety features and amenities.

Bicycle and Pedestrian Opportunities

- ▶ Enhanced crossings
- ▶ Sharrows
- ▶ Sidewalk improvements
- ▶ Streetscape enhancements



West 1st Street (NC 7) West of Hemlock Ln

Corridor Characteristics

N NC 7 carries traffic from downtown Lowell to neighboring Ranlo. Though traffic volumes are relatively modest, high speeds are a challenge on the four-lane roadway. A narrow sidewalk is available on one or both sides of the roadway throughout most of the corridor, though many stretches are in disrepair and lack basic accessibility. Pedestrian crossings are scarce or nonexistent, and should be a focus due to the community resources this road connects (e.g., the Lowell Community Center, Holbrook Middle School, and several churches).

Bicycle and Pedestrian Opportunities

- ▶ Enhanced crossings
- ▶ Possible Road Diet
- ▶ Sidewalk improvements
- ▶ Streetscape enhancements



Crossings

The bicycle and pedestrian network in Lowell should aspire to be safer, more inviting, and more accessible to users of all ages and abilities. By accommodating bicyclists and pedestrians, streets become safer for all users. Best practices for crossings including high visibility crosswalks, pedestrian timers (where possible), good sight distance, reduced crossing distances, and ADA accommodations. In addition to the featured crossings below, general crossing characteristics in Lowell include poor ADA accessibility, facilities in disrepair, limited sidewalks, and lack of pedestrian signals.

Phillips Street Railroad Crossing



South Main Street Railroad Crossing



Railroad crossings are a major challenge for pedestrians in Lowell. Two major railroad crossings near downtown - Phillips Street and South Main Street - present safety and accessibility concerns. Narrow roadways and a lack of pedestrian facilities put pedestrians and vehicles in conflict at both locations. Improved crossings, such as pedestrian safety signals and uninterrupted walkways can help create connections between Downtown, residential neighborhoods and Holbrook Middle School.

Mill Street, Groves Street and East 1st Street



This skewed intersection creates long crossing distances for pedestrians and poor visibility for drivers. A lack of safe crossings contributes to unsafe conditions, along with a lack of sidewalks on all roadways.

Main Street connection to Rankin Park



Though served by sidewalks and accessible ramps on all four legs, there is no crossing facility to allow access to Rankin Park from across Main Street.

West 1st Street and North Main Street



This major downtown intersection provides pedestrian crossings and curb ramps on all four legs in various states of repair. The addition of pedestrian signals, high visibility decorative striping, and curb extensions could transform this intersection into a signature downtown location.

North Main Street and McAdenville Road



This major downtown intersection does not include painted crossings or pedestrian signals. Sidewalks and curb ramps are available on three legs of the intersection, in various states of repair. Improvements to this intersection would greatly improve connectivity to downtown.

Holbrook Middle School



Though served by sidewalks immediately adjacent to the school, the school is disconnected from the surrounding area, as shown by the photo above. Additional facilities and crossings would improve connectivity and safety for students.

South Main Street across I-85



As one of the main connections between Lowell and surrounding communities, this crossing of I-85 currently only serves vehicular traffic. The addition of pedestrian and bicycle facilities would improve safety and connectivity between Lowell and regional destinations.

Connections

Many of the assets identified in Lowell relate to its small-town vibe and sense of community. These characteristics are due in part to the many local places that are located within proximity to the core. These places have been identified by the Steering Committee as worthy of enhanced multimodal connections. Some of these locations are featured in the photos below. Other locations include its schools, neighborhoods near downtown, the trail network, and commercial shopping centers. Connections to these places should respond to the context and constraints of nearby corridors.

Downtown Lowell



George Poston Park



Holbrook Middle School



Franklin Square Shopping Center



Outreach

Public outreach was a critical part of this process and was incorporated into every phase of planning. The outreach took three main forms including a steering committee made up of local officials, experts and community leaders; online surveys to reach a broad range of people; and public workshops to get in-depth input from community members.

Steering Committee

The steering Committee met four times over the course of several months in 2019. The work of the steering committee was fundamental to the plan as a whole since the steering committee helped determine the direction of the plan and scope.

Roles and Responsibilities

The Steering Committee had four distinct roles:

- ▶ Assist with development of the comprehensive bike plan
- ▶ Provide feedback on the plan elements throughout the planning process
- ▶ Act as a conduit for your organization
- ▶ Provide expert knowledge and local insights



Online Survey

An online survey was distributed widely via the City of Lowell and various members of the project steering committee. The survey was open from March 8 to April 8, and gathered respondent's attitudes toward existing conditions, as well as asked for priority ways the network could be improved. A summary of responses are shown below and on the next two pages.

Current quality rating on the pedestrian and bike networks in Lowell, NC.
On a scale of 0-100, How would you rate the current network?



SAFETY



When asked, in general, how safe people feel while walking and bicycling in Lowell:

59% of Pedestrians feel safe
34% of Bicyclist feel safe

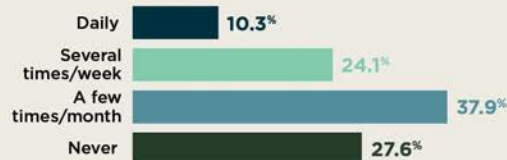
When given the choice between very safe, safe, unsafe, and very unsafe.

76%
feel that improving walk safety is important, and
71%
feel that improving bike safety is important

HOW WE TRAVEL

PEDESTRIANS: How often do you walk in Lowell for...

Recreational Purposes or Exercise



Reasons Other Than Exercise



BICYCLISTS

Which of the following best describes you as a bicyclist?



- 28.2%** I'll bike anywhere, anytime
- 19.2%** I stay on the roads with painted bike lanes and low traffic
- 28.2%** I generally stick to trails and places there are no cars
- 24.4%** I am not comfortable or not interested in riding a bike

How often do you ride your bike?

- 34.3%** Multiple times a week
- 6.4%** Once a week
- 11.5%** A couple times a month
- 25.6%** A handful of times a year
- 21.8%** I don't ride a bike



BARRIERS

Top barriers to walking

- Lack of sidewalks: **51.7%**
- High traffic speeds and unsafe conditions: **44.8%**
- Lack of destinations: **35.6%**
- Crossing the railroad: **17.2%**
- Crossing the interstate: **16.1%**
- Other: **6.9%**

Top barriers to biking

- High traffic speeds and unsafe conditions: **60.3%**
- Lack of destination: **35.9%**
- Lack of facilities: **28.2%**
- Crossing the railroad: **20.5%**
- Crossing the interstate: **15.3%**
- Other: **11.5%**



PEDESTRIAN IMPROVEMENTS

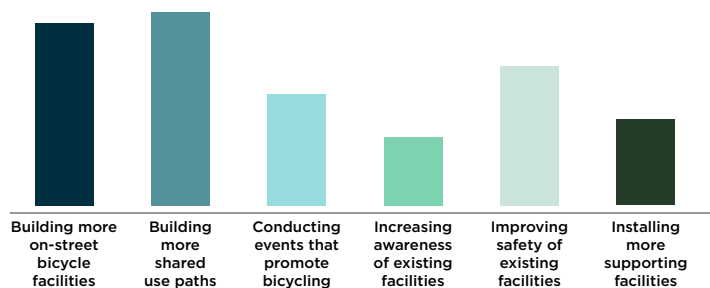
Important factors to improve walkability in Lowell:

- 70.1%** constructing new sidewalks where none exist today
- 55.2%** building greenways and multi-use paths
- 39.1%** adding crosswalks and pedestrian signals
- 36.8%** repairing existing sidewalks
- 19.5%** installing lights along pedestrian routes

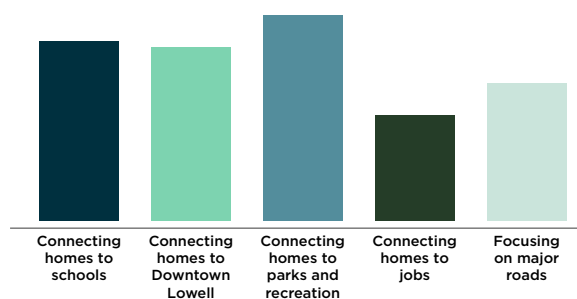
BIKING IMPROVEMENTS

80.2%
of respondents believe
Lowell needs more
bike infrastructure

Which of the following is most likely to encourage people to bike?



