City of Burlington
Downtown Circulation Plan

DRAFT-May 2020

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Credits and Acknowledgements

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- Barry W. Conaway

City of Burlington Land Use Board

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- Charles J. Carmanna, Greyhawk
- Patrick Farley, Cross County Connection TMA
- James Flynn, Burlington City High School
- David Gardellin, Community Member
- Bill Harris, City of Burlington
- Samuel D. Richter, City of Burlington, Land Use Board
- Tom J. Stanuikynas, Burlington County Bridge Commission
- Sonia Szczesna, Tri-State Transportation Campaign
- David P. Tishler, City of Burlington, Land Use Board

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DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Contents

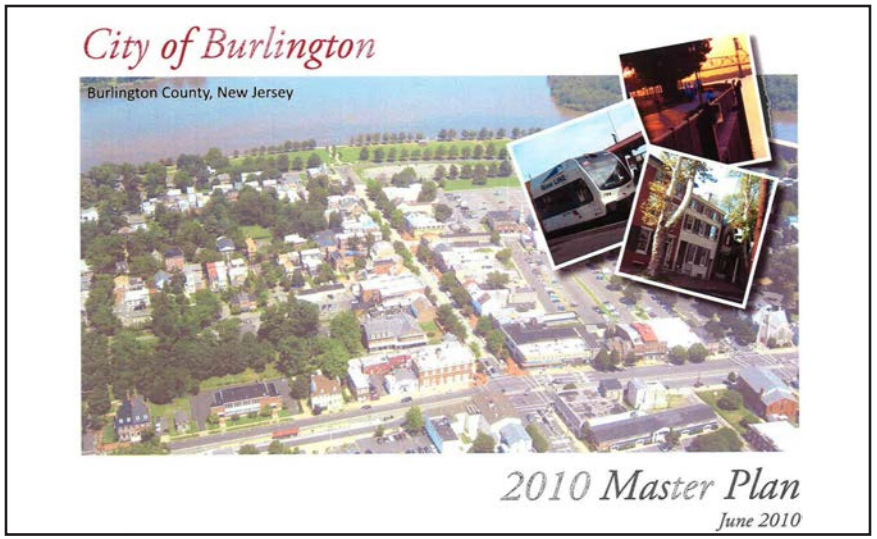

SAINTS PAROCHIAL SCHOOL

Introduction

In 2019, the City of Burlington initiated this effort to update the Circulation Element of the City's Master Plan, last updated in 2010. This study, the Downtown Circulation Plan, is intended to accomplish the following objectives:

- Update the City's 2010 Circulation Element with a focus on **enhancing bicycle and pedestrian travel** within and near the downtown area
- Develop planning-level recommendations to **improve roadway safety, enhance mobility, and support economic development**

The study team for the Downtown Circulation Plan consists of City officials and WSP USA, who was engaged as a consultant to the City for developing the plan. Once adopted by the City's Land Use Board, this document will serve as an official update to the 2010 Circulation Element.



Study Area

As shown in Map 1, the study area for the Downtown Circulation Plan is bordered by Route 130 to the south, the Delaware River to the north, and the municipal border with Burlington Township to the east and west. This study area was selected to encompass the historic downtown core and the adjacent residential neighborhoods north of Route 130.

Map 1: Study Area

BENEFITS OF WALKING AND BIKING

This circulation plan update is focused on enhancing bicycle and pedestrian travel under the realization that "active transportation" modes (i.e. walking and biking) provide numerous community-oriented and regional benefits. Some of the primary benefits are summarized below, with references to national data provided where applicable:

ENVIRONMENTAL SUSTAINABILITY

Active transportation provides a greener, more sustainable alternative to driving. It has a reduced impact on roadways, both in terms of space consumed and infrastructure maintenance required. Shifts from driving to walking or bicycling reduce vehicle miles traveled and congestion, fuel consumption, and emissions of CO2, CO, NOx, and VOCs.

TRANSPORTATION EQUITY

Bicycling and walking are more than recreation. They are a means of getting to work, running errands and seeing friends, particularly for those who are too young, unable, cannot afford or choose not to drive a car. On average, in most communities, 20%-40% of the population does not drive. Short trips of less than one mile can be easily made by bicycle or on foot, yet 60% of these trips are made by car.[1]

SAFETY

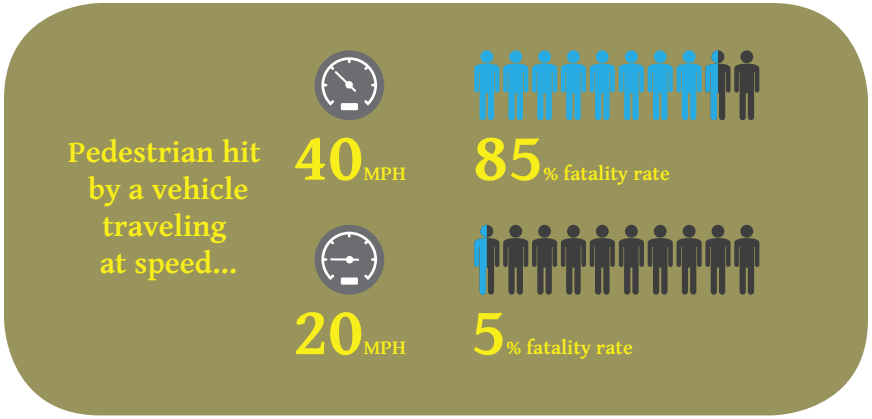
Safety improvements are an essential component to encouraging more people to walk or bicycle. Investments in bicycle and pedestrian infrastructure also improve safety for all roadway users. High vehicle speeds can inhibit a driver's ability to react to activities happening along the roadway and narrow a driver's peripheral vision. Traffic calming enhancements reduce the crash severity for all modes and create a more attractive environment for active transportation.

ECONOMIC VITALITY

An increase in the prevalence of bicycling and walking has a variety of positive economic impacts. Customers arriving by bicycle or foot are more likely to shop locally, which is beneficial to the economic strength and stability of the community. Though spending less per trip than motorists, they tend to spend more over the course of a month.[2] Pedestrian infrastructure can also support a more vibrant community, boost property values and sales revenues, and spur private investment.

PUBLIC HEALTH

Active transportation integrates physical activity into everyday life. This can lead to decreased rates of obesity, diabetes, heart disease, high blood pressure, and other ailments. Children who walk or bicycle to school are more attentive, better able to concentrate, and have mental alertness one-half school year more advanced than their less active peers.[3]



1 National Highway Travel Survey, 2009

2 Popovich and Handy, Bicyclists as Consumers, 2014

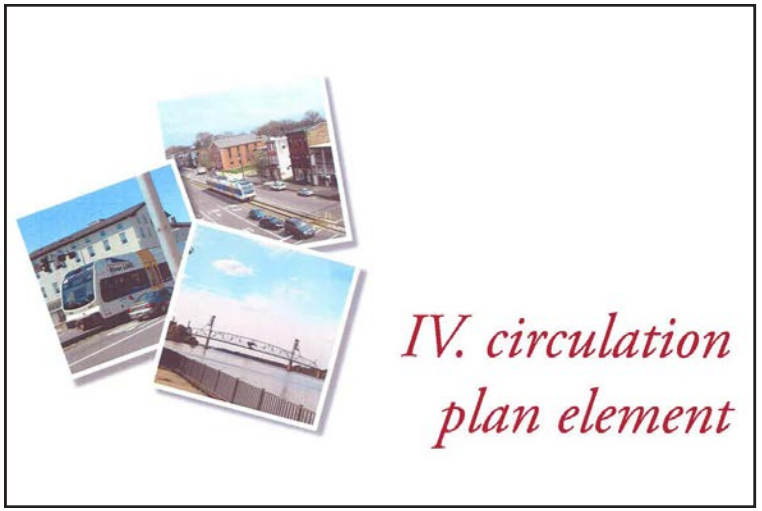
3 Egelund, N. et al., Mass Experiment, 2012

Previous and Ongoing Studies

The study team began by reviewing previous and ongoing studies helpful to the development of the Downtown Circulation Plan. A summary of these sources is provided below:

Circulation Plan Element of City's Master Plan (2010)

The City of Burlington completed a Circulation Plan Element as part of their 2010 Master Plan. The study, prepared by Environmental Resources, Inc. and Alberto & Associates, updated the 2007 Litwornia Associates, Inc. Circulation Element update and was funded in part by the Delaware Valley Regional Planning Commission (DVRPC). The update identified existing roadway characteristics, pedestrian and biking circulation, transit service and the presence of public parking. The plan provided a list of recommendations, some of which have since been implemented, as detailed in this plan update.



River Route Corridor Study (2018)

Completed in 2018 by the Burlington County Bridge Commission (BCBC), the River Route Corridor Study analyzed 41 locations along U.S. 130 in Burlington County consisting of both intersections and roadway sections. At each location, a summary of existing conditions, outline of issues and deficiencies, and recommended improvements with accompanying concept plans were provided. Four of the locations fall within Burlington City:

- U.S. 130 at Columbus Road (CR 543/655)/Jones Street:
- U.S. 130 at Court Drive
- U.S. 130 between NJ 413 & Assiscunk Creek
- U.S. 130 at NJ 413

CR 541 Transportation and Circulation Plan (2020)

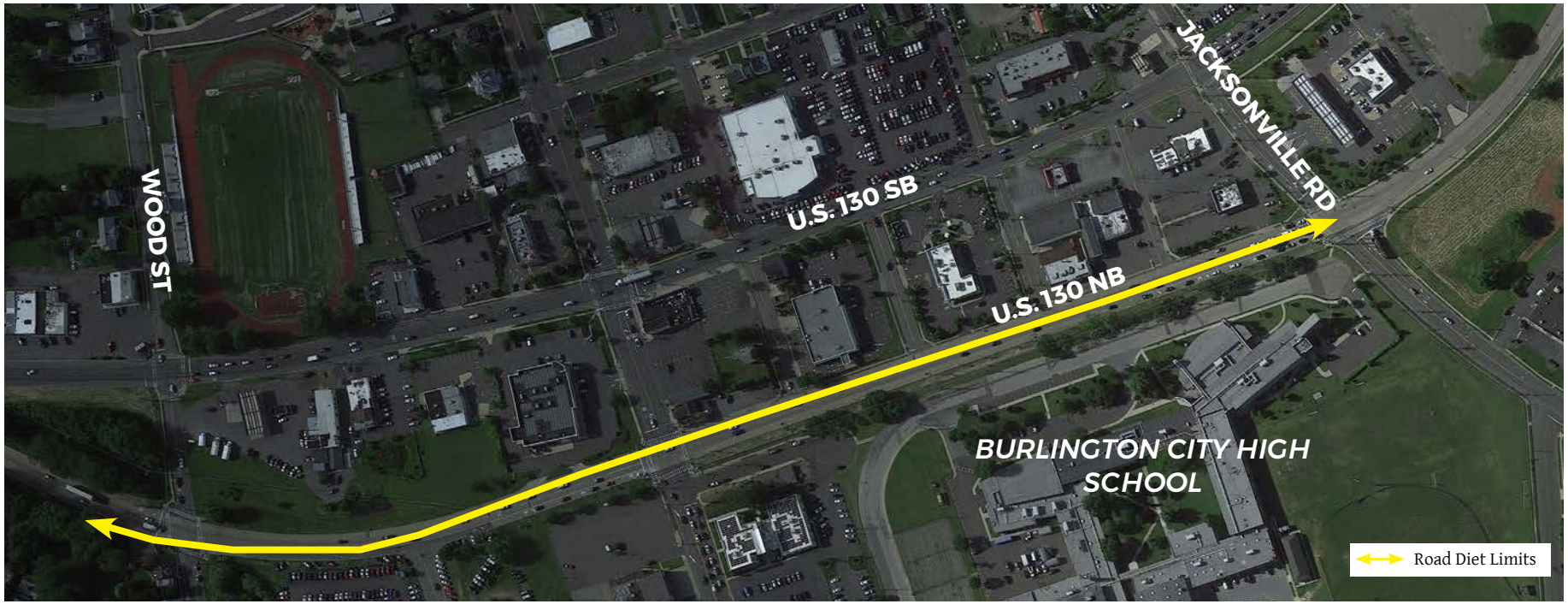
BCBC initiated the County Route 541 Transportation and Circulation Plan, as sponsored by the Burlington County Board of Chosen Freeholders, to address auto traffic and circulation, bicycle and pedestrian access, and land use and zoning issues along the corridor. The study area covers the section of County Route 541 between U.S. 130 and the Mount Holly Bypass which passes through Mount Holly Township, Westampton Township, Burlington Township, and Burlington City. The northern end of the study area is adjacent to the Circulation Plan Element study area. The plan will be incorporated into the County's highway master plan.

Northern US 130 Transportation Plan

By the year 2040, approximately 10 million square feet of new development (both conventional and e-commerce warehouse) is expected along the 2.5-mile-long section of US 130 south of the I-276 intersection. This includes the recently opened Amazon Warehouse/ Distribution Center along New Pearl Street in Burlington Township and the City of Burlington. BCBC initiated this study to estimate the growth in freight-related traffic and identify roadway improvements to mitigate future impacts from increased traffic.

US Route 130 Road Diet/Speed Limit Reduction

In 2016, 17-year old Burlington City High School student Antwan Timbers, Jr. was fatally struck while walking along U.S. 130 near the high school. In response to this tragedy, the New Jersey Department of Transportation (NJDOT) made several changes to the U.S. 130 corridor within the city limits. In Spring 2017, NJDOT implemented a road diet along the 0.43-mile segment of U.S. 130 between Jacksonville Road and Wood Street by restriping the roadway from three to two travel lanes in each direction. Following passage of Antwan's Law in 2018, NJDOT then implemented a speed limit reduction from 40 mph to 25 mph on U.S. 130 within those same extents. The speed limit leading to the school zone was also lowered to 35 mph, while the fine for speeding through the designated area was tripled.



Stakeholder Coordination & Community Outreach

The planning process included a community outreach and stakeholder coordination component consisting of meetings and other outreach tools, as outlined below.

Land Use Board Kickoff Meeting

On October 23, 2019, the study team formally presented an overview of the project to the City's Land Use Board (LUB). The meeting was open to members of the public and advertised on the City's website. The project team's presentation included an overview of the study's purpose and schedule, a description of previous and ongoing planning studies relevant to the project, and an initial assessment of study area existing conditions. The presentation was followed by a question and answer session with the LUB and members of the public.

Steering Committee

A Steering Committee (SC) was established for this study to provide input and guidance throughout the planning process. The SC consists of representatives from Burlington City, Burlington County, the local transportation management association (Cross County Connection TMA), the Bicycle Coalition of Greater Philadelphia, Tri-State Transportation Campaign, and Burlington City High School.

SC Meeting #1

The first SC meeting was held on November 13, 2019 at the Keegan Center in Burlington City. The study team presented an overview of the study process and the SC's role and described existing conditions within the study area including activity generators, crash history, and assessments of bicycle and pedestrian facilities. The committee then participated in a visioning exercise intended to guide the study team's work. Members were asked to envision what success may look like in Burlington, as well as suggest visions, goals, and challenges/obstacles to success. Members also participated in a map markup exercise where they identified and prioritized problem corridors and intersections.

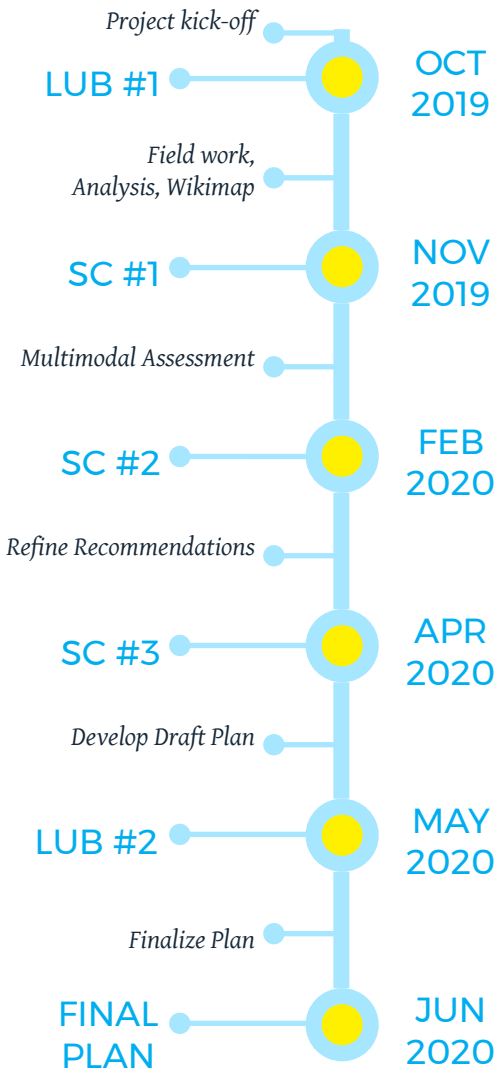
The committee member's responses to the visioning exercise were categorized by subject matter to identify factors to be prioritized during the existing conditions and recommendations phases. The summarized categories, ranked by prevalence of responses, is presented in Table 1.

SC Meeting #2

The second SC meeting was held on March 3, 2020 at the Keegan Center in Burlington City to provide an update on the Plan. The study team presented draft recommendations and gathered feedback from the SC.

SC Meeting #3

The third SC meeting was held virtually on April 23, 2020. The SC was unable to meet in person due to the COVID-19 crisis going on at the time. The study team presented updated draft recommendations based on feedback received during SC Meeting # 2.



LUB Meeting # 2

The study team presented the plan to the LUB on June 24, 2020.

MEETING SUMMARY PLACEHOLDER

Wikimap

An online interactive map (i.e. Wikimap) was created for the Circulation Plan update to collect place-based comments about walking and biking in Burlington. The web interface allows users to mark-up a virtual map of the City by identifying corridors and spot locations deemed difficult for walking and biking, desired walking and biking routes, and desired locations for bicycle parking. The Wikimap opened for public comment on October 23, 2019.

The primary purpose of the mapping tool was to graphically locate and identify problem areas and opportunities based on local knowledge. Results to date are shown in Map 2 and summarized in Tables 2 and 3.

Table 1: Visioning Results

	Success	Goals	Challenges/ Obstacles
#1	Connections	Infrastructure	Politics
#2	Safety	Connections	Funding
#3	Downtown	Plan	Traffic
#4	Infrastructure	Safety	Parking
#5	Lighting		
#6	Plan		

Table 2: Intersections Identified - Wikimap

Intersection	Comment Frequency
US 130 and Keim Blvd	8
Burlington Towne Centre	5
US 130, CR 655, and Jones St	4
Burlington South	4
High St and Broad St	3
US 130, Park Ave, and Salem Rd	3
Burlington Bridge and Reed St	3

Table 3: Corridors Identified - Wikimap

Corridor	Comment Frequency
CR 541/High St	6
US 130	5
CR 656/Pearl St	5
Riverbank	4
Wood St	3
Broad St	3

City of Burlington
Downtown Circulation Plan

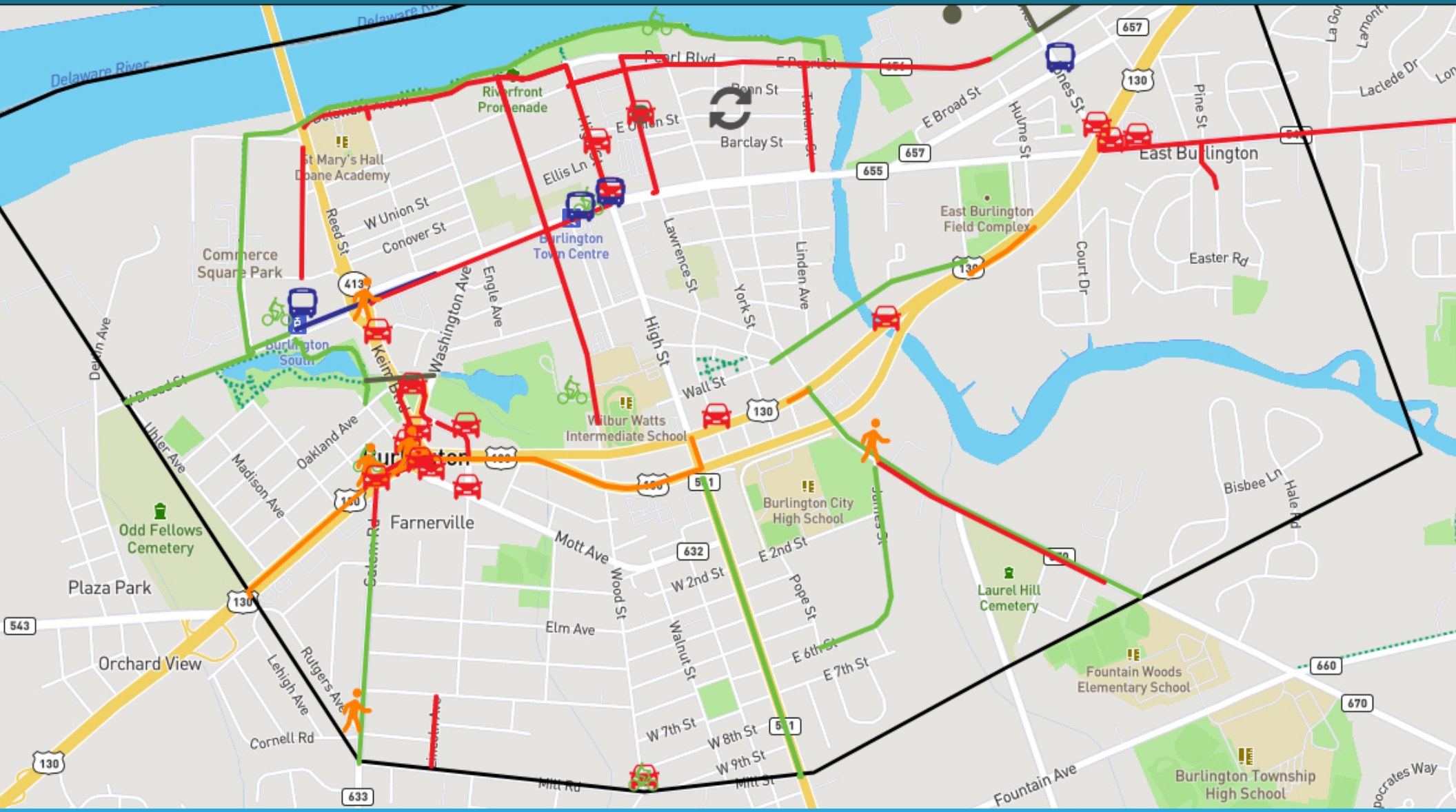
INSTRUCTIONS

1. **Draw** your opportunity or issue on the map by clicking "add a line" or "add a point" below
(you can search for an address by clicking the magnifying glass below to the left)
2. After drawing, **describe** the opportunity or issue in the Description box
3. If available, **upload** a photo of the area in the Description box
4. After entering information, **submit** your input!
5. **View/comment** on others' ideas
(to view input from others: Click the "Layers" button on top right of the map>Click "Turn On/Off Other People's Responses"

LEGEND

Point / Line

- Road/Motorist
- Transit
- Bicycle
- Pedestrian
- Other



Map 2: Wikimap Responses

EXISTING CONDITIONS

Roadway Characteristics

The 2010 Circulation Element included a comprehensive inventory of roadway characteristics including functional classification, jurisdiction, speed limits, and one-way streets. Key sections are repeated below, with updates from the 2010 Circulation Element highlighted where relevant.

Functional Classification

The Functional Classifications plan identifies Principal Arterial Roads, Urban Collectors, Minor Arterial Roads and Local Streets within the City. The classifications establish a hierarchy and indicate the type of service provided by the roadways within the overall roadway network. The hierarchy is used to promote safe and efficient circulation throughout and between municipalities and the region.

Principal Arterial Roads

Urban arterial roads typically serve the largest traffic volumes within and through urban areas. They are normally divided into major or principal arterial roads and minor arterial roads. Within Burlington City, U.S. Route 130, NJ Route 413, High Street (CR 541) between US Route 130 and the southern city limit, and Mott Avenue (CR 632) are identified as Principal Arterial Streets.

Minor Arterial Roads

Minor arterial streets connect to and enhance Principal Arterial Roads to provide moderate length trips at a lower level of mobility than the principal arterials. Jacksonville Road (CR 670), Salem Road, and Broad Street (east of NJ Route 413)/Columbus Street (CR 543 east of Linden Avenue) east to the city limits are classified as Minor Arterial Roads.

Urban Collector Roads

Urban collector roads provide service and traffic circulation within residential, commercial and industrial areas and differ from arterials in that collectors enter and exit residential neighborhoods, distributing trips from arterials to destinations. Collectors likewise collect local traffic and channel it to arterials. Pearl Blvd/River and High Street north of U.S. 130 are classified as Urban Collector Roads.

Local Streets

The remainder of the streets within the city are local streets and serve to provide direct access to adjacent lands and the higher street orders.

Jurisdiction

The Roadway Jurisdiction Map from the 2010 Circulation Element identified roadways in the City under the jurisdiction of NJDOT, Burlington County, and the City of Burlington. The 2010 Circulation Element recommended that High Street between U.S. 130 and Broad Street be reclassified from an Urban Collector to a Minor Arterial roadway, and Salem Rd be placed under the jurisdiction of Burlington County, rather than the City. **Neither of these changes have been implemented.**

Speed Limits

The Speed Limit Map from the 2010 Circulation Element identified speed limits on roadways throughout the City ranging from 25 miles per hour on local streets to 50 miles per hour on Principal Arterial Roads. **There were no recommendations for speed limit revisions in the 2010 plan; however, the speed limit along the 0.43 mile stretch of U.S. 130 between Wood Street and Jacksonville Road and the approaching segments was lowered from 40 mph to 25 mph in the Fall of 2019 as a result of Antwan's Law** as described on Page C6.


FFE
72045
23
PENSKE
Truck Rental
Wawa
2.15
2.43
Jeep
U37 GNA

One-Way Streets

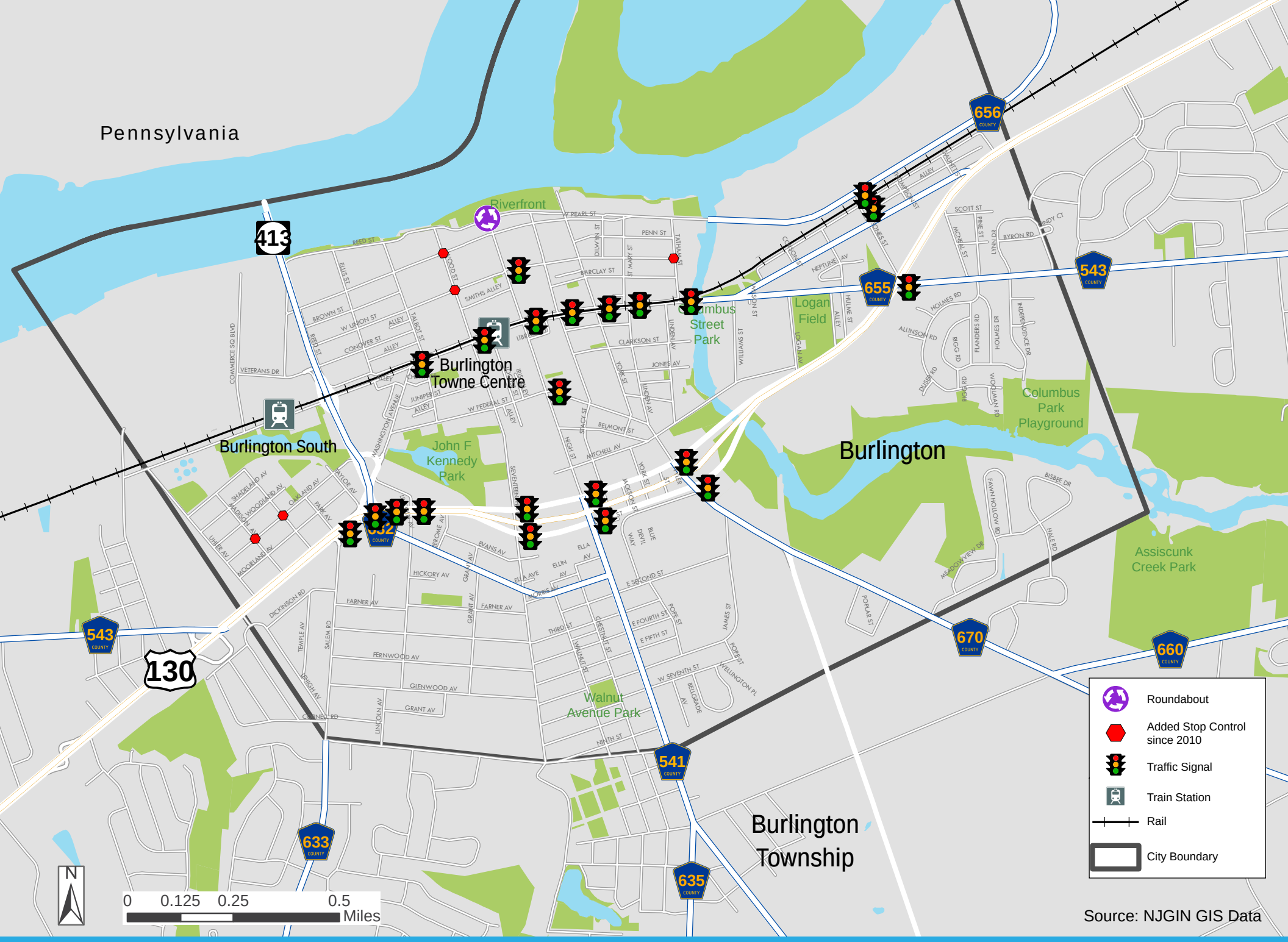
The Existing One-Way Street Map from the 2010 Circulation Element identified roadways designated as one-way streets within the City code. The 2010 Circulation Element also recommended the northern end of High Street be changed from a right turn only onto Pearl Street to a roundabout so that a vehicle traveling north on High Street could turn around and continue back south on High Street to find parking or facilitate pick-ups and drop-offs. **This recommendation was implemented with construction of the roundabout between 2013 and 2016.**

Traffic Controls

Signalized intersections within the study area are shown in Map 3. Additionally, numerous intersections within the City have two or all-way stop controls. T**he 2010 Circulation Element recommended changes to traffic controls at multiple intersections. Those recommendations that were implemented are listed below (also shown in Map 3):**

- Install stop sign on Oakland Ave at the intersection with Madison Ave
- Install stop sign on Oakland Ave at the intersection with Chelton Ave
- Install stop sign on Union St at the intersection with Tatham St
- Install four-way stop controls at intersection of West Pearl St and Wood St
- Install four-way stop controls at intersection of Union St and Wood St
- Construct a roundabout at the intersection of High St and Riverbank/ Pearl Blvd

Source: Google Streetview



Map 3: Traffic Controls

Roadway Safety Analysis

The project team reviewed traffic crash data to determine which roadways and intersections within the City of Burlington exhibit a crash pattern. Crash data was obtained from NJDOT for a 5-year period between 2013 to 2017, which represents the most recent data available at the time of this study. During this period, there were 2,136 total reported crashes citywide, which includes vehicles, bicycles, and pedestrians. Most crashes (82%) occurred along the following three corridors as shown in Table 4.

Table 4: Primary Crash Corridors

Corridor	All Crashes	Bicycle Crashes	Pedestrian Crashes
U.S. 130	1193	4	13
High St	388	7	6
Keim Blvd/ Reed St	170	1	0

Additionally, the primary crash intersections are presented in Table 5.

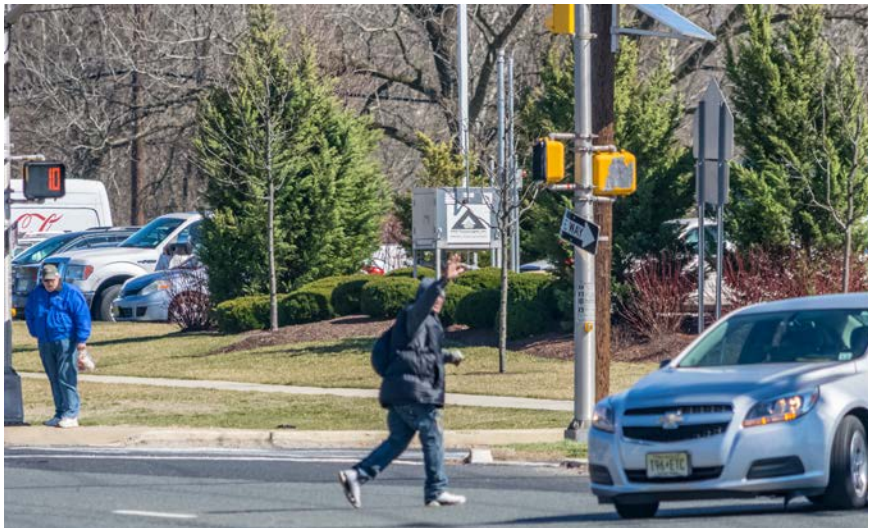
Of the 2,136 total crashes within Burlington City, 48% occurred on State roadways, 26% on County roadways, and 22% on Municipal roadways. The remaining crashes occurred on private property.