What should be the highest priority for new bicycle facilities?



Which local destinations would you most like to be able to walk or bike to?

1. George Poston Park
2. Downtown
3. Civic Buildings
4. Surrounding Communities
5. Franklin Square Shopping Center



What types of improvements are needed on these corridors?

	Pedestrian Improvements	Bike Improvements
A N Main Street to George Poston Park	71.2%	84.6%
B NC 7 to Ranlo	52.9%	82.4%
C Main Street through Downtown	78.6%	76.9%
D NC 7 from McAdenville to Downtown	67.9%	77.4%
E Philips Street to Holbrook Middle School	83.3%	75.0%
F S Church Street to Franklin Square	76.0%	78.0%
G S Main Street to US 74	69.8%	76.7%



Which of these intersections need improvements?

- A** McAddenville Rd (NC 7) and North Main Street: 83%
- B** 1st Street (NC 7) and South Main Street: 66%
- C** Mill Street, Grove Street and 1st Street: 45%
- D** South Main Street Railroad Crossing: 64%
- E** Phillips Street Railroad Crossing: 49%
- F** McAdenville Rd and I-85 Ramps: 60%
- G** South Main Street and I-85 Ramps: 48%

What do you believe are the three most important PEDESTRIAN projects?

- Additional Sidewalks: **100%**
- Greenways and Multiuse Paths: **83.3%**
- Access to downtown: **61.1%**

What do you believe are the three most important BICYCLE projects?

- Connection to Poston Park: **100%**
- Adding bike lanes: **80.5%**
- Carolina Thread Trail Extension: **56.1%**

Public Workshops

The plan's first public workshop was held on Thursday, March 28th from 6-8 p.m. at Lowell City Hall. The workshop was a drop-in opportunity for attendees to participate in several interactive stations and provide valuable feedback to be incorporated into the planning process. The workshop was attended by 12 people. Activities included:

- ▶ “One word” which asked participants to share one word to describe biking and walking in Lowell
- ▶ A dot mapping activity to allow participants to vote on draft recommendations
- ▶ A visual preference survey to familiarize participants with different facility types and allow them to select their preferred options
- ▶ Thought wall, which allowed attendees to provide open-ended responses to a variety of prompts

Overall participants shared concerns with safety and the desire for improved connections to destinations and recreational opportunities.

Grid
Poor
Inadequate
Unsafe
Exercise
Minimal
Traffic
Connectivity
Opportunity
Busy

What does Lowell need most?

Use your red dot (●) to select which of the improvement categories below is your **top priority**.
Use two blue dots (●●) to select your **second and third priority**.

Improvement	Priority Votes
Improve safety for pedestrians	●●●●●●
Improve safety for bicyclists	●●●●
Repair and maintain existing sidewalks	●●●●
Improve bicycle and pedestrian connections to destinations in Lowell (e.g. downtown, Lowell Community Center).	●●●●●●
Improve connections to regional destinations outside the City.	●●●●●●
Improve streetscapes to make walking and bicycling more pleasant.	●●●●●●
Focus on recreational opportunities, such as trails and greenways.	●●●●●●
Sponsor more events to promote walking and biking.	●●●●
Provide more education and awareness programs for pedestrians, bicyclists, and motorists.	
Incorporate a bicycle and pedestrian component into the City's forthcoming municipal citizens academy.	

I would bike or walk more often if...

- there are safe sidewalks.
- there are safe bike routes.
- Destinations are closer to home.
- Parks, greenways or trails are closer to work.

Lowell
Bicycle & Pedestrian Plan

USE 4 DOTS!

Lowell
Bicycle & Pedestrian Plan

What would you like to see in Lowell?

A second public workshop was held on Tuesday, September 24th, from 5pm to 7pm at Holbrook Middle School. The workshop followed an open house format and was a drop-in opportunity for attendees to review the core elements of the plan and specifically the facility and policy/programmatic recommendations. The workshop was held during a local community event at Holbrook Middle School and many stopped by the project booth to review the materials and engage with the project team.



Key Takeaways

Several themes emerged from the public engagement process. Overall, Lowell residents presented three top priorities throughout the planning process:

Top priorities:

1. Improve pedestrian and bicycle connections to destinations
2. Improve safety for pedestrians
3. Focus on recreational opportunities



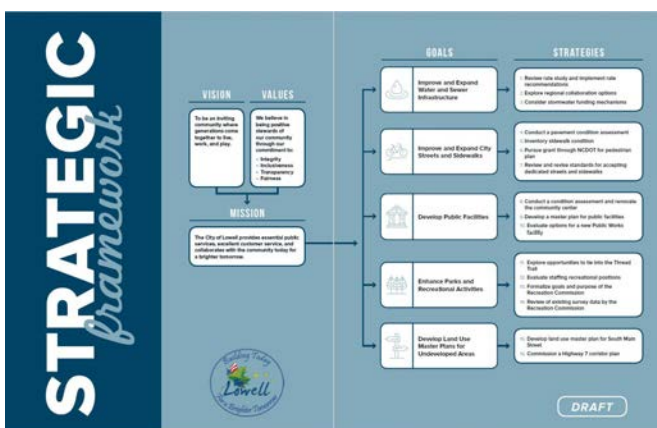
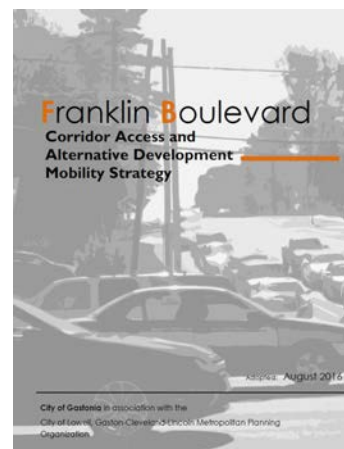
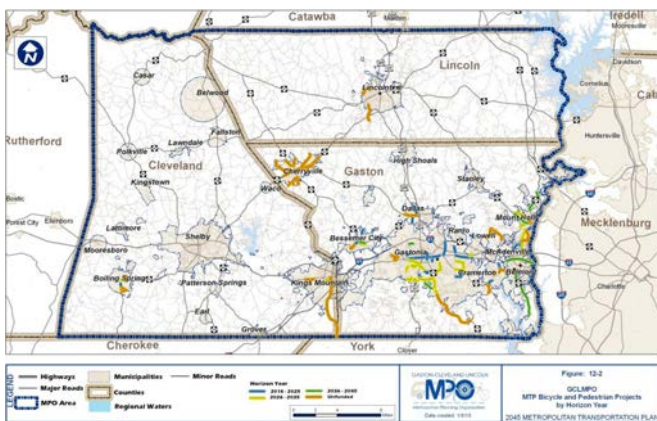
*photos are from both workshops

Plan Review

Reviewing previous plans is important to understand the planning history of Lowell and what recommendations have already been memorialized. This section outlines various planning efforts that contain recommendations relevant to the development of this plan. All recommendations listed are summarized from their respective documents.