Reported crashes within Burlington City during the 5-year period are shown in Map 4.

The crash data was analyzed to identify crash patterns related to crash type, day of the week, severity, lighting, and proximity to intersections. In addition, the local data was compared to statewide averages based on the corresponding roadway system (State, County, Municipal) to identify any significant overrepresentations.

Table 5: Primary Crash Intersections

Primary Street	Cross Street	All Crashes	Bicycle Crashes	Pedestrian Crashes
U.S. 130	Keim Blvd	203	0	0
U.S. 130 EB	High St	122	1	2
U.S. 130 EB	Jacksonville Ave	115	0	1
U.S. 130	Columbus Rd	89	0	1
Keim Blvd	West Broad St	98	1	0
U.S. 130	Salem Rd	72	0	0



Map 4: All Crashes

Crash Type

The most common vehicular crash types during the 5-year period were Same Direction-Rear End (29%), Same Direction-Sideswipe (26%), and Right Angle (16%). There were 24 pedestrian and 16 bicyclist crashes, as presented in Figure 1 and Map 5.

Weekday vs. Weekend

Crashes are more likely to occur during the weekday than the weekend. This pattern is consistent statewide and in Burlington City. On average, each weekday had 15.4% of crashes and each weekend 11.4%. For bicycle/pedestrian crashes in Burlington City, each weekday had 16.5% of crashes and each weekend 8.75%. Due to the small sample size of bicycle/pedestrian crashes, this difference is not statistically significant.

Severity

Throughout Burlington City, 77% of crashes resulted in property damage, 20% in complaint of pain, 2% in moderate injury, and less than 1% in incapacitation or fatality. A much higher percent of bicycle/pedestrian crashes resulted in injury, with 48% leading to complaint of pain, 23% in moderate injury, 3% in incapacitation, and 3% in a fatality (Figure 2).

Lighting Conditions

Approximately 70% of all crashes in Burlington City occurred during daylight conditions, which is consistent with the statewide average. The only significant difference between lighting condition trends within the city and those statewide occurred on County roads, with local crashes more likely to occur during daylight periods than statewide crashes.

Proximity to Intersection

Approximately 43% of the total crashes in Burlington City occurred at an intersection. These road system-specific figures are significantly different from statewide trends, where only 24-35% of statewide crashes occur at intersections. The increased likelihood of crashes at intersections in Burlington is likely due to the dense street network, which results in closer-spaced intersections with less roadway distance between intersections.

Figure 1: Bicycle and Pedestrian Crashes (2013-2017)

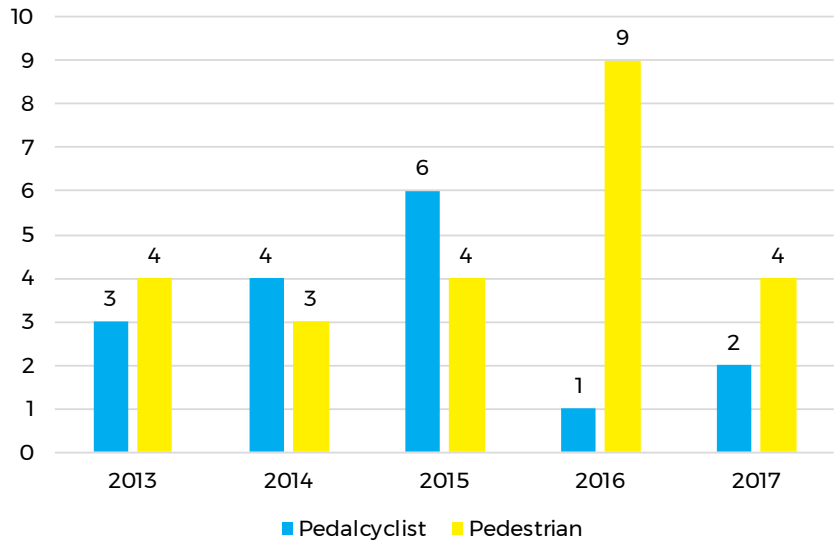
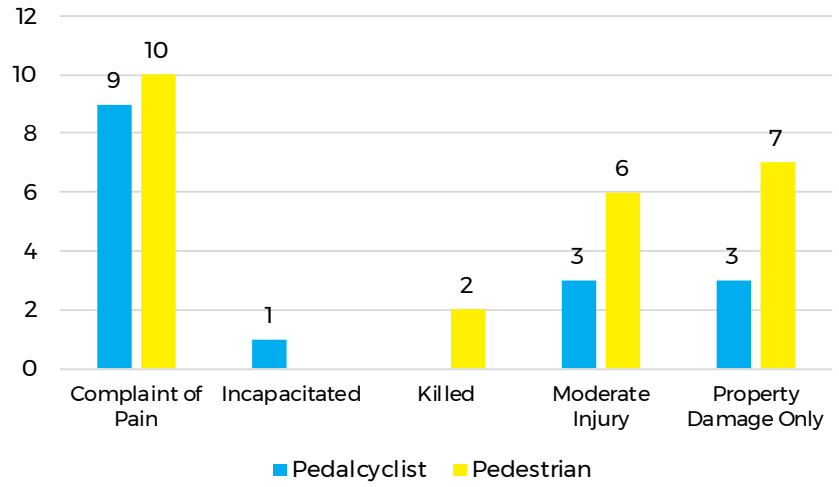
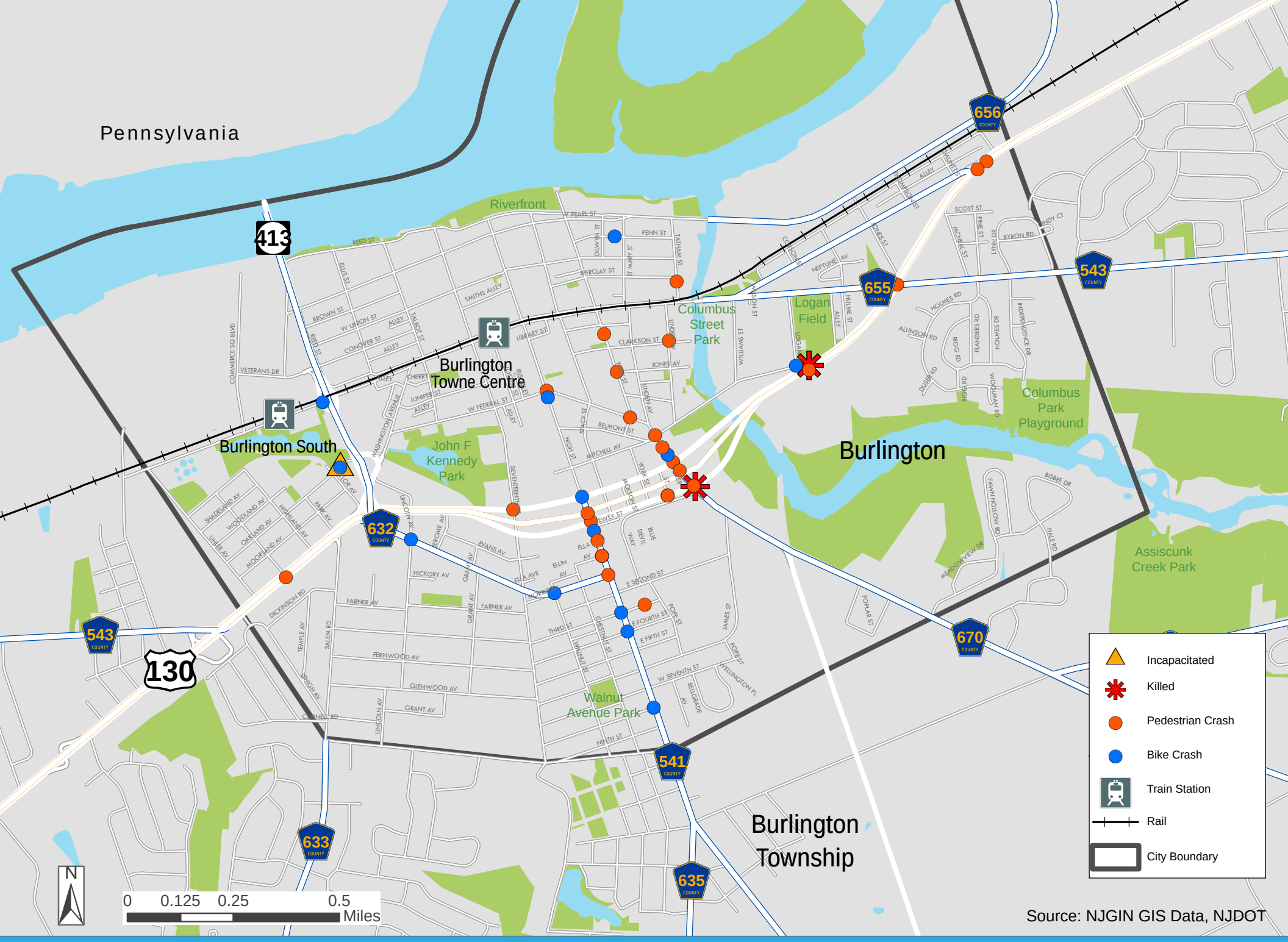


Figure 2: Bicycle and Pedestrian Crash Severity (2013-2017)





Map 5: Bicycle and Pedestrian Crashes

Activity Generators

Locations attracting or generating a high number of pedestrian and/or bicycle trips were inventoried and mapped. During the existing conditions analysis, the pedestrian accommodations at these locations was of particular interest as the sites are the most likely to have pedestrian demand. Shown in Map 6, these activity generators (also referred to as points of interest) are grouped into the following categories:

Downtown

Burlington City features a vibrant and historic downtown commercial area along High Street. This corridor is the City's primary generator of walking and biking trips, by both those traveling from nearby neighborhoods as well as visitors traveling from further away who park downtown or reach Burlington City by rail.

Other Commercial Areas

While the portion of High Street north of Broad Street provides the most pedestrian-friendly retail district in the City, the southern portion of High Street as well as most of U.S. 130 feature commercial destinations. The the southern stretch of High Street mainly features commercial offices and government services (City Hall, Police Department, Post Office, Public Library, etc.), while U.S. 130 has larger, more auto-oriented commercial uses such as pharmacies, gas stations, fast food restaurants, and other services.

Transit

Both River Line stations within the study area, Burlington Town Centre and Burlington South, generate many biking and walking trips throughout Burlington. The Burlington South station has several hundred parking spots available to commuters, while the Burlington Town Centre is intended to be more walkable, providing no day-long dedicated parking. Bus stops along the City's major routes also cater to pedestrian demand.

Parks

The study area includes a mix of small playgrounds and larger parks including John F. Kennedy Park, and the Burlington River Promenade.

Schools

Schools are among the largest generators of foot and bicycle traffic. The City of Burlington Public School District includes two early elementary schools (grades PreK-2), one intermediate school, and one high school. Captain James Elementary School and Wilbur Watts Intermediate School are also in in the study area. Burlington City High School is adjacent to the study area, located immediately south of U.S. 130. Both Doane Academy (PreK-12 with 250 students) and Holy Light Christian Academy (PreK-5, 50 students) are located in the study area. Saint Paul School is located south of the study area.

Historic Sites

Burlington City is one of the most historic municipalities in New Jersey, which is one of the nation's most historic states. In addition to individual historic sites, Burlington has three expansive historic districts:

- **Burlington Historic District** - a federally recognized district covering the area west of High Street downtown
- **High Street Historic District** - a federally recognized district covering the High Street corridor within Historic Burlington
- **Burlington City Municipal Historic District** - a municipally recognized district covering both the Burlington and High Street Historic Districts, in addition to much of Burlington City north of Broad Street

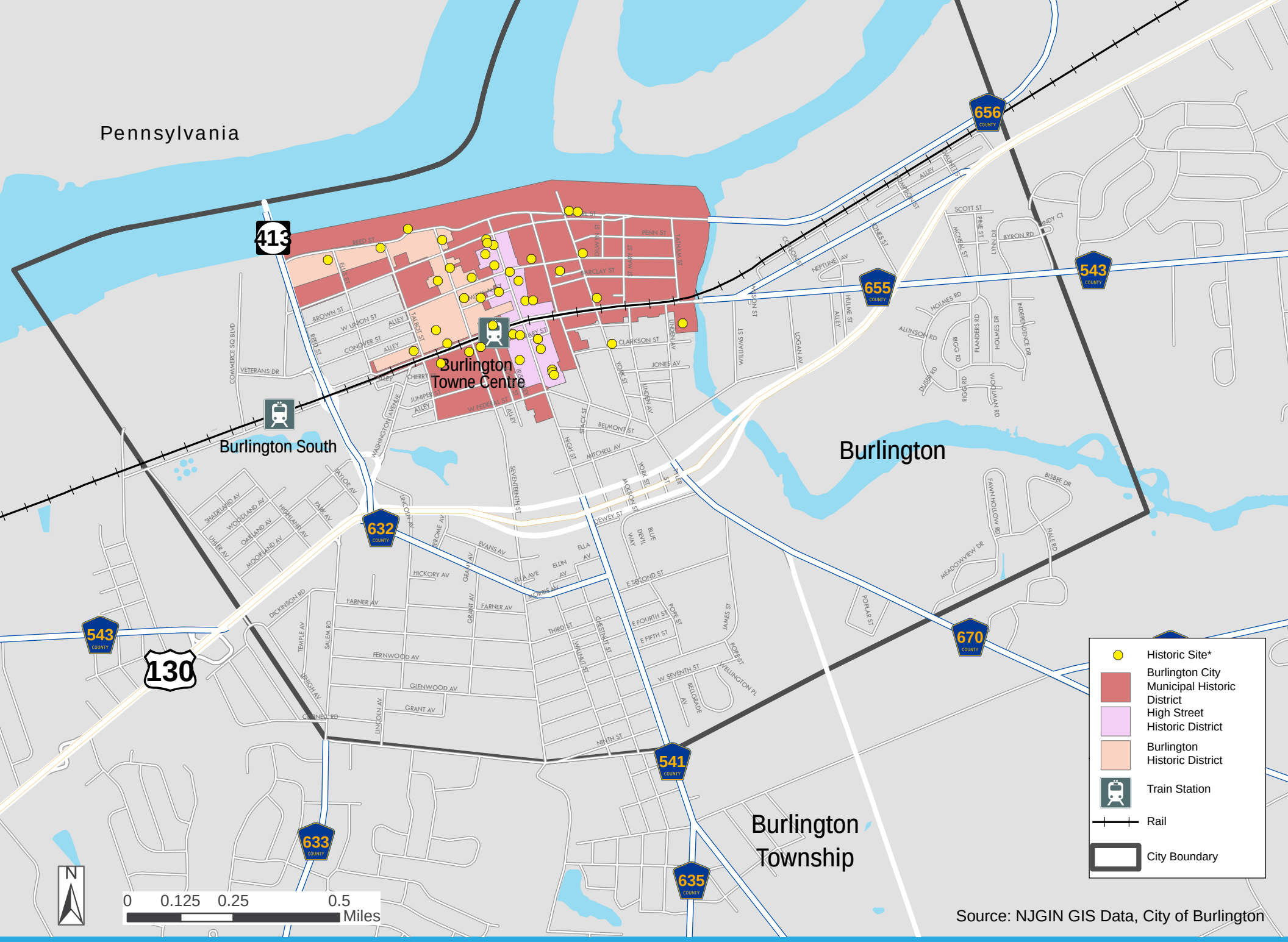
These historic districts and some of the study area's 918 historic properties are presented in Map 7. The historic properties shown were provided by TourBurlington.org. Each historic property contributes to Burlington City's historic character and include publicly accessible and private buildings.

Ongoing and Proposed Land Development Projects

There are several ongoing and proposed residential developments within Burlington City with the potential to generate significant additional walking and biking trips. Approximate locations of the new developments are shown in Map 6.