Document	Relevant Recommendations
GCLMPO Comprehensive Transportation Plan	<ul style="list-style-type: none"> ▶ Implement new multi-use paths along South Fork River and to the west of Lowell ▶ Enhance current sidewalk networks and on-road bicycle paths throughout the city ▶ Widen and construct major thoroughfares to assist with traffic congestion across adjacent counties ▶ Improve the safety of I 85 and its crossings in downtown Lowell
Downtown Lowell Transportation Study	<ul style="list-style-type: none"> ▶ Improve pedestrian safety and streetscape aesthetics through the implementation of wider sidewalks, accessible curb ramps, shorter pedestrian crossings, larger street trees, narrowed curb lines, and on-street parking realignment ▶ Restripe existing pavement width along NC 7 at the following corridors: E 3rd Street/McAdenville Road, Main Street, and N Main Street ▶ Construct extensions in downtown Lowell to allow for direct and alternative routes for truck and through-traffic traveling on NC 7
Carolina Thread Trail Master Plan	<ul style="list-style-type: none"> ▶ Amend regulations accordingly to ensure enough open space and greenway corridors are available as developments are planned and reviewed ▶ Form a Trail Advisory Committee, building off the steering committee who developed the master plan, to promote greenway development and advise the governing group on related issues ▶ Classify and maximize local trail opportunities through the development plan review process, land evaluation, utility corridors/easements, and floodplain regulations ▶ Establish criteria for trail prioritization (i.e. cost, length of trail, location, conservation benefit, etc.) ▶ Identify multiple funding sources in accordance to the construction, operation, and maintenance of trail facilities and amenities

Document	Relevant Recommendations
<p>Franklin Boulevard Corridor Access and Alternative Development Mobility Strategy</p>	<ul style="list-style-type: none"> ▶ Assess the physical and operational opportunities for safety and mobility enhancements at the following intersections: S Main Street/Redbud Drive at US 29/74; S Main Street at I 85 NB Ramp; and S Main Street at I 85 SB Ramp ▶ Accommodate for all modes of transportation to create balanced streets through restriping, resurfacing, installing medians, and landscaping ▶ Partner with government entities, stakeholders, private developers, and the local community for successful implementation and financial stability
<p>City of Lowell Strategic Plan</p>	<ul style="list-style-type: none"> ▶ Conduct pavement condition and sidewalk inventory assessments ▶ Pursue NCDOT grants to assist with the pedestrian plan finances ▶ Review and revise current dedicated street and sidewalk standards
<p>GCLMPO Metropolitan Transportation Plan</p>	<ul style="list-style-type: none"> ▶ Enhance pedestrian and bicycle access along roadways and to transit ▶ Improve pedestrian and bicycle safety through public awareness programs ▶ Advocate for pedestrian and bicyclist linkages to enhance connectivity between neighborhoods, employment centers, services, cultural facilities, schools, parks, businesses, and other important destinations



FACILITY RECOMMENDATIONS



Recommendations

This chapter highlights the recommended physical improvement projects, including on and off-road facilities as well as intersection-level improvements. Draft recommendations were formed and presented at a public workshop where participants were asked to provide their feedback and comments on the draft recommendations. The recommendations discussed in this chapter represent the culmination of these outreach efforts along with input from the Steering Committee and City of Lowell.

Recommendations Approach

The pedestrian and bicycle network recommendations were developed by layering existing condition data with the needs, input, and feedback of the outreach efforts. This process is essentially a formula where the appropriate data points, analysis, and input are entered, and the results are the recommendations of the plan.



The process outlined here is critical to understanding how the recommendations were developed. The remainder of this chapter focuses on facility recommendations, but it's important to note that this process applies to other recommendations of the plan as well (prioritization, policies, programs).

Bicycle Facilities

The recommended bicycle facilities for Lowell consist of three different facility types: bicycle lanes, sharrow markings, and paved shoulders. It's important to note that multi-use path facilities are shared between pedestrian and bicycle users. Multi-use path facilities are detailed in the Pedestrian Facility subsection on subsequent pages. The cost estimates are based on the 2019 NCDOT Bicycle and Pedestrian Cost Estimation Tool. The bicycle facility types are explained in more detail below:



Bicycle Lanes

A marked travel lane along a portion of the roadway that has been designated for preferential or exclusive use for bicyclists.

- ▶ Dedicated space for bicyclists delineated by painted lines
- ▶ May be done in conjunction with road diet projects
- ▶ Buffered or Protected Bicycle lanes should be considered where possible during the design phase
- ▶ \$110,000 per 0.25 miles (standard bike lanes. Buffered or Protected lanes will incur higher costs)



Shared Lane Markings

A street marking installed to indicate where cyclists may use the entire lane with vehicles.

- ▶ These painted lane markings are often accompanied by signage
- ▶ Sharrow markings do not require additional right-of-way acquisition
- ▶ \$40,000 per 0.25 miles



Paved Shoulders

Part of the highway that is directly adjacent to the regularly traveled portion of the highway that more safely accommodates bicycles.

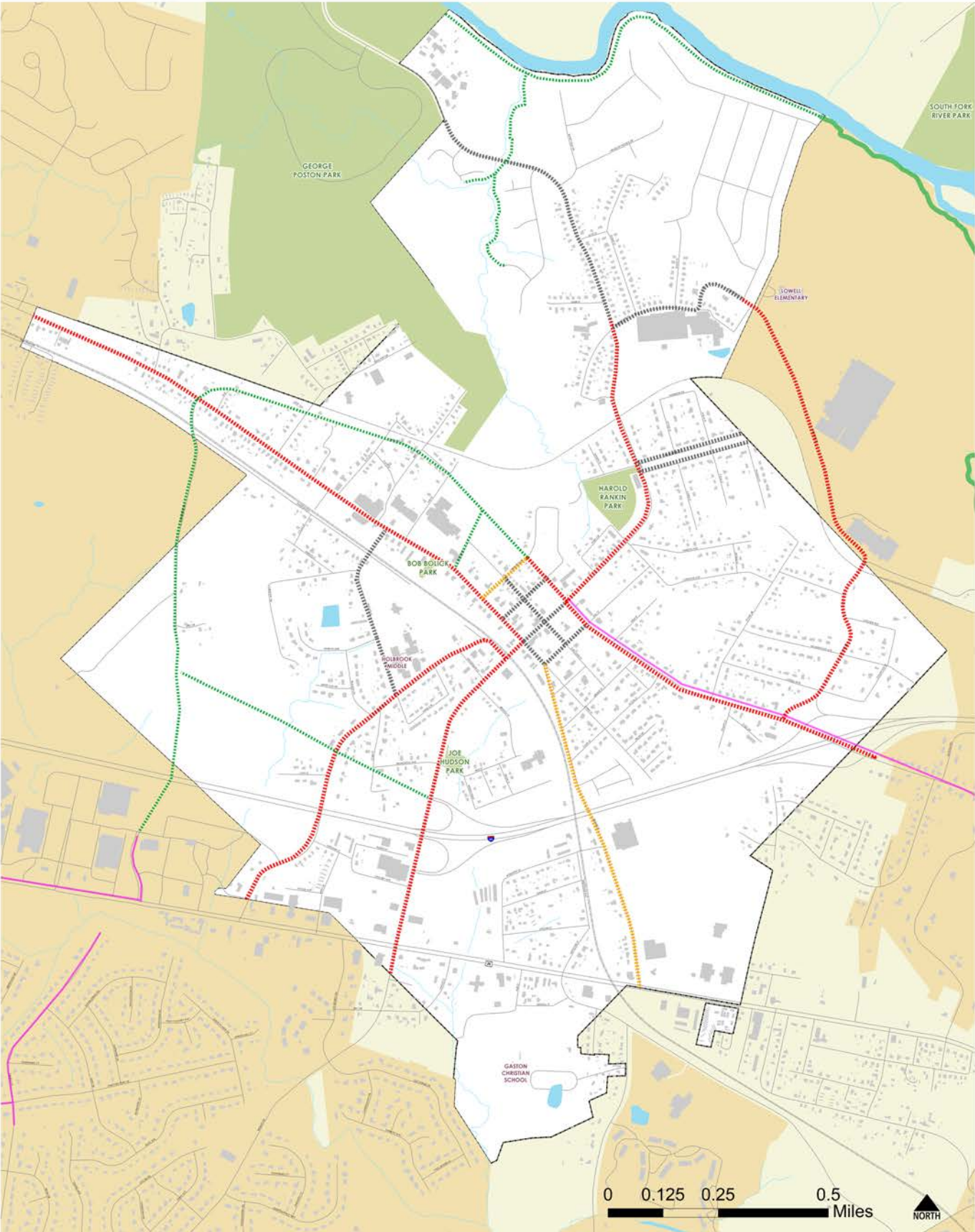
- ▶ Provide additional space at the edge of the roadway for cyclists
- ▶ Completed in conjunction with all types of roadway improvements
- ▶ \$90,000 per 0.25 miles



Multi-Use Paths

A facility that may be used by bicyclists, pedestrians, and other non-motorized users. They are separated from the roadway by an open space or physical barrier.