- **River Walk Station:** This planned multifamily development would be located between the Burlington South River Line station and the Delaware River. It is anticipated to include between 700-1,100 apartment units in multiple 3-4 story buildings. The site is an old Army Ammunition site that is currently being remediated by the Army Corps of Engineers. After due diligence is completed, an MOU with the developer would be initiated by the City.
- **Pearl Pointe:** Currently under development, a mixed-use project at the corner of High Street and Pearl Street will consist of two buildings with 7800 SF of ground floor commercial space and 183 market rate rental units on the upper floors. The first building is scheduled for completion in 2020 with the second building scheduled for 6 months after completion of the first building.
- **Burlington Dream:** This planned mixed-use development would be located along New Pearl Street at the eastern edge of the City near Jones Street. The site has three historic brownstone buildings which would be preserved and reused as commercial or studio space. There are also plans for an indoor waterpark and other outdoor public space amenities, and the developer has agreed to implement a riverfront trail along the length of the property that would ultimately connect with the existing promenade downtown.

Map 6: Activity Generators



Map 7: Historic Districts and Sites

Pedestrian Circulation

To supplement the 2010 Circulation Element, the project team conducted a citywide inventory of pedestrian infrastructure in Burlington. The inventory consisted of the following two components:

Sidewalk Gap Assessment

A comprehensive sidewalk inventory of the study area was conducted using the latest satellite imagery from Google Earth paired with targeted field observations. Each roadway was classified as having no sidewalk, sidewalk on one side, or sidewalks on both sides, as shown in Map 8. Of the study area's 24.7 total miles of street, 13.6 miles (55%) have sidewalks on both sides of the street, 5.7 miles (23%) have sidewalks on one side, and 5.4 miles (22%) have no sidewalks.

Most local streets near downtown Burlington City (centered around High Street and Broad Street) have sidewalks on both sides. Roads around the border of Burlington City, and those with higher speed limits and higher traffic volumes are more often lacking a sidewalk on at least one side. Most of Reed St/Pearl Blvd lack sidewalks on one or both sides, most of Keim Boulevard lacks sidewalks on both sides, and significant segments of U.S. 130 lack sidewalks on one or both sides. These roads present major barriers to walking by inhibiting pedestrian mobility between different parts of Burlington City and Township. Without sidewalks, these high-speed roads are difficult and uncomfortable to walk along.

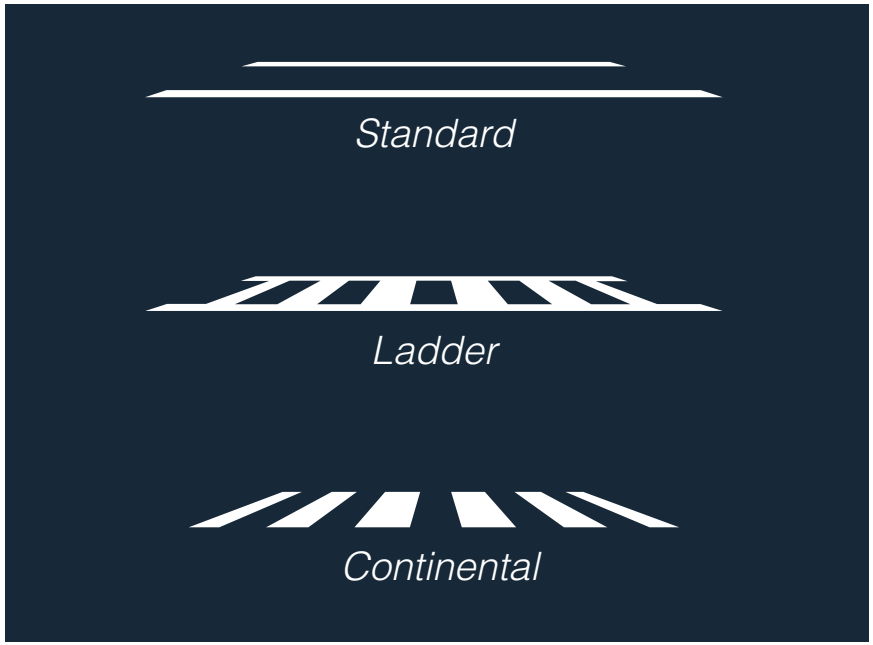
Difficult Pedestrian Crossing at Keim Blvd and Washington Ave

Missing Pedestrian Connection at US 130 near Logan Ave

Map 8: Sidewalk Gap Assessment

Pedestrian Crossing Assessment

Along with sidewalk connectivity, the project team assessed the location, spacing and type of existing pedestrian crossings within the study area. In general, downtown Burlington is well-served by crosswalks, as shown in Map 9. Most intersections north of (and including) Broad Street have marked crosswalks. The area south of Broad St has fewer crosswalks, except for U.S. 130 which has crosswalks at most signalized intersections. Along the main corridors (U.S. 130, High St, and Broad St) the presence of crosswalks roughly corresponds to whether the intersection is signalized, with nearly all signalized intersections having marked crosswalks. The intersection of US 130 and NJ 413 is one exception where the crosswalks are not consistently provided. Based on site observations and public comments through the Wikimap, traveling through this intersection and walking north through the Keim Blvd Circle is very challenging for pedestrians.



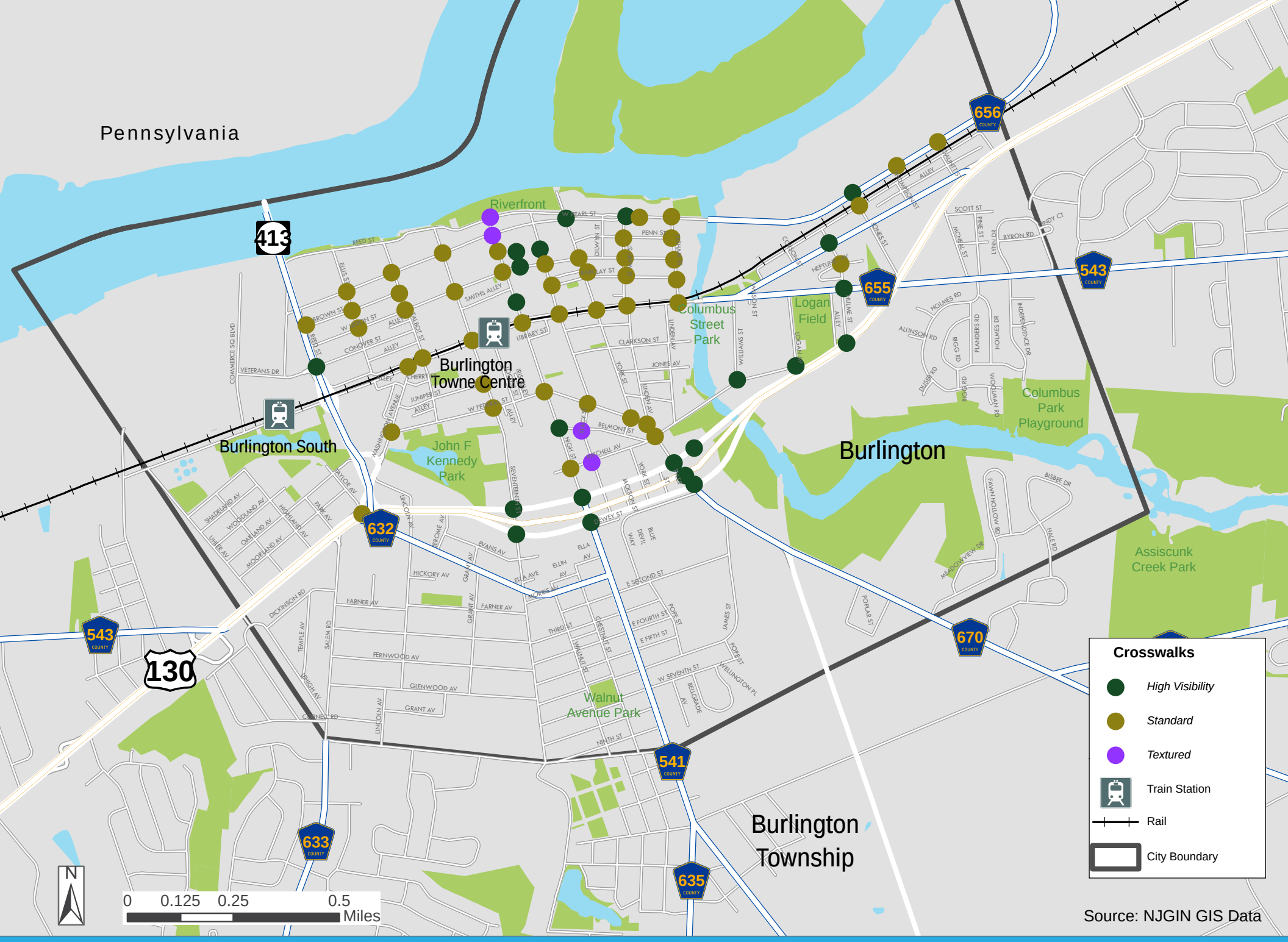
Types of Crosswalk Treatments

Nearly all existing crosswalks north of U.S. 130 are "standard" style crosswalks while those along U.S. 130 are "high visibility." High visibility style includes both ladder and continental styles. The differences between these styles of crosswalks are shown in the graphic below. Additionally, several crosswalks within historic Burlington City are textured. While these crossings are aesthetically pleasing in historic areas, they do not have the same visibility as high-visibility crosswalks.

Map 8 shows the presence of each type of existing crosswalk treatment. At locations with multiple types of crosswalks (i.e. high visibility and standard) the lower (less visible) type of crosswalk is denoted on the map. Some crosswalks with existing high visibility or standard crosswalks are still missing crosswalks along some legs, and thus should be considered for upgrades.

Additionally, a median refuge island with Rectangular Rapid Flashing Beacon (RRFB) is present on High Street at Belmont Street, in front of the municipal complex. This treatment enhances pedestrian mobility and, along with other treatments, will be further discussed in the recommendations section.

Existing Pedestrian Refuge Island with Rectangular Rapid Flashing Beacon (RRFB) near Wilbur Watts Elementary School



Map 9: Pedestrian Crossings

Bicycle Circulation

Within the City limits, the only dedicated bicycling facility are the Delaware River Heritage Trail and a few pedestrian paths, as shown in Map 10. The Delaware River Heritage Trail operates as a sidepath along the entirety of Commerce Square Blvd before turning east under the Burlington-Bristol Bridge and continuing along the Delaware River promenade. Once complete, the larger Delaware River Heritage Trail will continue along both sides of the Delaware River shore between Trenton and Palmyra with ample access to the River itself.

The 2010 Circulation Element recommended a network of bicycle lanes and paths throughout the City which is presented in Figure 3. At this time none of the routes have been implemented.

Bicycle Parking

Bicycle parking facilities are needed to extend bicycle use from an opportunity for recreation to a feasible mode of transportation. The majority of existing bike racks in the City are located near schools, near train stations, and along the Delaware River Heritage Trail. There is a lack of bicycle parking near downtown and other commercial areas in the City. Most of the racks in the City are "comb" style racks, an older design type.

Older style racks, such as the "comb"/ "schoolyard," "toast," and "wave" are not recommended because they do not properly support the bicycle frame, generally do not facilitate locking of the frame to the rack, and frequently cause interference between the handlebars of adjacent bikes when the rack is near capacity. Recommended racks include the "inverted U," "A," and "post and loop."

Map 10: Existing Bicycle and Pedestrian Paths

Proposed Trail, Bicycle, Greenway & Waterway Network

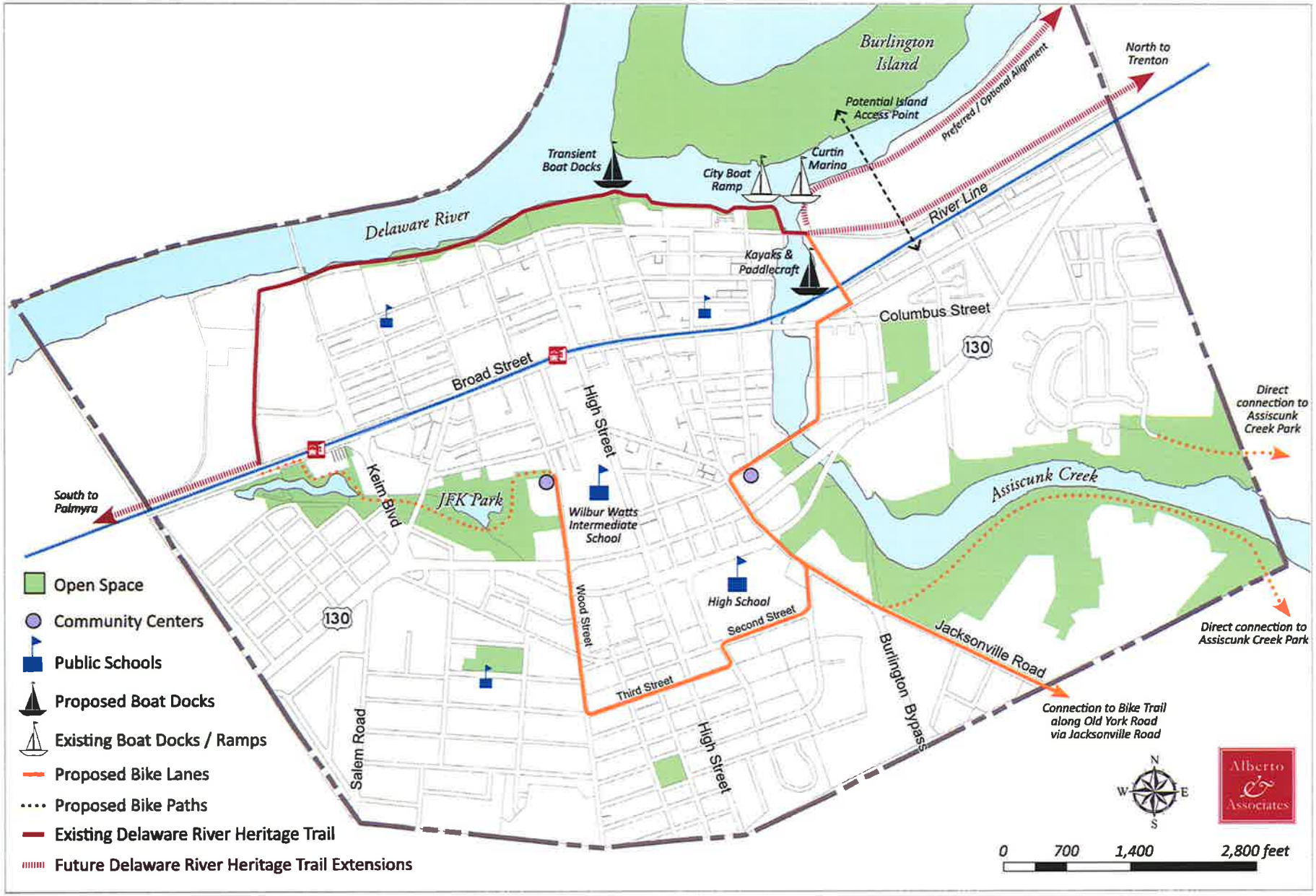


Figure 3: Proposed Trail, Bicycle, Greenway & Waterway Network - Circulation Plan 2010

Transit Service

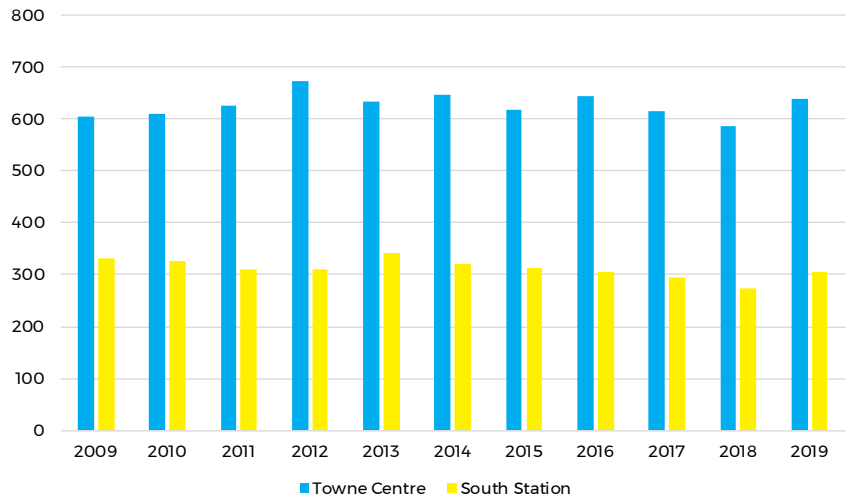
The City of Burlington is served by multiple forms of public transit with connections to adjacent municipalities, as well as destinations beyond New Jersey.