- ▶ Provide connections to parks and schools
- ▶ Cost: Varies depending on environment



Bicycle Recommendations Map

- Existing Multi-Use Path
- ⋯ Planned Multi-Use Path
- ⋯ Planned On-Street Bike Lane
- ⋯ Planned Paved Shoulder
- ⋯ Planned Sharrows/Signage
- Unspecified On-Road Improvement
- Parks
- Gaston County
- Lowell City Limits
- Other Municipalities

Pedestrian Facilities

The recommended pedestrian facilities for Lowell consist of three different facility types: sidewalks, safe pedestrian crossings, and multi-use paths. The pedestrian facility types are explain in more detail below:



Multi-Use Paths

A facility that may be used by bicyclists, pedestrians, and other non-motorized users. They are separated from the roadway by an open space or physical barrier.

- ▶ Provide connections to parks and schools
- ▶ Cost: Varies depending on environment



Sidewalks

A paved pathway for pedestrians, typically on both sides of a road.

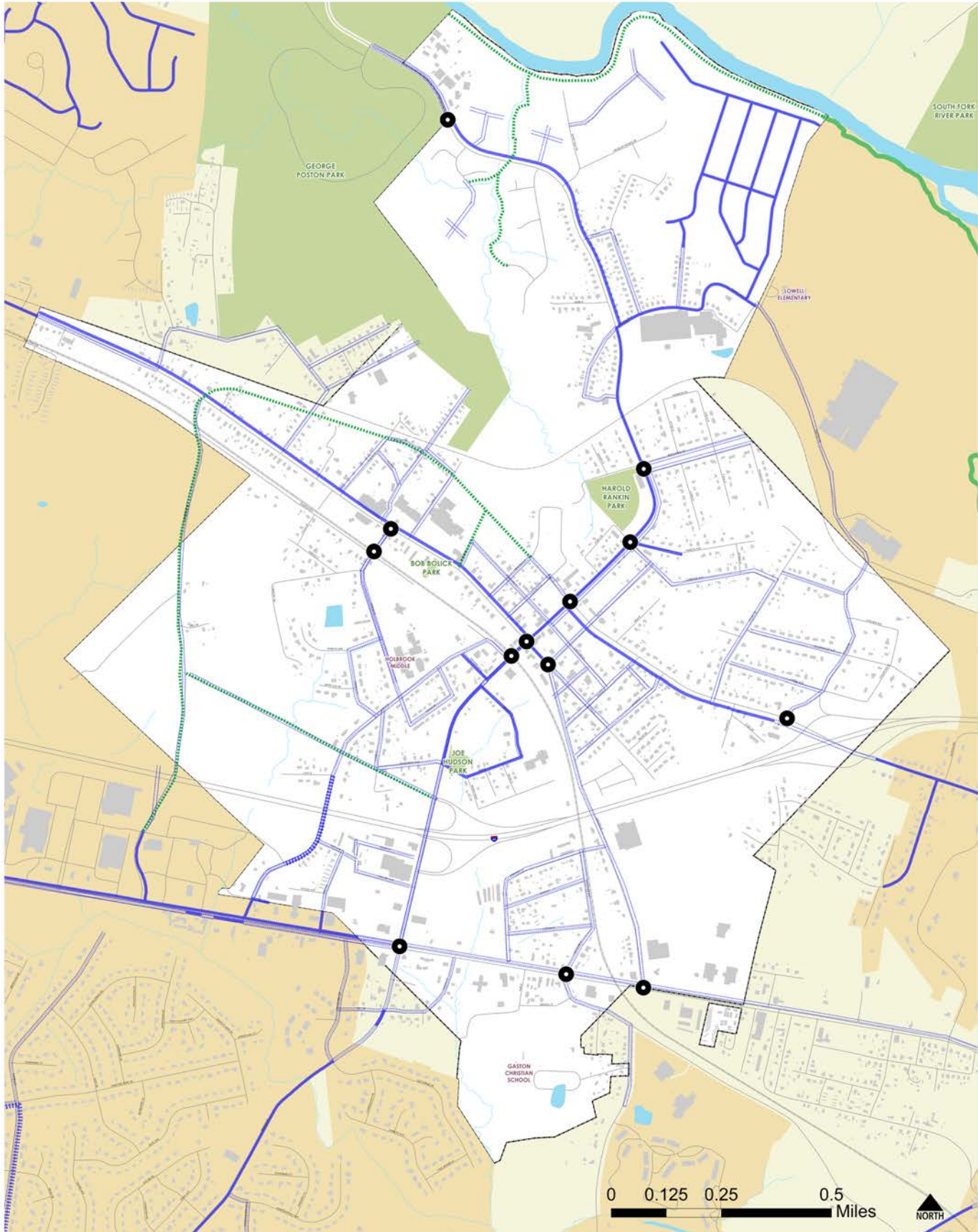
- ▶ Filling gaps will provide connectivity to and between neighborhoods and activity centers
- ▶ Create continuous pathways at both sides of intersections
- ▶ Recommended connections on one or both sides of existing roadways
- ▶ \$85,000 per 0.25 miles



Pedestrian Intersection Improvements

The portion of the roadway intended for pedestrians to use in crossing the street. It may be distinctly indicated for pedestrian crossing by lines or other signage.

- ▶ Dedicated space for pedestrians delineated by high visibility paint markings or distinctive pavement treatments
- ▶ For added safety, may be paired with pedestrian beacons and signals
- ▶ May be done in conjunction with larger corridor or roadway improvement projects
- ▶ \$30,000 per intersection (varies depending on treatment)



Pedestrian Recommendations Map

- Existing Sidewalk
- Planned Sidewalk
- Existing Multi-Use Path
- Planned Multi-Use Path
- Recommended Safety Improvements
- Parks
- Gaston County
- Lowell City Limits
- Other Municipalities

Pedestrian Intersection Improvements

Crossing Improvements



Improvements that improve pedestrian safety, visibility, accessibility, and shorten crossing distance including pedestrian refuge islands, ADA ramps, and high visibility crosswalks.

Safe Railroad Crossing



There are a variety of treatments to provide accessible surfaces, increased safety and comfortable crossings.

Signal Improvements



At signalized intersections, the following can be applied to enhance safety of crossings within crosswalks: pedestrian pushbuttons, leading pedestrian phases, and pedestrian countdowns.

Connectivity Improvements



Sidewalk and trail improvements throughout the town improves connections to create continuous pathways at both sides of intersections, making walking more comfortable.

Pedestrian Beacon



These beacons can be applied at non-signalized intersections to enhance the visibility of pedestrians and bicyclists crossing mid-block or at marked intersections.

The matrix below outlines recommended intersection improvements with key intersections in Lowell.

Improvement Matrix	Crossing Improvements	Signal Improvements	Pedestrian Beacon	Safe Railroad Crossings	Connectivity Improvements
North Main Street & Rogosin Boulevard					
North Main Street & Park Circle/Carolina Avenue					
North Main Street & McAdenville Rd/W 3rd Street					
W 1st Street & Phillips Street					
Phillips Street Railroad Crossing					
South Main Street & 1st Street					
South Main Street Railroad Crossing					
E 1st Street & Mill Street/Grove Street					
Power Drive & McAdenville Rd					
Redbud Drive & Wilkinson Boulevard					
Westover Street & Wilkinson Boulevard					
Groves Street & Wilkinson Boulevard					

Spotlight Projects

The following pages highlight eight recommended projects selected to further explore the types of projects recommended throughout the City. These projects represent a variety of facility types, reasons for significance, varying priority levels, and the various constraints and challenges associated. These are not necessarily the first eight projects that should be implemented, but represent projects that are the most likely to garner public support and are critical to the future vision for Lowell.