NJ Transit River Line

New Jersey Transit operates a light-rail line, the River Line, between Camden and Trenton through the City of Burlington. Two stops are located in the City – the Burlington South Station is located on West Broad Street and Keim Boulevard at Burlington Commerce Square, while the Burlington Towne Centre station is located at the intersection of Broad and High Streets in the City's downtown. Burlington Towne Centre has the 3rd highest ridership of any station on the route. Comparative ridership statistics for the two Burlington stations are presented in Figure 4. The River Line provides connections to Amtrak, SEPTA and New Jersey Transit's Northeast Corridor route in Trenton, New Jersey Transit's Atlantic City Line in Pennsauken, and the PATCO Speedline in Camden, in addition to local bus service transfers throughout the line.

The Burlington South station provides parking for 368 vehicles and the Burlington Towne Centre station provides limited parking and is meant to be more of a "walk and ride" station. The River Line provides regional access to Burlington City residents and has the potential for enhancing economic development and personal mobility. Bicycles are permitted on all River Line trains.

Figure 4: Average Weekday passenger boardings



NJ Transit Bus

The Route 409 bus provides service between Philadelphia and Trenton with stops at Broad and High Streets, and Broad and Talbot Streets in Burlington City. The High St stop provides service to the Burlington Town Centre River Line stop. The route also provides stops in Camden, Pennsauken, Cinnaminson, Delran, Willingboro, Burlington Township, Florence, Fieldboro, Bordentown and Hamilton.

The Route 413 bus provides service between Florence and Camden with stops in Burlington City along High St at U.S. 130, Belmont St, E Federal St, and Library St, and along E Broad St at Library St, York St, St. Mary St, Williams St, Hulme St, and Jones St. The route also provides stops in Camden, Cherry Hill, Maple Shade, Moorestown, Hartford, Hainesport, Mt. Holly, Westampton, Burlington Township, and Florence.

The Route 418 bus provides service between Trenton and Camden with the sole stop in Burlington City/Township on US 130 at Salem Rd. The route also provides stops in Willingboro, Maple Shade, Cherry Hill, Merchantville, and Pennsauken.

Riders can transfer between the 409 and 413 buses at Broad and High Streets, and between the 409 and 418 buses on US 130 at Salem Rd. Additionally, when the River Line is not in service, NJT operates Route 343 as a replacement along roughly the same route.

Bus routes are shown along with other activity generators on Map 6.

County Service

Burlington County provides shuttle service for senior citizens and disabled persons through Burlington County Transportation Services (BCTS) curb to curb shuttle service. Service is provided to shopping/ personal service facilities, medical appointments, nutrition sites, educational facilities, and limited employment locations.

For all residents, the County Board of Chosen Freeholders also maintains a fixed route bus service through BurlLink. BurlLink does not provide service within Burlington City, the nearest stop is in Beverly City at the Beverly light rail station.

Public Parking

The City has several public parking lots in the downtown and outlying areas north of Route 130 that are identified on the Public Parking Lots chart. The largest available downtown parking lots are the 200 block of High Street lot with 198 spaces and the 300 block of High Street lot with 234 spaces. A gravel lot at the end of Pearl Boulevard provided an estimate 150 spaces, but is currently being developed as part of the previously detailed Pearl Pointe development. The Burlington South station of the River Line provides 368 parking spaces. The City also has limited on-street parking spaces in front of businesses that are available for shorter periods of time. Adequate curb side parking within the commercial district is important to maintain in order to encourage patronage of local businesses.

On-Street Parking

The City has two types of on-street parking; angled and parallel. Most of the on-street parking in the downtown area including High Street are parallel parking spots. Angled parking is located on High Street (between Library Street and Belmont Street) and Broad Street (between Conrow Street and Ellis Street and High Street and York Street). As shown in the photos to the right the parking spots on High Street are longer than average striping of 20'-21'. Restriping of existing parking spots in the downtown area could lead to increased parking capacity.

Parallel Parking on High Street

Freight and Goods Movement

Freight is an integral part of New Jersey's transportation network with nearly 75% of all statewide freight tonnage being moved by trucks. Though commonly thought of as consisting mainly of long-distance shipments on interstate highways and rail, freight shipping is increasingly becoming local with the burgeoning e-commerce and retail home delivery industry leading to the demand and ability to ship items to their final destinations more quickly. Nationally, 51% of all freight (by weight) travels less than 100 miles, and 83% travels less than 500 miles. Additionally, 82% of freight traveling less than 100 miles is moved by truck. Since 2009, e-commerce has grown 15% annually, and is expected to account for 15% of all retail commerce by 2020. Compounding this is the consumer expectation of two-day (or faster) delivery. With many of these deliveries directed to homes, large vehicles must access more local roads. This can present issues for older communities such as Burlington, particularly on narrow roads and/or those used frequently for walking and biking.

Amazon Fulfillment Center

Amazon's fulfillment center recently opened on New Pearl St where it has hired 600 full-time workers. This has been a positive boom for the local economy, but requires the movement of far more trucks to and from the fulfillment center than Burlington City previously experienced. Through the public outreach process, several stakeholders commented on the need to address the prevalence of trucks heading to the fulfillment center traveling on local roads.

RECOMMENDATIONS

Recommendations

This chapter presents recommendations to improve multimodal circulation in the downtown area of Burlington City, with a focus on enhancing the safety, accessibility, and convenience of walking and biking. The section first describes infrastructure-focused pedestrian and bicycle improvements, which are followed by policy and program related recommendations.

Pedestrian Network Improvements

Based upon the existing conditions analysis, feedback from the Steering Committee, and public input through the online interactive map Wikimap, proposed concepts were developed to improve connectivity, access, and safety for pedestrians. The recommendations outlined in this chapter include general planning and design principles applicable throughout the study area, priority areas for completing gaps in the sidewalk network, and pedestrian crossing enhancements.

The proposed improvements are intended as conceptual recommendations that would likely require varying levels of design or further analysis, depending on the magnitude of the improvement. An effort was made to identify concepts that are implementable and emphasize low-cost options, where applicable, such as restriping of existing roadways or enhanced signage.

Projects may be implemented over time as funding allows. The recommendations may be used to support grant applications, integrate pedestrian projects into the capital improvement pipeline, and/or incorporate pedestrian improvements into routine roadway maintenance and resurfacing projects or development activity to minimize additional costs.

Pedestrian Design Treatments

While the proposed concepts were focused on routes connecting major destinations, many of these improvements include common design elements that would be applicable in other parts of the City and could be incorporated into roadway improvement projects as opportunities arise. These common elements can generally be described using two categories: (1) enhanced pedestrian crossings, and (2) traffic calming measures.

The following sections summarize key elements of these treatments. As the City implements various roadway projects, it is recommended that pedestrian facility design be based on current best practices and design guidance including:

- NJDOT New Jersey Complete Streets Design Guide
- NACTO Urban Street Design Guide
- FHWA Small Town and Rural Multimodal Networks
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- Manual on Uniform Traffic Control Devices (MUTCD)

Enhanced Pedestrian Crossings

Based on the surrounding context, traffic volumes, and traffic speeds, a variety of design elements can be employed to create “enhanced crossings” that improve pedestrian visibility, enhance user comfort, increase driver compliance with the State’s “stop for pedestrians” law, and/ or decrease the crossing distance for pedestrians. On low volume and low speed roadways, crosswalk striping is often sufficient. However, on higher volume and/or higher speed roadways, additional treatments are recommended.

Elements of an enhanced pedestrian crossing may include:

- High visibility crosswalk striping
- Pedestrian crossing signage and beacons
- Intersection daylighting

Additional design recommendations and design details on pedestrian design treatments are available in the New Jersey Complete Streets Design Guide.

Traffic Calming Measures

Traffic calming strategies aim to reduce motor vehicle speeds. Lower speeds support a more bicycle- and pedestrian-friendly environment by reducing instances of vehicles overtaking bicyclists, enhancing the drivers' ability to see and react to bicyclists and pedestrians, and reducing the severity and likelihood of crashes for all street users. Reducing vehicle speeds also improves bicyclist comfort by reducing the speed differential between motor vehicles and bicyclists and is a critical element of a bicycle boulevard. Benefits of traffic calming techniques include:

- Decreased motor vehicle speeds
- Decreased crash likelihood and crash severity for all street users
- Improved bicyclist and pedestrian comfort
- Improved conditions for pedestrians and residents by reducing vehicle speeds
- Establishes and reinforces bicycle priority on bicycle boulevards
- Provides opportunity for landscaping and other community features, such as benches, communal space, and artistic painted intersections, benefiting all roadway users and residents

Speed management treatments can be divided into two types: horizontal and vertical deflection. These treatments can be implemented individually or in combination to increase their effectiveness. As with all roadway features, traffic calming elements should be designed to consider the context and needs of the street. Enhanced signing strategies can also support lower traffic speeds. Radar speed signs or driver feedback signs, for example, alert drivers of their speed and the actual speed limit. These relatively low cost, easily implementable tools have been shown to have a moderate impact on reducing 85th percentile speeds, and a significant impact on reducing high-end speeds – those exceeding the speed limit by 10 MPH or more (Spotlighting Speed Feedback Signs, Public Roads/FHWA, 2016).

Horizontal Deflection

Horizontal speed control devices are used to slow motorists by either visually narrowing the roadway or deflecting motorists through an artificial curve. Where possible, sufficient space should be provided for bicyclists to pass around the outside of the elements. Horizontal deflection includes:

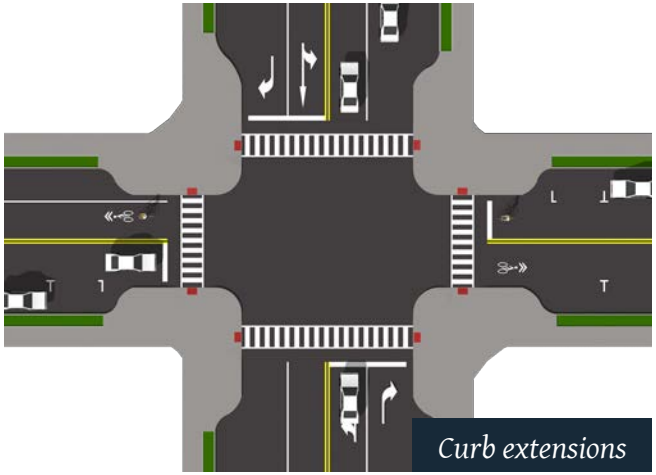
- Curb extensions
- Chicanes
- Neighborhood roundabout

Vertical Deflection Treatments

Vertical speed control measures are composed of wide, slight changes in pavement elevation that self-enforce a slower speed for motorists. Narrow and abrupt speed bumps that are often used in private driveways and parking lots are not recommended for public streets and are hazardous to bicyclists. Vertical deflection includes:

- Speed humps
- Speed tables
- Raised crosswalk / raised intersection
- Speed cushion

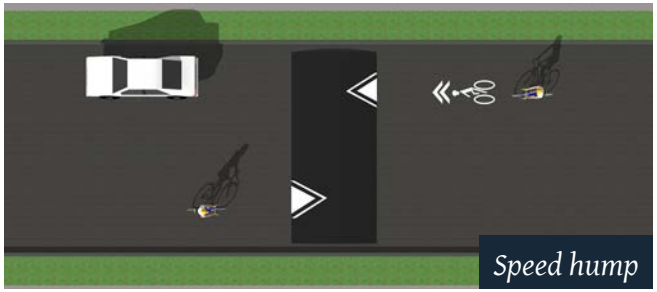
Additional design recommendations and design details on traffic calming measures are available in the New Jersey Complete Streets Design Guide.



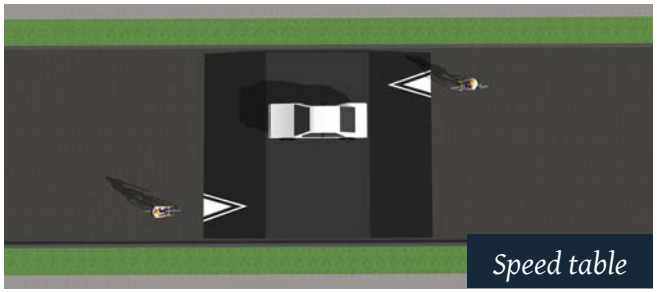
Curb extensions

Chicanes

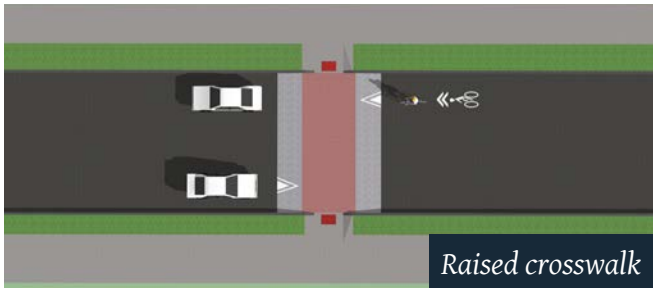
Neighborhood roundabout



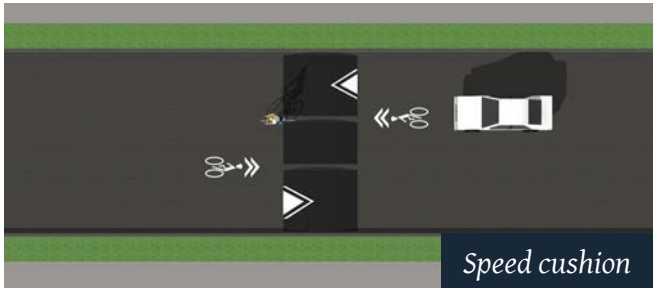
Speed hump



Speed table



Raised crosswalk



Speed cushion

Prioritized Sidewalk Plan

Most of the streets in the study area have sidewalks on both or at least one side of the roadway; however, there are several notable gaps in the sidewalk network. High priority sidewalk segments to be completed were identified based on the existing conditions review and input from the steering committee and public. The guiding approach was to identify critical connections between pedestrian activity centers (schools, businesses, transit, etc.) and then provide sidewalk along at least one side of these routes. Table 6 and Map 11 show the sidewalk completion priorities identified for this plan.

Table 6: Prioritized Sidewalk Plan

Street	From	To	Length (ft)
Riverbank St	Reed St	Ellis St	640
Riverbank St	High St	York St	950
York St	Riverbank St	D&R Heritage Tr	340
Keim Blvd	US 130	Veterans Dr	1,900
Clarkson St	Lawrence St	York St	450
High St (CR 541)	US 130 NB	US 130 SB	330
US 130 NB	Logan Ave	Court Dr	1,500
Mitchell Ave	Mitchell Ct	Logan Ave	1,450

New sidewalks should have a minimum width of five feet, which allows two people to pass each other and is generally sufficient for most residential neighborhoods. In areas with greater pedestrian activity, such as downtown or major walking routes to schools, a wider width should be considered. Where right-of-way allows, a planting strip between the sidewalk and curb should be considered to provide an additional buffer between pedestrians and the roadway.

During sidewalk construction, curb ramps compliant with the Americans with Disabilities Act (ADA) must be installed at street crossings to ensure the sidewalk network is accessible for everyone, including seniors, children, families with strollers, and those in wheelchairs or with other mobility impairments. At driveway crossings, design should make it clear and intuitive that the pedestrian has the right-of-way. As illustrated in the image below , the sidewalk should extend through the driveway. A continuous, level sidewalk requires vehicles to cross at sidewalk grade, thereby prioritizing pedestrian movements and encouraging motorists to turn at slower speeds and stop for pedestrians.