South Main Street Railroad Crossing Pedestrian Intersection Improvements

Project Limits	Intersection of South Main Street and railroad
Why it's important	Improving this pedestrian rail crossing provides a safe way to cross from downtown to South Lowell and improves accessibility for all travelers. Railroad crossings are a major challenge for pedestrians in Lowell. Narrow roadways and a lack of pedestrian facilities put pedestrians and vehicles in conflict. Improved crossings, such as pedestrian safety signals and uninterrupted walkways can help create connections between Downtown and Holbrook Middle School.
Potential Challenges	South Main Street is state-owned and operated, and therefore any changes will require coordination with NCDOT.
Estimated Cost	\$50,000 - \$100,000 (depending on treatment)



Example crossing treatment

Poston Park Pedestrian Entrance Sidewalk/Trail

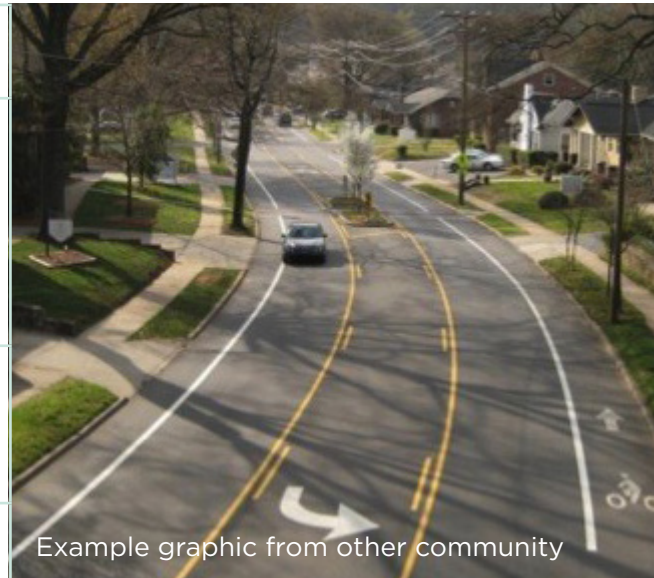
Project Limits	W 1st Street to Poston Park limits
Why it's important	Poston Park is currently inaccessible from inside the Lowell city limits. This planned sidewalk connection introduces a new recreational opportunity for Lowell residents and increases the connection between the City and Park. Cost may be shared with Gaston County.
Potential Challenges	Limited right-of-way means some property impacts may be required for sidewalk.
Estimated Cost	Cost varies based on ultimate design and length of construction



Example graphic from another community

South Main Street Road Diet On-Street Bike Lanes and Sidewalk

Project Limits	1st Street to US 74
Why it's important	South Main Street connects Downtown Lowell with I-85 and US 74, and has excess capacity within the existing right-of-way. This project was included in the Downtown Lowell Transportation Study.
Potential Challenges	South Main Street is state-owned and operated, and therefore any changes will require coordination with NCDOT.
Estimated Cost	\$85,000 restriping + \$170,000 sidewalk



Church Street Improvements On-Street Bike Lane and Sidewalk

Project Limits	Railroad street to City limits
Why it's important	Church Street connects Downtown Lowell, Holbrook Middle School, and Franklin Square on the other side of I-85. This roadway currently contains inadequate sidewalks and no dedicated bicycle facility. This street is slated for resurfacing by NCDOT in 2023. Lowell should coordinate with that project to include mobility improvements.
Potential Challenges	Limited right-of-way means some property impacts may be required for sidewalk. Bicycle lane may be infeasible in narrow portions of the roadway.
Estimated Cost	\$25,000 (additional costs to resurfacing) + \$170,000 sidewalk



North Main Street & McAdenville Rd

Pedestrian Intersection Improvements

Project Limits	Intersection of North Main Street & 3rd Street/McAdenville Rd
Why it's important	Dedicated crosswalks, pedestrian signals, and ADA-accessible ramps at this major crossing would improve safety and comfort for those seeking to walk from the neighborhood to downtown. This project was included in the Downtown Lowell Transportation Study.
Potential Challenges	Road is state owned and operated, and therefore any changes will require coordination with NCDOT.
Estimated Cost	\$30,000 - \$50,000



Photo Simulation

Phillips Street Improvements

Shared Lane Markings, Sidewalk infill and Improved Crossings

Project Limits	W 1st Street to SChurch Street
Why it's important	Phillips Street directly connects residential neighborhoods to Holbrook Middle School. This roadway currently lacks dedicated bicycle or pedestrian facilities for much of its length. Improving pedestrian crossings, signage, and installing safe facilities would help improve safety for the neighborhood as well as Holbrook students.
Potential Challenges	May face resistance from the public if additional right-of-way is required for sidewalk installation
Estimated Cost	\$80,000 (shared lane markings) + \$70,000 (sidewalk) + \$60,000 (intersections)



Photo Simulation

North Main Street Road Diet

On-Street Bike Lane and Right-of-Way Reallocation

Project Limits	McAdenville Road to Lineberger Street
Why it's important	North Main Street is a major connector between Downtown Lowell, Rankin Park, the Boys & Girls Club, and George Poston Park. This roadway has excess capacity in its current configuration, and the roadway converts from 4 to 2 lanes, creating confusion for drivers. This project would convert the entire roadway to 2 or 3 lanes with a dedicated bicycle lane.
Potential Challenges	South Main Street is state-owned and operated, and therefore any changes will require coordination with NCDOT.
Estimated Cost	\$75,000 restriping



Photo Simulation

Third Street/McAdenville Road Bike Lanes

On-Street Bike Lane

Project Limits	I-85 to North Main Street
Why it's important	This roadway provides adequate right-of-way to add painted bicycle lanes without compromising traffic operations. Adding accessible facilities to this roadway provides direct access to downtown Lowell across I-85. Re-purposing the overly wide travel lanes will provide mobility, improve safety, and introduce an element of traffic calming. This project was included in the Downtown Lowell Transportation Study.
Potential Challenges	Road is state owned and operated, and therefore any changes will require coordination with NCDOT.
Estimated Cost	\$100,000 (restriping only)



Photo Simulation

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IMPLEMENTATION



Prioritization

In addition to foundational analysis (existing conditions, engagement) that helped to develop the facility recommendations, a quantitative process was conducted to help prioritize the identified projects. This prioritization process was developed in conjunction with the steering committee and the City of Lowell. The goal of the prioritization is to provide the City with a guide and timeline for project implementation and allocation of resources. A detailed scoring process was created that assessed each project on a variety of criteria.

Methodology

Using a quantitative methodology, projects were sorted into three prioritization tiers (short-term, mid-term, and long-term). In general, short-term projects are intended to be completed (or initiated) prior to mid-term and long-term projects. However, prioritization should be flexible to changes over time, including shifts in City priorities, and opportunities that arise due to available funding and resources.

The prioritization process consisted of assessing each project based on three major categories, defined in consultation with the project steering committee. **Each project was individually assessed and given a score of 1, 3, or 5 for each category**, with 1 denoting low performance in that category, and 5 denoting high performance. The three categories are outlined below:

- ▶ **Feasibility:** Prioritize projects and programs that can be implemented at low cost, do not rely on external partners or high levels of investment, and projects that can be implemented within a short time frame.
- ▶ **Connectivity:** Prioritize projects and programs that help connect pedestrians and cyclists from neighborhoods to Downtown, local schools, and parks.
- ▶ **All Ages and Abilities:** Prioritize projects and programs that provide safety and comfort for all users, regardless of age, experience level, or ability.

The score for each category was then weighted based on feedback from the project steering committee. Connectivity scores were weighted the highest, followed by All Ages and Abilities, and finally Feasibility. Once the score for each category is weighted, the three category scores are added together to create the overall project score, with 5 being the highest achievable score.

$$\begin{array}{ccccccc} \text{Connectivity} & & \text{All Ages and Abilities} & & \text{Feasibility} & & \\ \mathbf{X(0.5)} & + & \mathbf{Y(0.3)} & + & \mathbf{Z(0.2)} & = & \mathbf{FINAL SCORE} \end{array}$$

The final scores were tallied and the **projects were then sorted into the priority tiers** based upon their final ranking. All projects scored above 4.5 were ranked as short-term projects, any between 3.5 and 4.4 were mid-term, and any scored 3.4 or lower were listed as long-term projects. A comprehensive list of projects sorted into their prioritization tiers is shown on the adjacent page.

Prioritization Table

The table below highlights the prioritization process for the recommended projects. Based on public input from the previous open house and the online survey, and in conjunction with the City and the Project Steering Committee, a quantitative analysis of the recommended projects were conducted, yielding an overall weighted score for prioritization.

Note: the table below does not include standalone sidewalk projects, due to the number of sidewalk segments recommended. Sidewalk construction should be an ongoing priority for the City, and should be completed in conjunction with roadway projects as opportunity arises.