Pedestrian Unfriendly and Friendly Sidewalk and Driveway Design

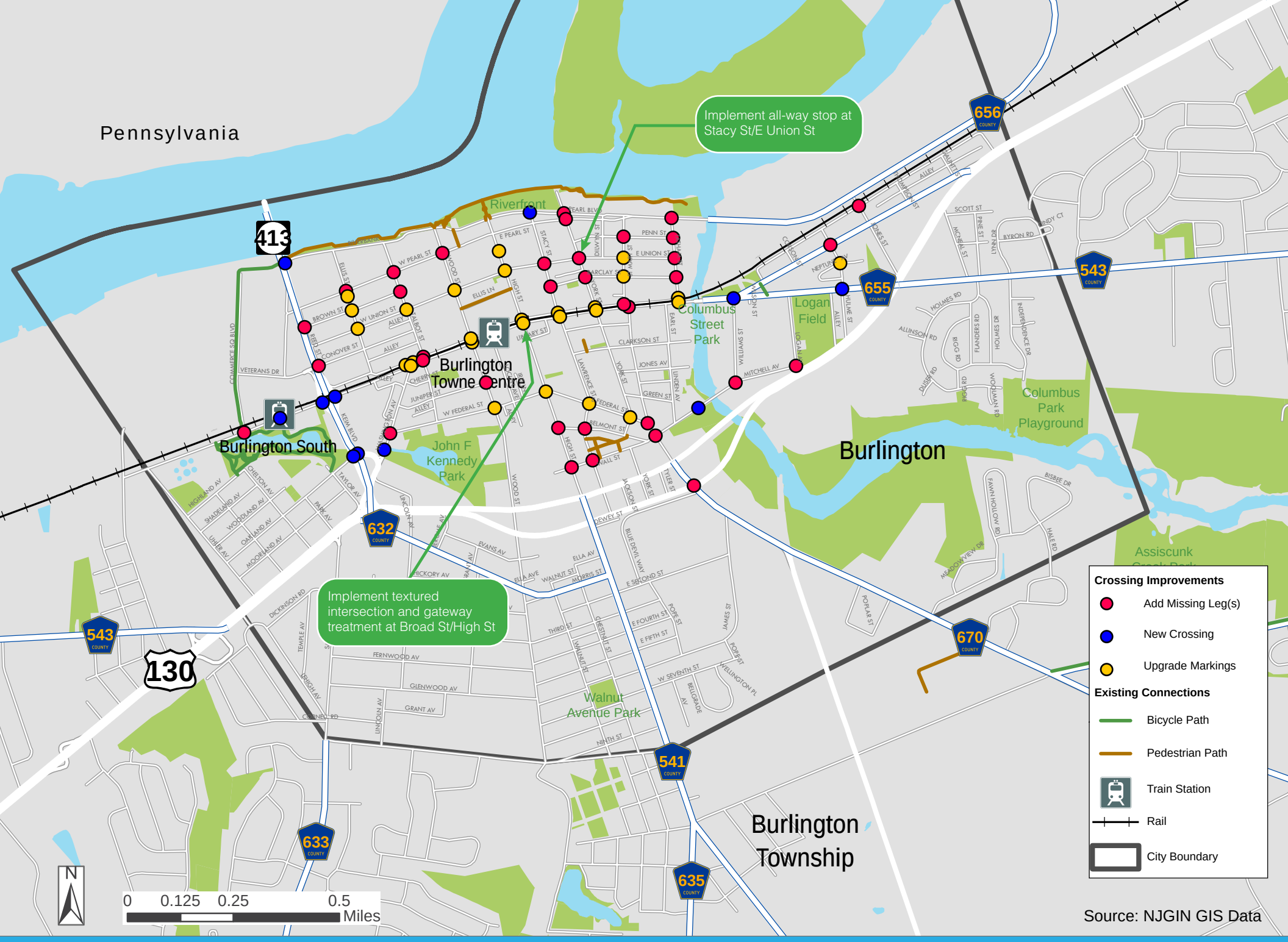
Study Area-wide Crossing Improvements

Along with completion of the sidewalk network, it is essential to provide safe and regular crossing opportunities at intersections throughout the City. Through the existing conditions assessment, significant gaps in crossing opportunities along major roads were identified and mapped. Map12 presents recommendations for improving roadway crossings through the study area, through a combination of:

- New designated crossing locations to address these gaps
- Enhancing existing crossings that would benefit from higher levels of treatment
- Completing all four legs of the intersection with crosswalks

Map 12 demonstrates the need for new marked and/or enhanced crossings along higher speed, higher volume roads that currently act as barriers including Keim Boulevard, Route 130, and Riverbank Street/ Pearl Boulevard. Additional study will be needed to determine the appropriate treatment at each of these locations. FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2017) can be used to select treatments based on the number of lanes, posted speed, traffic volumes, and other roadway characteristics.

Map 11: Prioritized Sidewalk Plan



Map 12: Proposed Crossing Improvements

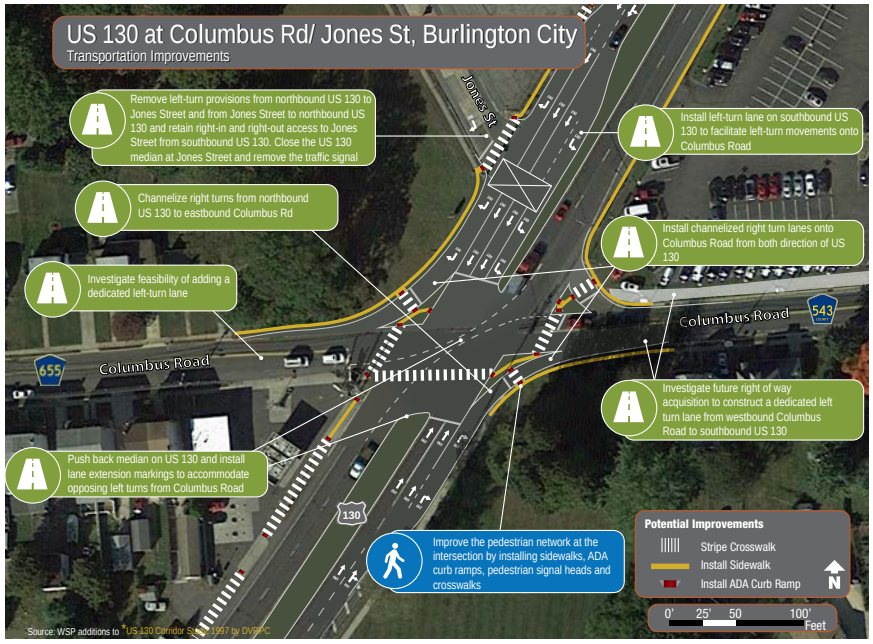
Improvements at Focus Area Intersections

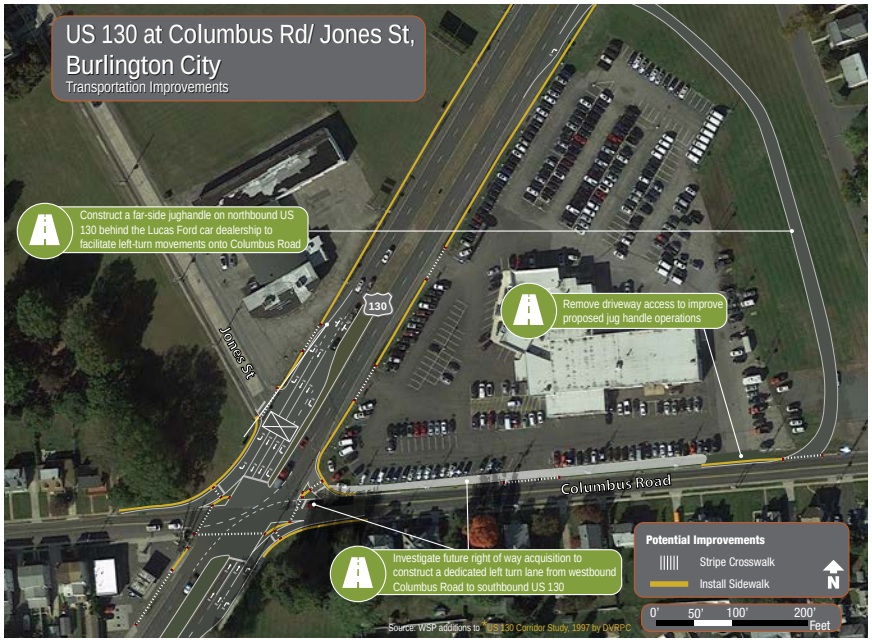
Recommendations in this plan are proposed on municipal, county and state roadways. Therefore, it is important for the City to collaborate with different jurisdictions to implement projects. The City should coordinate with NJDOT, Burlington Bridge Commission, and Burlington County to design and implement proposed recommendations in the River Route Corridor Study as well as the ongoing CR 541 Study. There are several multijurisdictional intersections from the River Route Study as listed below (figures below and to the right), that would need collaboration:

- US 130 & Keim Blvd
- US 130, CR 655, & Jones St
- US 130, Park Ave, & Salem Rd

In addition, specific recommendations were developed for the following "focus area intersections" that were identified as problem areas during the existing conditions assessment:

- US 130 and Jacksonville Road
- Keim Boulevard and Washington Avenue
- Bordentown Road (CR 657) and Columbus Street (CR 655)





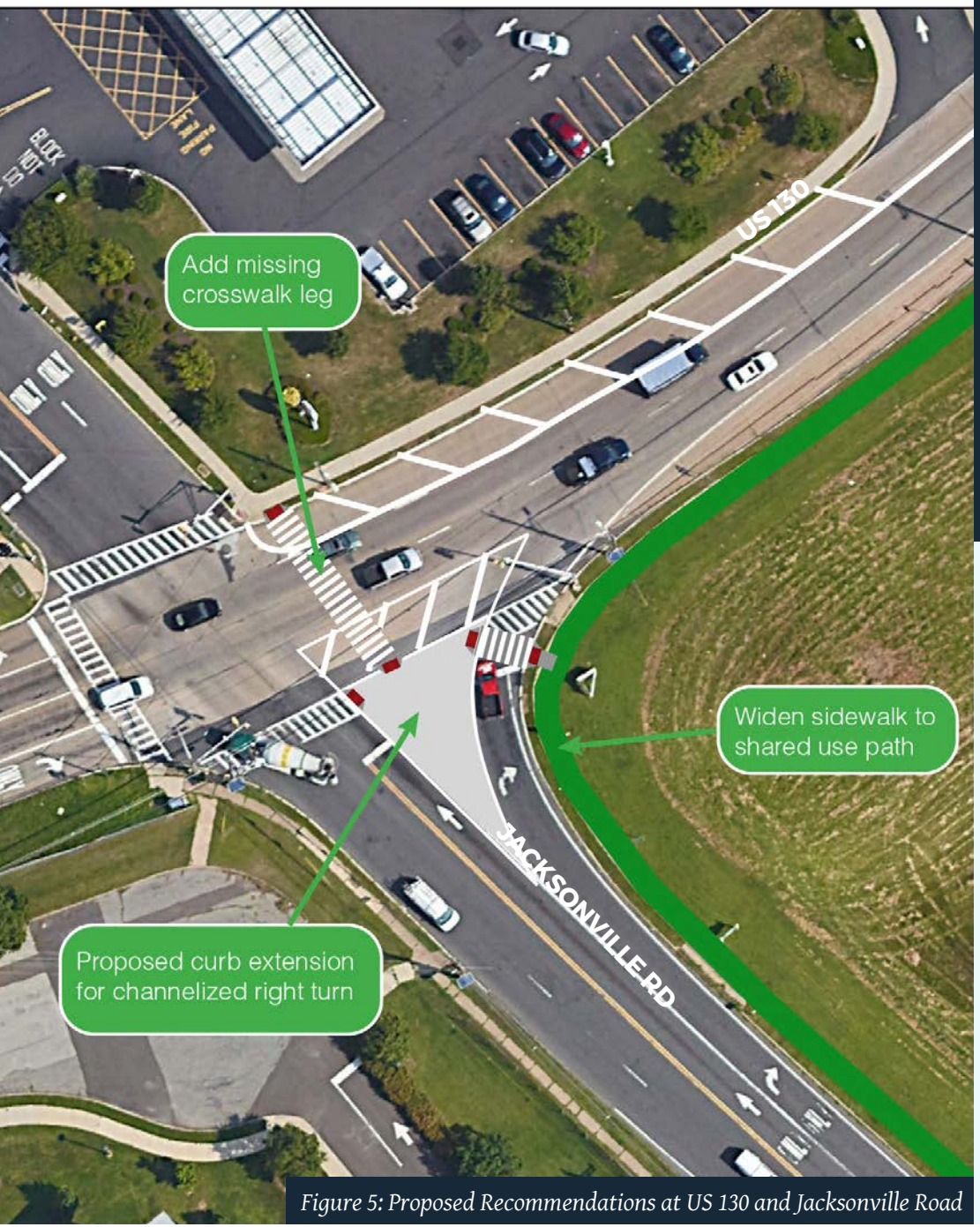


Figure 5: Proposed Recommendations at US 130 and Jacksonville Road

US 130 and Jacksonville Road

Existing Issues

1. Missing crosswalk at the eastern leg of the intersection
2. Wide right turning radius from Jacksonville Road on to US 130
3. Long crossing distance for pedestrians
4. Lack of accommodations for bicyclists along Jacksonville Road and through the intersection

Proposed Recommendations (see Figure 5)

- Install pedestrian refuge island, which would significantly reduce the crossing distance for pedestrians while still accommodating the heavy right turning traffic movements
- Install a crosswalk on the eastern leg of the intersection, and re-time signal to provide a safe pedestrian crossing phase
- Mark channelization along northern and southern most lanes on Route 130 to ease movements
- Widen existing sidewalk along Jacksonville Road and Route 130 to a shared use path (10') to create a safe facility for bicyclists riding along Jacksonville Road
- A proposed development at the southeast corner of this intersection provides an opportunity to incorporate these recommendations through the development process

Bordentown Road (CR 657) and Columbus Street (CR 655)

Existing Issues (see Figure 6)

1. The skewed geometry at this intersection encourages high speed turns between Bordentown Road and Columbus Street
2. No safe pedestrian crossing opportunities in this area; both roads acts as barriers due to the speed and volume of traffic

Proposed Recommendations (see Figure 7)

A conceptual improvement plan was developed for this intersection and reviewed with the County Engineer's office. The proposed concept would:

- Add curb extension on Columbus Street
- Add STOP control for Columbus Street
- Add high visibility crosswalk with Rectangular Rapid Flashing Beacon (RRFB) across Bordentown Road
- Add high visibility crosswalks across Williams Street and Columbus Street

Figure 6: Existing Conditions at Bordentown Road and Columbus Street

Figure 7: Proposed Recommendations at Bordentown Road and Columbus Street

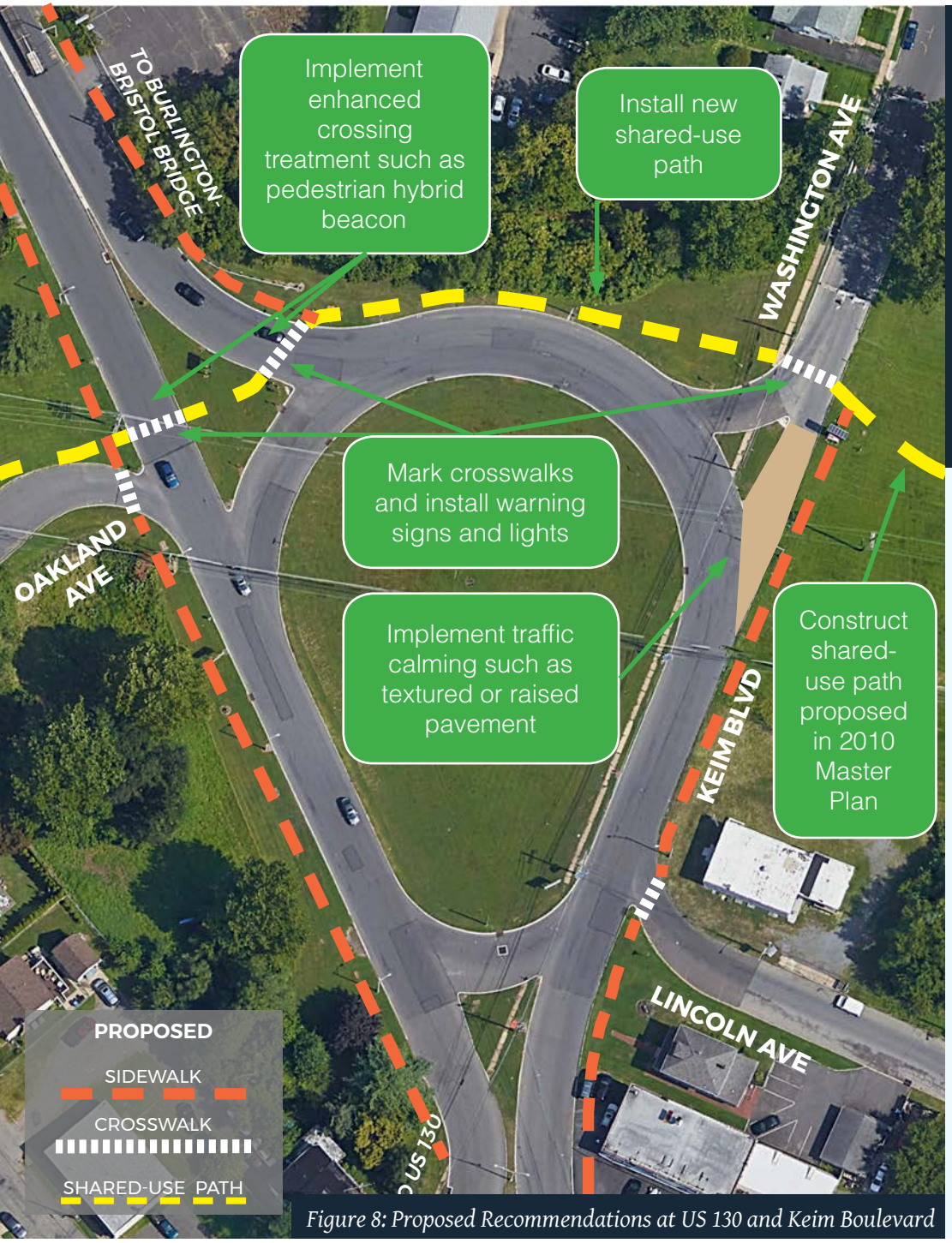


Figure 8: Proposed Recommendations at US 130 and Keim Boulevard

Keim Boulevard and Washington Avenue

Existing Issues

1. Keim Boulevard presents a major barrier to bicycle and pedestrian travel between the downtown and neighborhoods to the west. The area around the intersection is missing sidewalks, crosswalks, ADA curb ramps, and pedestrian signal heads.
2. The traffic circle immediately north of the intersection reduces pedestrian mobility and reduces the usable park space surrounding the circle. There are no safe pedestrian connections between John F Kennedy Park and Oakland Avenue and the surrounding residential neighborhoods.