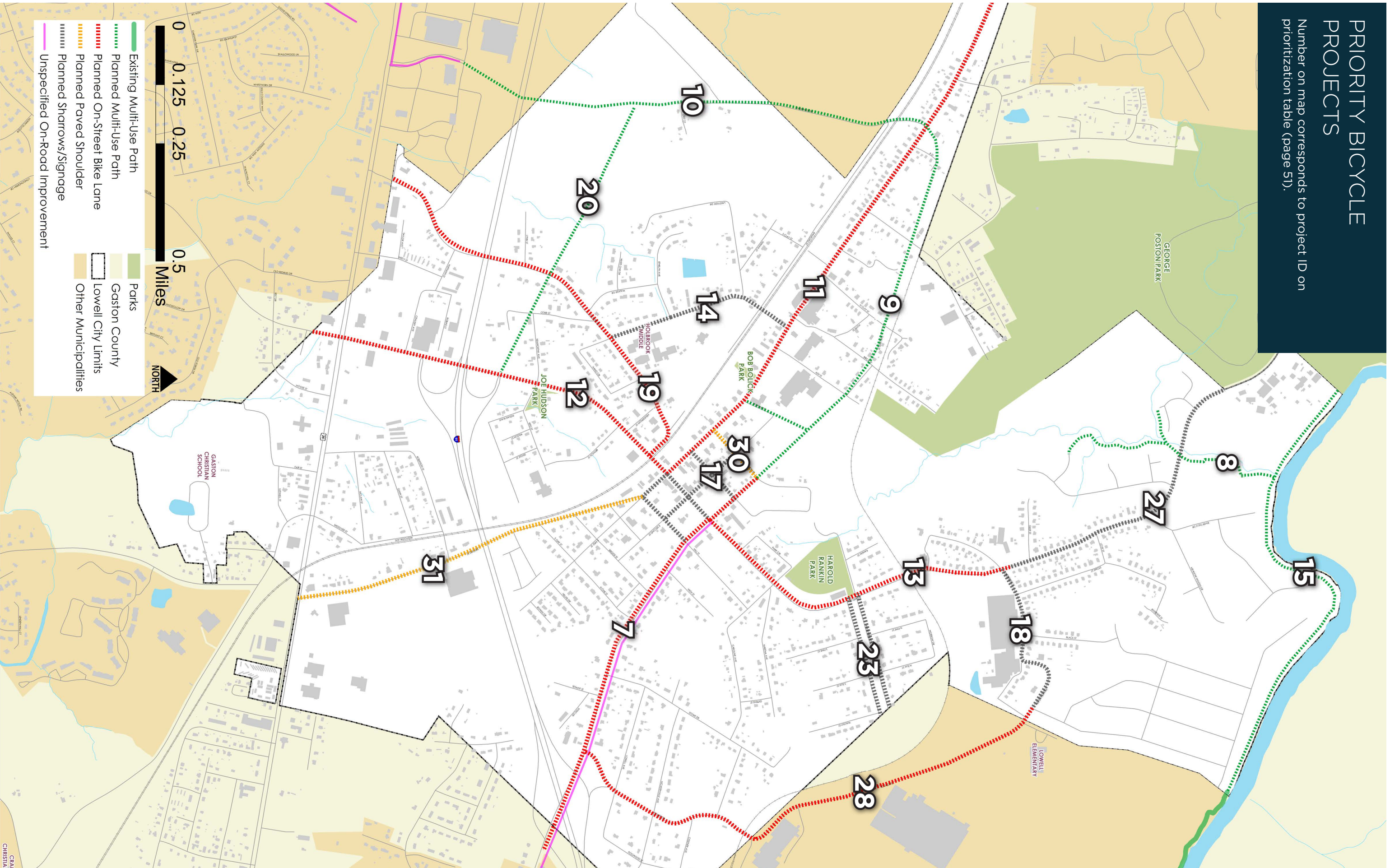
The projects shown below are sorted into: Short-Term (0-3 years) Mid-Term (3-10 years) Long-Term (10+ years)

Project ID	Facility Name	Extent	Length (miles)	Facility Type
1	North Main Street & Rogosin Boulevard	Intersection	-	Safe Crossing
2	North Main Street & Park Circle/Caroline Avenue	Intersection	-	Safe Crossing
3	South Main Street Railroad Crossing	Intersection	-	Safe Crossing
4	North Main Street & McAdenville Rd/W 3rd Street	Intersection	-	Safe Crossing
5	W 1st Street & Phillips Street	Intersection	-	Safe Crossing
6	Phillips Street Railroad Crossing	Intersection	-	Safe Crossing
7	Third Street/McAdenville Rd Road Diet	Hemlock Lane to city limit	0.9	On-Street Bike Lane
8	North Lowell Neighborhood Trail	CTT extension to new development	0.6	Multi-Use Path
9	Third Street Greenway	Third Street Extension Multi Use Path	1	Multi-Use Path
10	Franklin Square Greenway*	Railroad Street to Lineberger Road and Main Street	1.6	Multi-Use Path
11	First Street Road Diet	City limit to Main Street	1.3	On-Street Bike Lane
12	South Main Road Diet	First Street to city limit	0.8	On-Street Bike Lane & Sidewalk
13	North Main Road Diet	Third Street to Lineberger Street	0.7	On-Street Bike Lane
14	Phillips Street Improvements	First Street to Church Street	0.4	Sharrow & Sidewalk
15	Carolina Thread Trail Extension	From existing trailhead to NW city limit	1.1	Multi-Use Path
16	Power Drive & McAdenville Rd	Intersection	-	Safe Crossing
17	Downtown shared lane network	Downtown	0.7	Sharrow
18	Lineberger Street	North Main to Lowell Elementary	1.0	Sharrow
19	Church Street improvements	S. Main Street to city limit	0.9	On-Street Bike Lane & Sidewalks
20	Aberdeen Blvd Extension	I-85 ramps to Cox Rd in Gastonia	-	Multi-Use Path
21	South Main Street & 1st Street	Intersection	-	Safe Crossing
22	North Main Street at Poston Park	Intersection	-	Safe Crossing
23	Rogosin Boulevard Improvements	N. Main Street to city limit	0.5	Sharrow & Sidewalk
24	Westover St & Wilkinson Boulevard	Intersection	-	Safe Crossing
25	Groves Street & Wilkinson Boulevard	Intersection	-	Safe Crossing
26	Redbud Drive & Wilkinson Boulevard	Intersection	-	Safe Crossing
27	North Main Street/Lowell Spencer Mountain Rd Sharrow	Lineberger Rd to George Poston Park	-	Sharrow
28	Power Drive/Saxony Road Improvements*	Third Street to Lowell Elementary	1.1	On-Street Bike Lane & Sidewalk
29	E 1st Street & Mill Street/Grove Street	Intersection	-	Safe Crossing
30	Hemlock Lane	Third Street to First Street	0.1	Paved Shoulder
31	Groves Street	First Street to US-29	0.8	Paved Shoulder

*Multi-jurisdictional projects

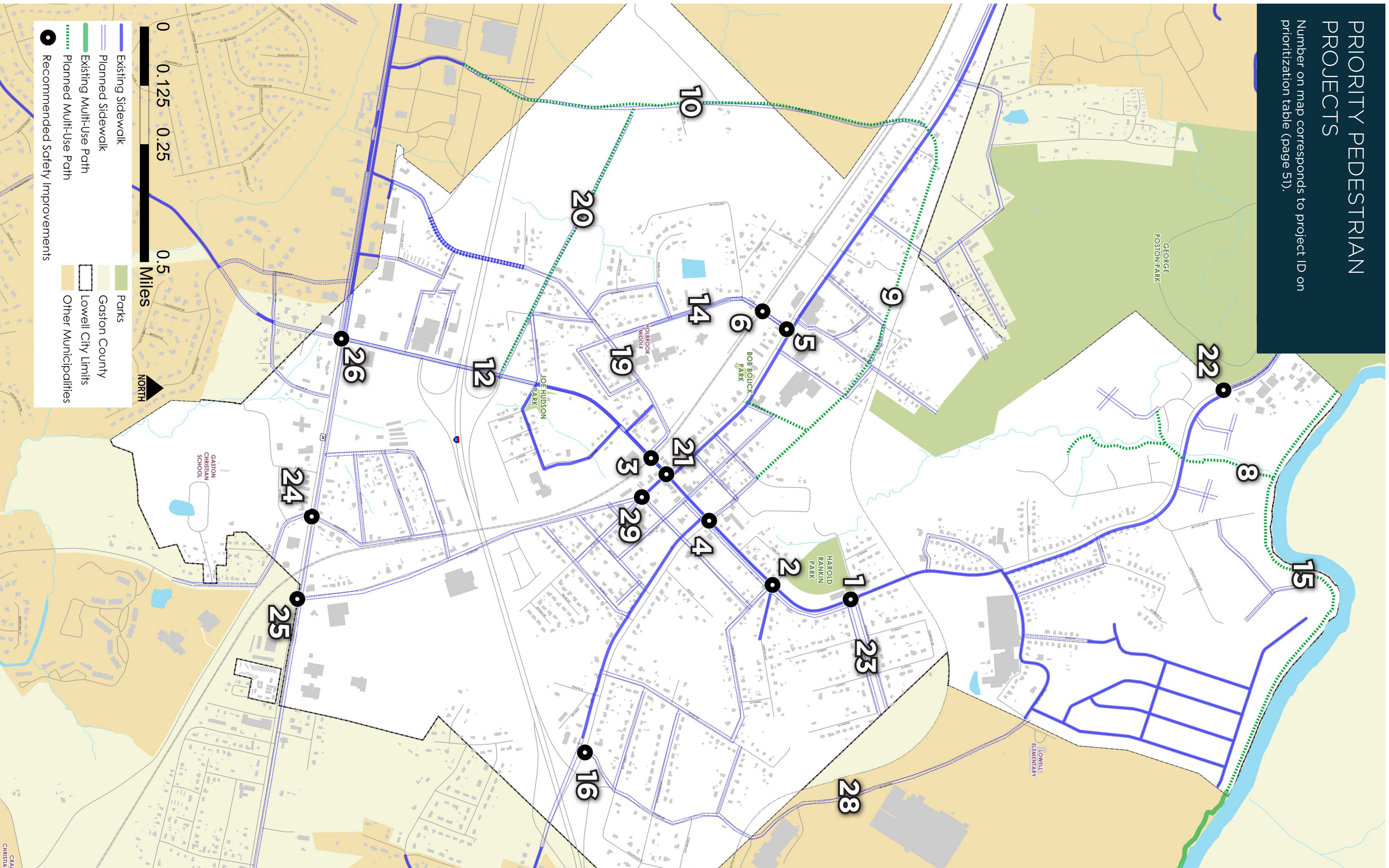
PRIORITY BICYCLE PROJECTS

Number on map corresponds to project ID on prioritization table (page 51).



PRIORITY PEDESTRIAN PROJECTS

Number on map corresponds to project ID on prioritization table (page 51).



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Policies and Programs

The Lowell Pedestrian and Bicycle Plan includes a number of on- and off-street recommendations. Beyond those physical facilities, the City and its local and regional partners can undertake programmatic efforts to improve bicycling conditions. These efforts include creating programs or policies to promote and encourage bicycling; educating motorists, pedestrians, and bicyclists about how to safely navigate the City together; and creating policies that ensure walking and bicycling are recognized as valid modes of transportation and as contributors to the Town's economy.

Each of the policies listed below are efforts that the City could complete or begin within a few years of adoption of this plan. Policies are broken into Tier 1 and Tier 2, which denote the level of priority that should be placed on implementing each (Tier 1 should be considered highest priority for short-term implementation). The policies listed below each also address at least one of the plan goals by improving connections and mobility to:



Our parks and natural areas



Our neighborhoods, new and old



Our schools, library, and civic sites



Our downtown and the places we shop



Our regional pedestrian and bicycle network



Our neighboring communities

Tier 1

Identify regional, state, and federal funding opportunities to implement multimodal opportunities

Apply for grants and explore partnerships with local businesses and developers to fund the installation of trails, sidewalk improvements, and better pedestrian crossings.

Create a Pedestrian and Bicycle Advisory Committee

The Committee should be comprised of community stakeholders, and will meet regularly to hear updates on local transportation projects and have the opportunity to hold local or regional agencies accountable to establish active transportation goals.

Install bike racks at local schools and around town

Low-cost improvements that provide opportunities for children to bike to school, or residents to complete errands downtown.

Establish a Safe Routes to Schools Taskforce

Safe Routes to School (SRTS) is a national program that works to promote safe walking and biking to and from school. This would engage with local planning efforts to integrate SRTS goals with local infrastructure projects.

Publicize, promote and present the plan.

The plan should be made available online and publicized using the City's website and social media outlets. Additionally, the plan and its recommendations should be presented to partner agencies including the Gaston-Cleveland-Lincoln MPO and NCDOT.

Adopt a local Complete Streets and Traffic Calming Policy

Complete Streets put the safety of all road users, especially people walking and biking, at the forefront of roadway design. Traffic calming similarly involves slowing traffic through physical infrastructure, to promote the safety of all road users. See [Smartgrowthamerica.org](https://www.smartgrowthamerica.org) for more information on local best practices when creating a Complete Streets POLICY.

Tier 2

Conduct a facility Inventory and create a local priority project list

Conduct a thorough, regular review of the condition of the town's existing pedestrian and bicycle facilities to develop a prioritization list of sidewalk segments to be repaired or constructed through dedicated funding.

Create a Bicycle/Walk Benefits Program

This public awareness campaign should encourage residents to walk or bike, rather than drive, for short trips around Downtown. More information at [bicyclebenefits.org](https://www.bicyclebenefits.org)

Conduct a Pedestrian Crossing Study

Work with Local, County, or NCDOT staff to identify intersections where simple low-cost improvements would provide major benefits for pedestrians.

Revisit the pedestrian and bicycle plan regularly

This plan is a living document, and should be regularly amended and updated to keep up with changing conditions within the City. As local priorities change, this document should be updated to reflect new priority projects and existing conditions in order to remain a relevant guidebook for future officials.

Host pedestrian and bicycle safety events

Target drivers, young children, and families through public events such as bicycle rodeos, walking tours, and police outreach.

Ensure coordination with NDOT and the resurfacing program.

By staying in continual coordination with NCDOT, the City of Lowell can make efforts to include recommendations of this plan for consideration when an NCDOT maintained roadway is about to be repaved or begin the design process for improvements.

Update UDO requirements to require provisions for bicyclists and pedestrians

The current ordinances only requires sidewalks in some areas of town, and for certain types of developments. Others are exempt from sidewalk requirements, and bicycle facilities are not mentioned. Language should be added to the zoning and subdivision ordinances requiring sidewalk construction for all new developments, and requiring some level of bicycle facility on all newly constructed roadways.

Conduct Regular Bicycle and Pedestrian Counts

A regular bicycle and pedestrian count program can help establish the local baseline, and monitor progress in active transportation trends and facility improvements are implemented. Counts may be conducted manually by volunteers or local students, or counting devices may be used. The North Carolina Division of Public Health has established a [pedestrian counter loan program](https://www.dph.ncdhhs.gov/programs/active-living/counts/) to assist communities in conducting pedestrian counts.

Funding

Implementation requires taking advantage of federal, state, local, and private funding opportunities. As a municipality in a metropolitan planning organization area in North Carolina, the City of Lowell can use federal and state funding that has been allocated to NCDOT Division 12 or to the GCLMPO. The City's capital improvement program and private entities are other sources that can be used to implement the recommendations of the Lowell Pedestrian and Bicycle Plan. Some of these funding sources are summarized in the sections below.

Fixing America's Surface Transportation (FAST ACT)

The most recent surface transportation legislation, Fixing America's Surface Transportation or FAST Act, was passed in December 2015. It restructured several of the funding programs that were active in the previous legislation, Moving Ahead for Progress in the 21st Century or MAP-21. For the programs described below, the City of Lowell would apply to the GCLMPO for funding and provide a 20% local match.