Proposed Recommendations (see Figure 8)

The proposed improvements shown in Figure 8 were developed to provide a short-to-medium term option to improve pedestrian and bicycle circulation through this area. Longer term options that reconfigure geometry and turning radii to slow speeds and create a safer environment - similar to those from the River Route Study shown on page 41 - should also be considered. Both short and long term options would require coordination with the County and NJDOT.

- Construct shared use path in John F Kennedy Park as proposed in the 2010 Circulation Plan
- Connect proposed shared use path in John F Kennedy Park to Oakland Avenue
- Complete sidewalk network in this area
- Implement traffic calming on Washington Ave at Keim Boulevard
- Add high visibility crosswalks with Pedestrian Hybrid Beacons (PHB) at NB and SB approaches of Keim Boulevard
- Add high visibility crosswalk at Washington Avenue and Keim Boulevard and at Lincoln Avenue and Keim Boulevard

Bicycle Network Improvements

With its compact layout and network of low-speed, low-volume residential streets, Burlington City has the potential to be an attractive community for bicycling. The proposed bicycle network presented in this section builds upon the community's strengths including its historic downtown, schools, parks, the Delaware River Heritage Trail, transit opportunities, and other assets by improving cyclist safety and comfort, enhancing non-motorized access to key destinations, and providing linkages to the regional bicycle network. This section begins by providing an overview of different types of bicycle facilities, and then outlines recommended bicycle-related improvements for the City.

Bicycle Facility Design

Bicycle treatments should be implemented in a standardized manner to create uniform, effective, and recognizable treatments throughout the City. Adhering to national design guidance and best practices for bicycle facilities promotes a universal understanding of bicyclist and motorist behavior and expectations for a given facility type among all roadway users. As the City implements elements of the Plan, facility design should refer to current best practice guidance for more detailed information, including:

- NJDOT New Jersey Complete Streets Design Guide
- NACTO Urban Bikeway Design Guide
- FHWA Small Town and Rural Multimodal Networks
- AASHTO Guide for the Development of Bicycle Facilities
- Manual on Uniform Traffic Control Devices (MUTCD)

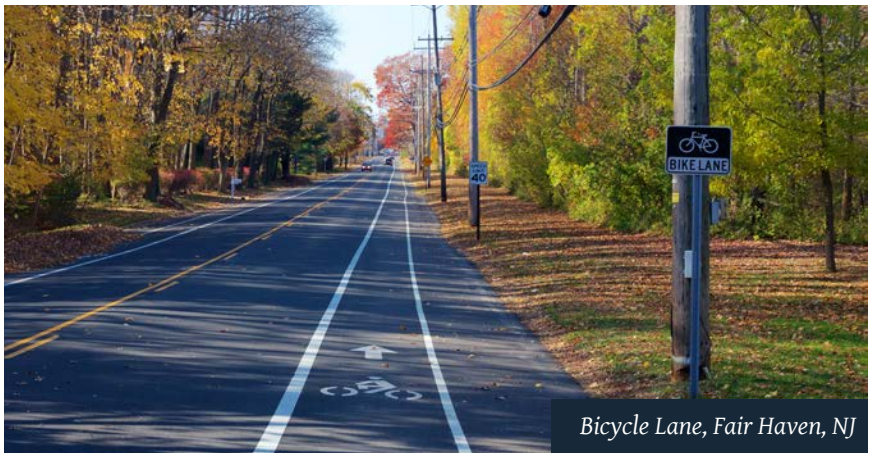
The following section summarizes the main characteristics, applications, and benefits of the following common types of bicycle facilities:

- Conventional bicycle lanes
- Buffered bicycle lanes
- Separated bicycle lanes
- Bicycle boulevards
- Shared-lane markings

While some of these treatments may not be applicable to Burlington City under current conditions, they are included to illustrate the range of bicycle treatments that are available today to meet differing contexts, needs, and constraints.

Conventional Bicycle Lane

Bicycle lanes provide an exclusive space for bicyclists through the use of pavement markings and signage. They enable bicyclists to ride at their preferred speed, free from interference from motorists, and help facilitate predictable behavior and interaction between bicyclists and motorists. Bicyclists may leave the bicycle lane to pass other bicyclists, make turns, or avoid obstacles and conflicts. Motorists may pass through the bicycle lane to access parking or make other turning movements, but they may not stand or park in the lane.



Bicycle Lane, Fair Haven, NJ

Buffered Bicycle Lane

Buffered bicycle lanes can enhance conventional bicycle lanes by providing a marked buffer space and creating additional horizontal separation between bicyclists and motorists. This buffer space also helps to calm traffic by visually narrowing the travel lanes. While buffers are typically used between bicycle lanes and travel lanes to increase bicyclist comfort, they can also be used between bicycle lanes and parking lanes to discourage cyclists from riding too close to parked vehicles, decreasing the risk of conflicts with drivers opening their car door.

Buffered Bicycle Lane, Newark, NJ

Separated Bicycle Lane

A separated bicycle lane provides vertical separation to improve safety, prevent encroachment, and deter double-parking. Physical separation from passing traffic can be provided by bollards, planters, on-street parking, curbing, or medians. This extra separation from motor vehicle traffic makes a separated bicycle lane more attractive for bicyclists of all ages and abilities. Typically used to enhance bicyclist comfort on streets with higher traffic speeds and/ or volumes, they require additional street width and careful consideration of sight distance at intersections and street maintenance needs.

Separated Bicycle Lane, Newark, NJ (source: City of Newark)

Bicycle Boulevard

Bicycle boulevards, also referred to as neighborhood greenways or quiet streets, are traffic calmed streets that prioritize bicycle travel and create a more comfortable bicycling environment. While bicyclists share the street with motor vehicles, the low speed and low volume character of a bicycle boulevard creates a low-stress facility for bicyclists of all ages and all abilities.

Shared-Lane Markings

On roadways where it is not feasible or appropriate to provide dedicated bicycle facilities, shared-lane markings may be used to indicate a shared environment for bicycles and automobiles. Shared-lane markings alone do not reduce bicycle level of traffic stress or create an "all ages and abilities" facility; however, they can provide several benefits, including:

- Assert the legitimacy of bicyclists on the roadway
- Provide directional and wayfinding guidance
- Direct bicyclists to ride in the most appropriate location on the roadway
- Provide motorists with visual cues to anticipate the presence of bicyclists

Additional design recommendations and design details on bicycle facility design are available in the New Jersey Complete Streets Design Guide.


Shared Lane Markings, Princeton, NJ

Proposed Bicycle Network

The proposed bicycle network provides a framework to support the goals of this Circulation Plan. The network utilizes several of the bicycle facilities summarized in the previous section, where feasible, and identifies a series of improvements guided by:

- **Major destinations:** Seeks opportunities to provide convenient access to key destinations
- **Public input:** Incorporates input from the Steering Committee and Wikimap on existing issues and desired routes
- **Roadway constraints:** Prioritizes easily implementable improvements that can be constructed within existing roadway widths with minimal disruption to current roadway configurations, speed limits and existing on-street parking. Burlington City is a built-out community, with very limited opportunities for new path connections or widening of existing streets.
- **Potential trail connections:** Builds upon and connects to existing trails (including the Delaware River Heritage Trail) to enhance network connectivity and leverage existing infrastructure.

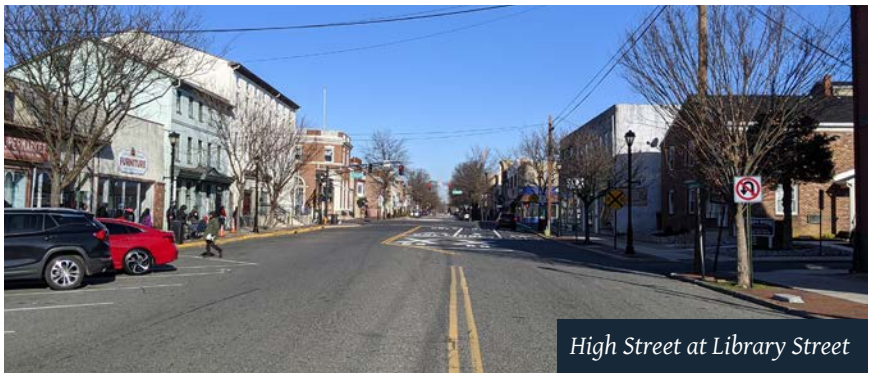
The proposed bicycle network is illustrated in Map 13. When planning for bicycle travel, the constrained nature of the study area in Burlington City's street system requires a thorough evaluation of the needs of various roadway users including bicyclists, motorists, and parked cars. The following section summarizes recommendations for the primary corridors comprising the bicycle network, by facility type.

Bicycle Lane

This category of bicycle facilities is suitable for streets where dedicated space for bicyclists is recommended due to higher traffic volumes and speeds. Candidate streets for bicycle lanes are:

- **Broad Street** from Keim Boulevard to Tatham Street
- **High Street** from Riverbank Street to US 130
- **Stacy Street** from Riverbank Street to Broad Street
- **E Pearl Street** from St Mary's Street to the Pearl Street bridge

Existing and proposed cross-sections were developed for Broad Street and High Street to determine how bike lanes would impact the street layout (see Figures 9 through 18). Based on existing curb to curb dimensions, both streets can accommodate bicycle lanes without needing to remove vehicular travel lanes or on-street parking.



High Street at Library Street

Bicyclist on Broad Street

One Way Bicycle Lane

This category of bicycle facilities is recommended for streets that are designated as one-way streets and can accommodate a bicycle lane without impacting existing travel or parking lanes. Candidate streets for one-way bicycle lanes are:

- **E Pearl Street** from High Street to St Mary's Street
- **W Pearl Street** from Pearl Street to York Street