Surface Transportation Block Grant Program

MAP-21's Surface Transportation Program-Direct Attributable (STPDA) was changed to the Surface Transportation Block Grant Program (STBG) in the FAST Act. Municipalities within metropolitan planning organization (MPO) study areas can submit projects for STBG funding through the MPO. Eligible projects include roadways, transit (operations excluded), bike facilities, pedestrian facilities, truck parking areas, and intelligent transportation systems (ITS) improvements.

Transportation Alternatives

What was once the Transportation Alternatives Program (TAP) is now a set-aside under STBG called Transportation Alternatives (TA). Eligible projects include pedestrian and bicycle facilities, recreational trails, and Safe Routes to School projects. Municipalities can apply for Transportation Alternatives funding in the same way they would apply for STBG funding.

Metropolitan Planning

The FAST Act maintains MAP-21's metropolitan planning funding program. Jurisdictions that are members of an MPO can apply for this funding for planning studies. Localities must provide a 20% local match and can only use the funding on planning studies.

BUILD Discretionary Funds

Started in 2018 in place of the Transportation Investment Generating Economic Recovery (TIGER) grant program, the Better Utilizing Investments to Leverage Development (BUILD) grant program is a highly competitive program that aids in funding multimodal, multi-jurisdictional projects that are often difficult to fund with traditional funding strategies. BUILD grants can be used for capital projects that generate economic development and improve access to safe and affordable transportation alternatives.

NCDOT Strategic Mobility Formula

NCDOT receives and allocates federal funding using their Strategic Mobility Formula, established by the Strategic Transportation Investments law passed in 2013. The Strategic Mobility Formula is a data-driven and performance-based process of prioritizing projects for federal and state funding, and it updates NCDOT's 10-year State Transportation Improvement Program (STIP) every two years. Projects in the first five years of the STIP have been committed for funding and construction, while projects in the last five years of the STIP are reevaluated every two years using the Strategic Mobility Formula. In the Strategic Mobility Formula, transportation projects are grouped into three separate funding categories: division needs, regional impact, and statewide mobility. All bicycle projects are considered division needs and are only eligible for funding that has been allocated for division needs projects. The City of Lowell can coordinate with GCLMPO to submit bicycle facility projects for prioritization for funding. Projects identified in this pedestrian and bicycle plan would be eligible for Strategic Mobility Formula Funding.

Powell Bill Funds

North Carolina's State street-aid program, also known as the Powell Bill program, provides funding for eligible municipalities based on population and mileage of locally-maintained roadways. The primary function of the Powell Bill program is to assist municipalities in funding resurfacing local streets, but the funds may also be used for planning, constructing, and maintaining bikeways, greenways and sidewalks. Powell Bill funds could be pursued as a match for future updates of this Plan. In fiscal year 2019, Lowell received approximately \$93,000 in Powell Bill funding.

Capital Improvement Program

The Lowell's annual budget for 2019 includes \$90,000 for roadway maintenance. There is not a set amount proposed for sidewalk or bicycle facility construction, however a small amount (\$5,000) has been expended annually in the past. Projects from this plan can be included as a separate allocation in future years.

Transportation Bonds

Transportation bonds generate revenue from a tax increase on property values. In North Carolina, bond referendums must be approved by the local council and then included on the ballot to be voted on by residents. Transportation bonds can include roadway, bicycle facility, and sidewalk projects.

Private Developments

Updating the Town's zoning and subdivision ordinances to require private developers to include pedestrian and bicycle infrastructure in their site plans will help the Town build out the pedestrian and bicycle plan's facility recommendations. Pedestrian and bicycle infrastructure requirements can include on-street and off-street facilities as well as bicycle parking or pedestrian benches.

Non-Profit Organizations

Non-profit organizations, such as many health care organizations, bicycle advocacy organizations, and community funds, are potential sources of funding for bicycle facilities. PeopleForBikes awards grants through their Community Grant Program. Grant amounts can be up to \$10,000 per project, can't be more than 50% of the project cost, and can be awarded to local governments or non-profit organizations. This has been used successfully in some communities to complete small-scale projects, such as wayfinding, bike-rack installation, or improvements to existing trails and sidewalks.

NCDOT Highway Maintenance Improvement Program

The state's Highway Maintenance Improvement Program (HMIP) details a five-year maintenance plan that covers pavement rehabilitation and resurfacing. Roads scheduled to be improved under this plan are excellent candidates for coordinated bicycle improvements, especially bike lanes and shared lane markings that require no change to existing right-of-way. Lowell should monitor the HMIP and coordinate with local NCDOT representatives to discuss coordinated improvements.

Measuring Success

Beyond completing the physical projects and policy recommendations laid out in this plan, the City of Lowell should consider regularly evaluating the town's progress in achieving the overall vision of the Pedestrian and Bicycle Plan.

A sample report card is shown below, which should be updated annually to help track progress on a number of key measures. This provides a basic template that communicates key metrics to a variety of audiences, and also shows the importance of continuing to make progress against these goals.

Performance Measure	Desired Trend
Pedestrian and Bicyclist Counts	↑
Miles of ADA-compliant sidewalk	↑
Miles of multiuse paths	↑
Miles of on-street bicycle facilities	↑
Number of benches and pedestrian amenities	↑
Number of bicycle racks	↑
Funding dedicated to multimodal facility construction and maintenance	↑
Number of pedestrians and bicyclists involved in vehicle crashes	↓
City overall Walk Score (from walkscore.com)	↑
Number of projects and programs implemented	↑
Tickets issued for unsafe behavior (drivers and pedestrians/cyclists)	↓
Number of intersections with pedestrian safety improvements (warning lights, pedestrian buttons, high-visibility crossings, etc.)	↑

Design Guidelines

Several guidance documents exist to assist City planning and engineering officials in the design of pedestrian and bicycle facilities. The guidance documents that the City of Lowell should reference when implementing the facility recommendations of this plan are summarized below.

National Guidelines	State Guidelines
Resource	Author
Guide for the Development of Bicycle Facilities, 4th Edition AASHTO 2012	<i>The American Association of State Highway Transportation Officials</i>
Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition, AASHTO 2004	<i>The American Association of State Highway Transportation Officials</i>
Manual on Uniform Traffic Control Devices FHWA 2012	<i>Federal Highway Administration</i>
Separated Bike Lane Planning and Design Guidance FHWA 2015	<i>Federal Highway Administration</i>
Achieving Multimodal Networks FHWA 2016	<i>Federal Highway Administration</i>
Small Town and Rural Multimodal Networks FHWA 2016	<i>Federal Highway Administration</i>
Urban Bikeway Design Guide, 2nd Edition NACTO 2014	<i>National Association of City Transportation Officials</i>
Urban Street Design Guide NACTO 2013	<i>National Association of City Transportation Officials</i>
ADA and ABA Accessibility Guidelines US Access Board 2004	<i>Architectural and Transportation Barriers Compliance Board</i>
2009 NC Supplement to MUTCD NCDOT 2009	<i>North Carolina Department of Transportation</i>
Statewide Pedestrian and Bicycle Plan NCDOT 2013	<i>North Carolina Department of Transportation</i>
NCDOT Complete Streets NCDOT 2012	<i>North Carolina Department of Transportation</i>
Evaluating Temporary Accommodations for Pedestrians NCDOT	<i>North Carolina Department of Transportation</i>
NC Local Programs Management Handbook NCDOT 2009	<i>North Carolina Department of Transportation</i>
Traditional Neighborhood Development Guidelines NCDOT 2000	<i>North Carolina Department of Transportation</i>
Roadway Design Manual (regularly updated)	<i>North Carolina Department of Transportation</i>

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CONCLUSION

The City of Lowell has a clear vision for the future. Through the completion of this plan, the City is recognizing the importance of providing safe, comfortable pedestrian and bicycle facilities throughout town and connecting residents to schools, parks, and civic destinations. The benefits of these connections have been proven time and again, both for the health and well-being of individual residents, and the general health and vibrancy of the community. The pages that precede lay out a roadmap and a series of actions that will move Lowell down the path toward this goal. That goal is achievable, but it will not come without the hard work and dedication of City officials, community advocates, and planners. With this plan as a guide, and a tool for advocacy, Lowell is well on the way to providing a safe, healthy, and comfortable community for residents of all ages and abilities.