Map 13: Proposed Bicycle Network Improvements

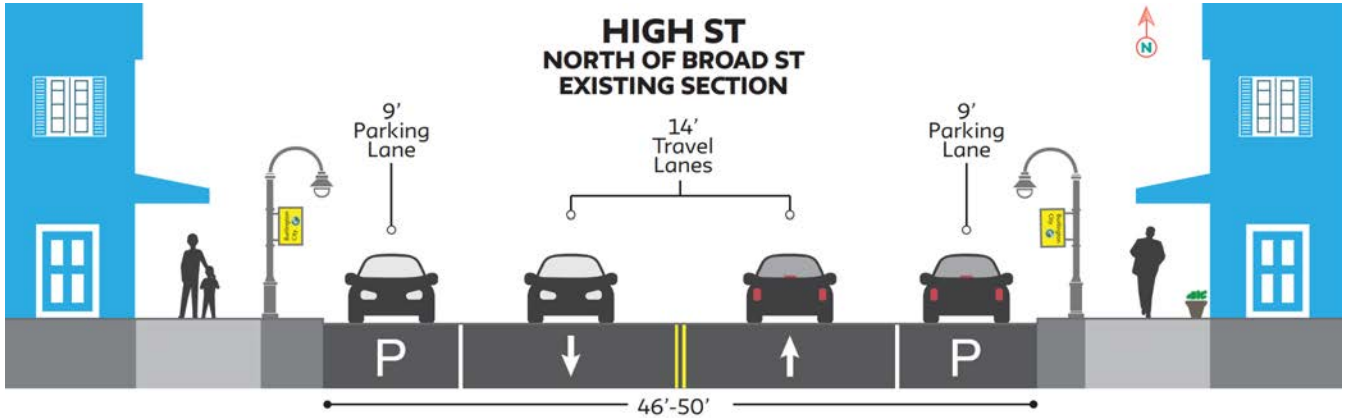


Figure 9: Existing Cross Section High Street - North of Broad Street

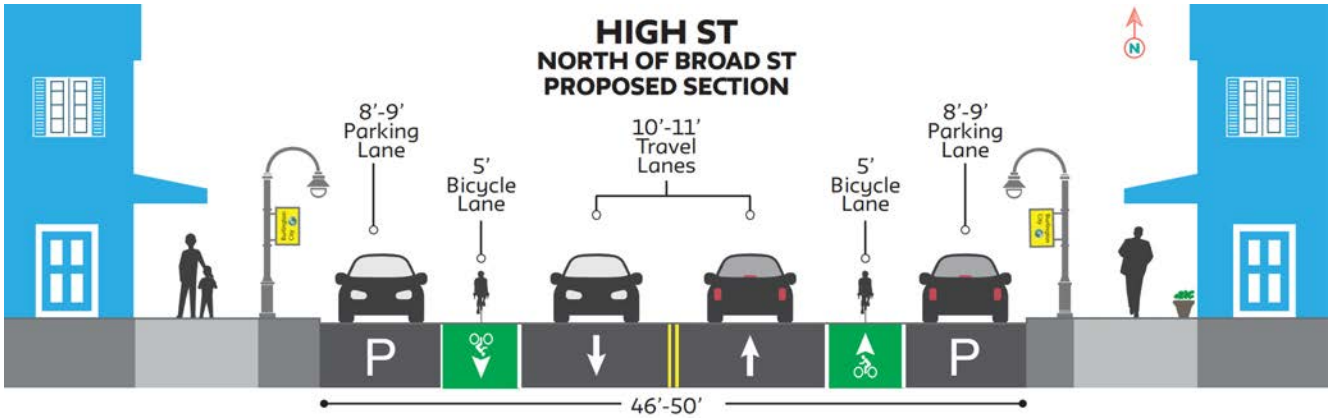


Figure 10: Proposed Cross Section High Street - North of Broad Street

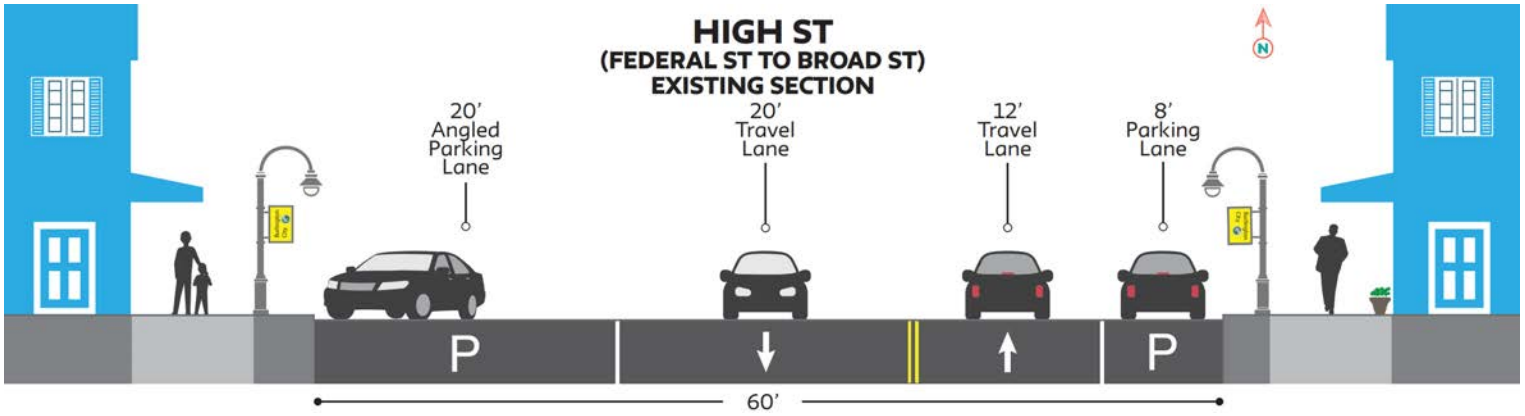


Figure 11: Existing Cross Section High Street - Federal Street to Broad Street

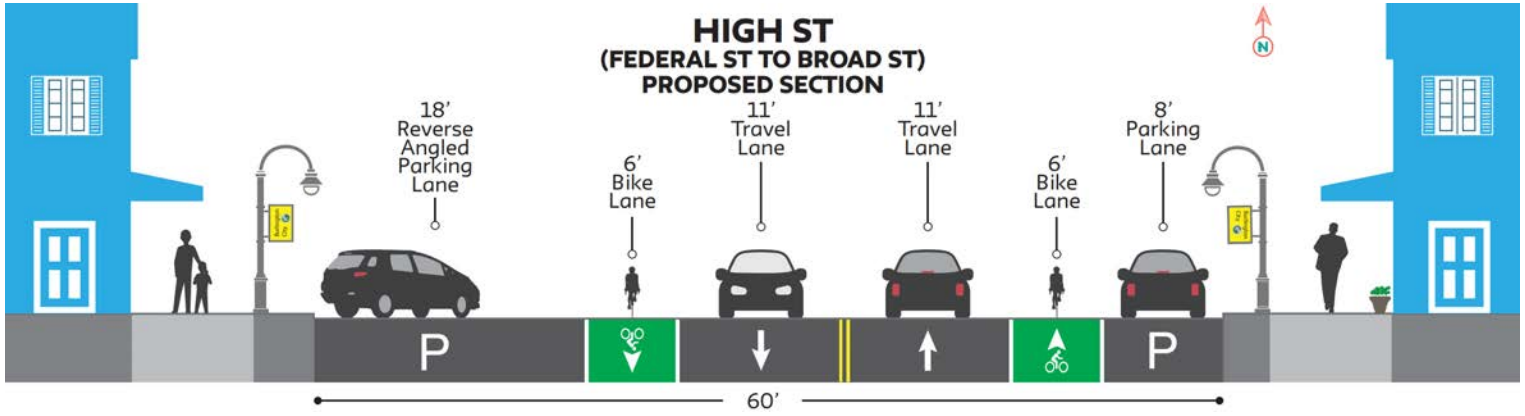


Figure 12: Proposed Cross Section High Street - Federal Street to Broad Street

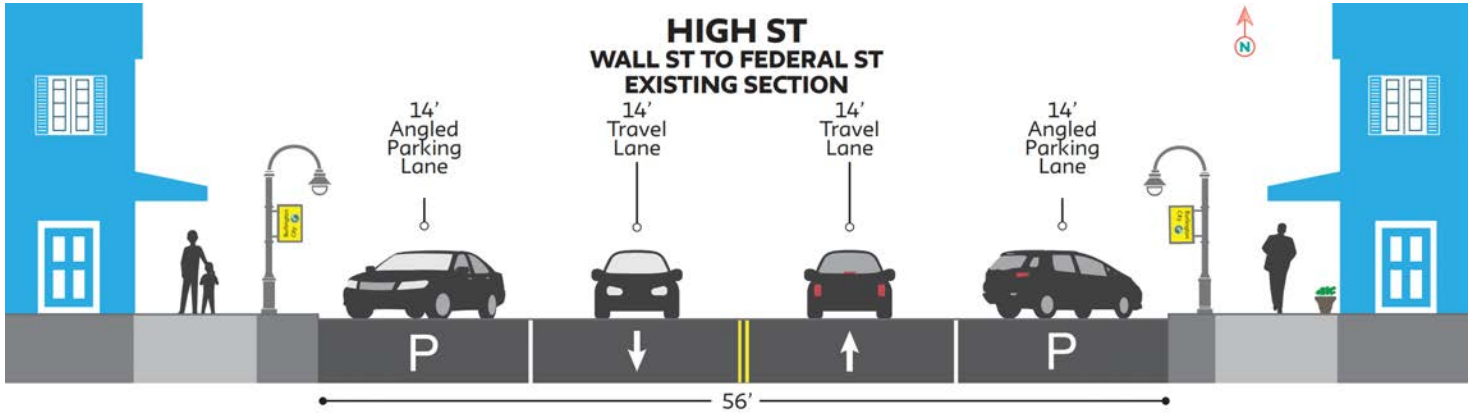


Figure 13: Existing Cross Section High Street - Wall Street to Federal Street

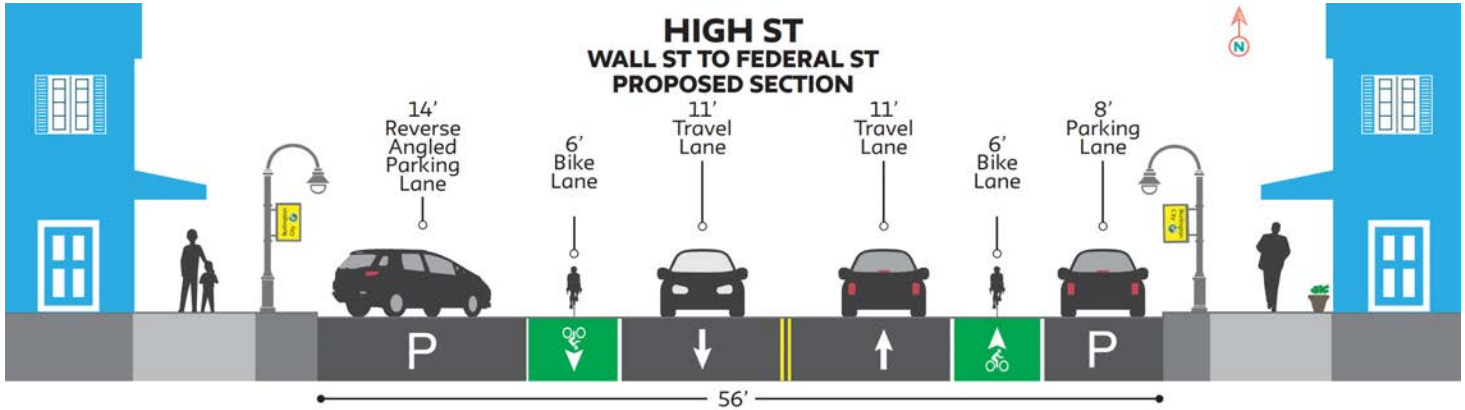


Figure 14: Proposed Cross Section High Street - Wall Street to Federal Street

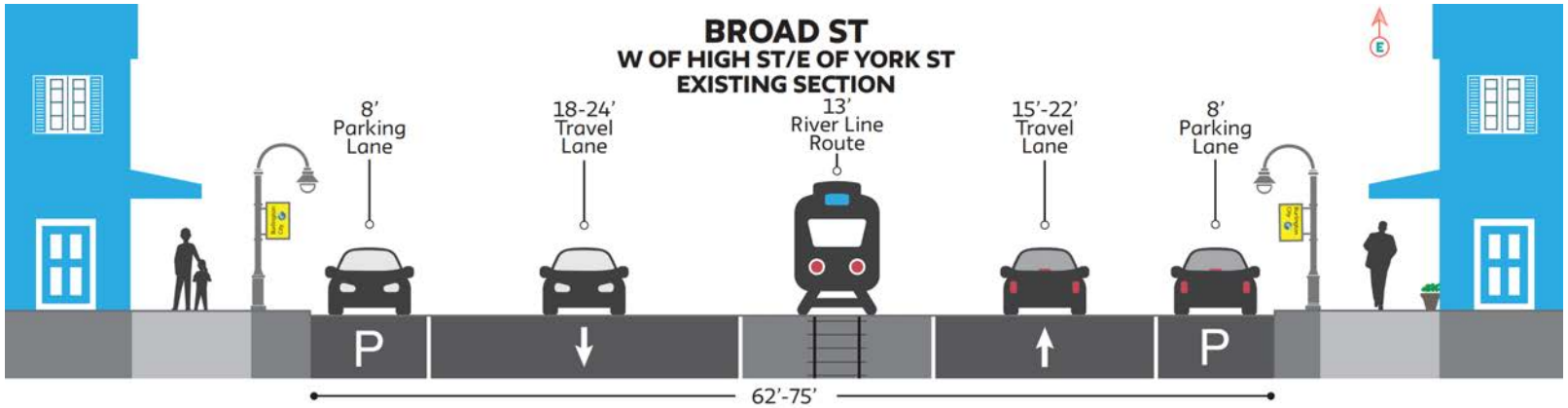


Figure 15: Existing Cross Section Broad Street - West of High Street/East of York Street

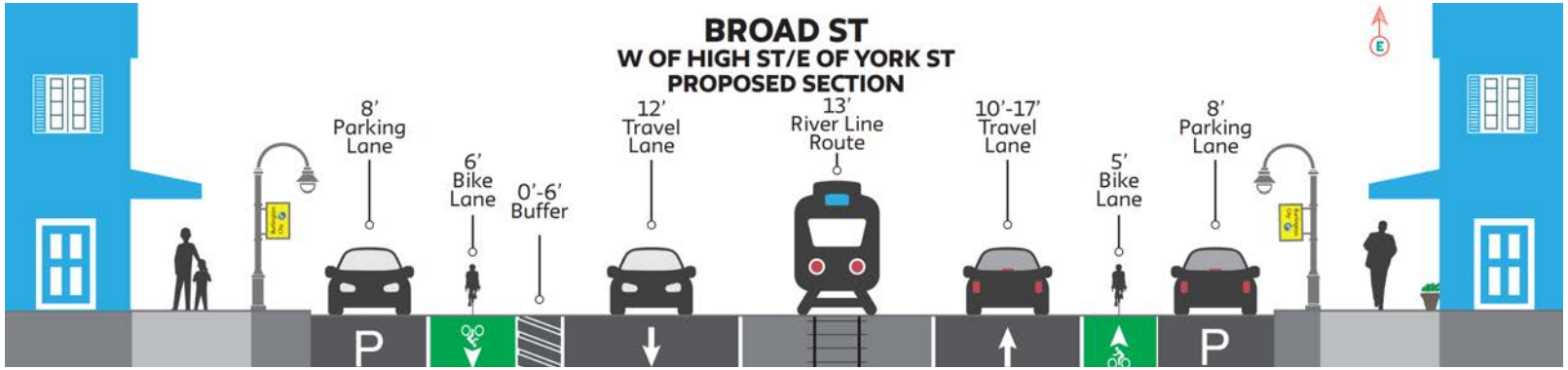


Figure 16: Proposed Cross Section Broad Street - West of High Street/East of York Street

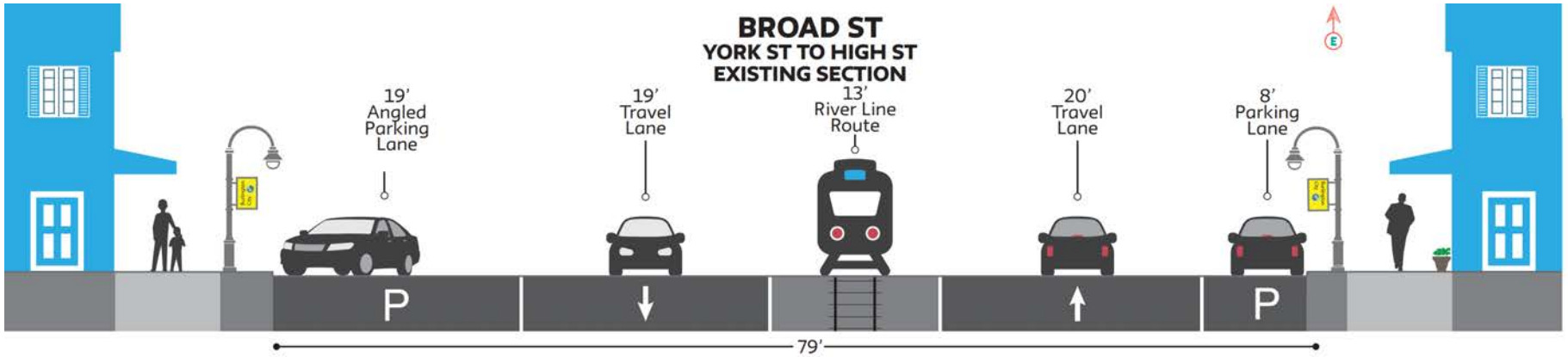


Figure 17: Existing Cross Section Broad Street - York Street to High Street

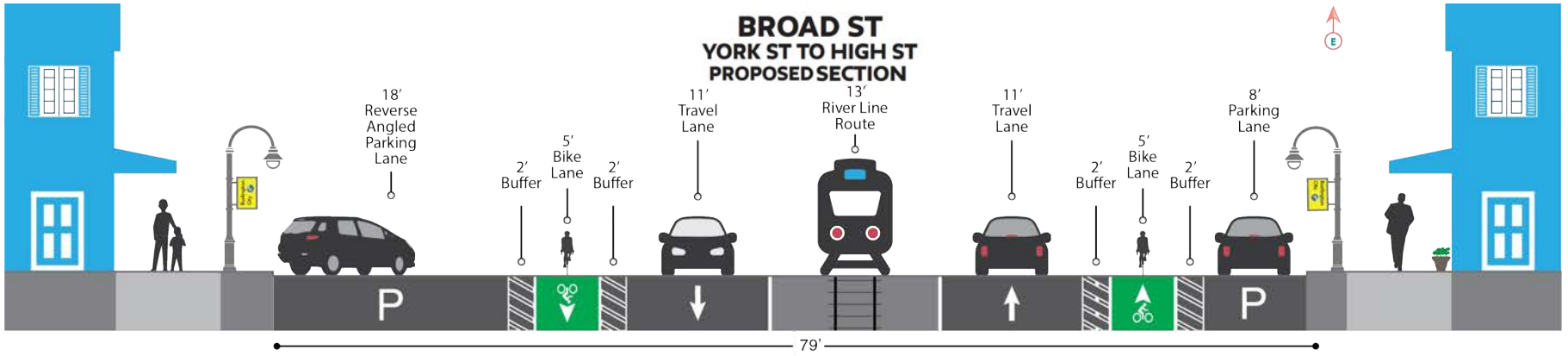


Figure 18: Proposed Cross Section Broad Street -York Street to High Street

Shared Use Path/Trail

As shown in Map 13, candidate roadways/locations for shared use paths are as follows:

- **Riverbank Road** from Reed Street to York Street
- **Broad Street** (near Burlington South Train Station) from Commerce Square Boulevard to Uhler Avenue
- **JFK Park Trail**
- **E Pearl Street (CR 656)** from Delaware River Heritage Trail to Jones Street
- **Mitchell Avenue** from St Mary's Street to Logan Avenue
- **US 130 NB** from Jacksonville Road to Logan Avenue

Shared Lane Markings

Shared lane markings are recommended on segments of roads throughout the study area to provide continuity in the bicycle network. In general, these are segments where limited cartway widths and high demand for on-street parking make adding dedicated bicycle facilities challenging. As noted under the facility descriptions, design treatments including signage and striping should be used on these streets to help calm traffic and increase their visibility as bicycle routes. Candidate roadways for shared lane markings are as follows:

- **Reed Street** from Broad Street to W Pearl Street
- **Oakland Avenue** from Keim Boulevard to Taylor Avenue
- **W Pearl Street** one way from High Street to Reed Street
- **Wood Street** one way from John F Kennedy Park Trail/Federal Street to W Pearl Street
- **Federal Street** from Washington Avenue to St Mary's Street
- **Lawrence Street** from Federal Street to Broad Street
- **York Street** one way from Federal Street to Delaware River Heritage Trail
- **St Mary's Street** one way from E Pearl Street to Federal Street

Improvements along Focus Area Corridors

A primary component of the bicycle plan was investigating ways to provide a continuous Delaware River Heritage Trail connection through the City limits. Recommendations at specific areas along the route where facilities are missing are described in the next pages.

Delaware River Heritage Trail

Shared Use Path to Amazon Warehouse Facility

Figure 19: Proposed Recommendations from Reed Street to Riverbank Street

Reed Street to Riverbank Street – Delaware River Heritage Trail Connection

Existing Issues

1. Missing bicycle connection between Delaware River Heritage Trail terminus at Burlington-Bristol Bridge and Commerce Square Boulevard. Existing promenade along waterfront is not wide enough to accommodate both pedestrian and bicycle travel.

Proposed Recommendations (see Figure 19)

- Install shared use path along Riverbank Street for bicyclists and pedestrians to serve as the Delaware River Heritage Trail DRHT connection for bicyclists and pedestrians
- Install shared lane markings on W Pearl Street
- Investigate use of service road under Burlington Bristol Bridge as a shared use path connecting Delaware River Heritage trail to W Pearl Street

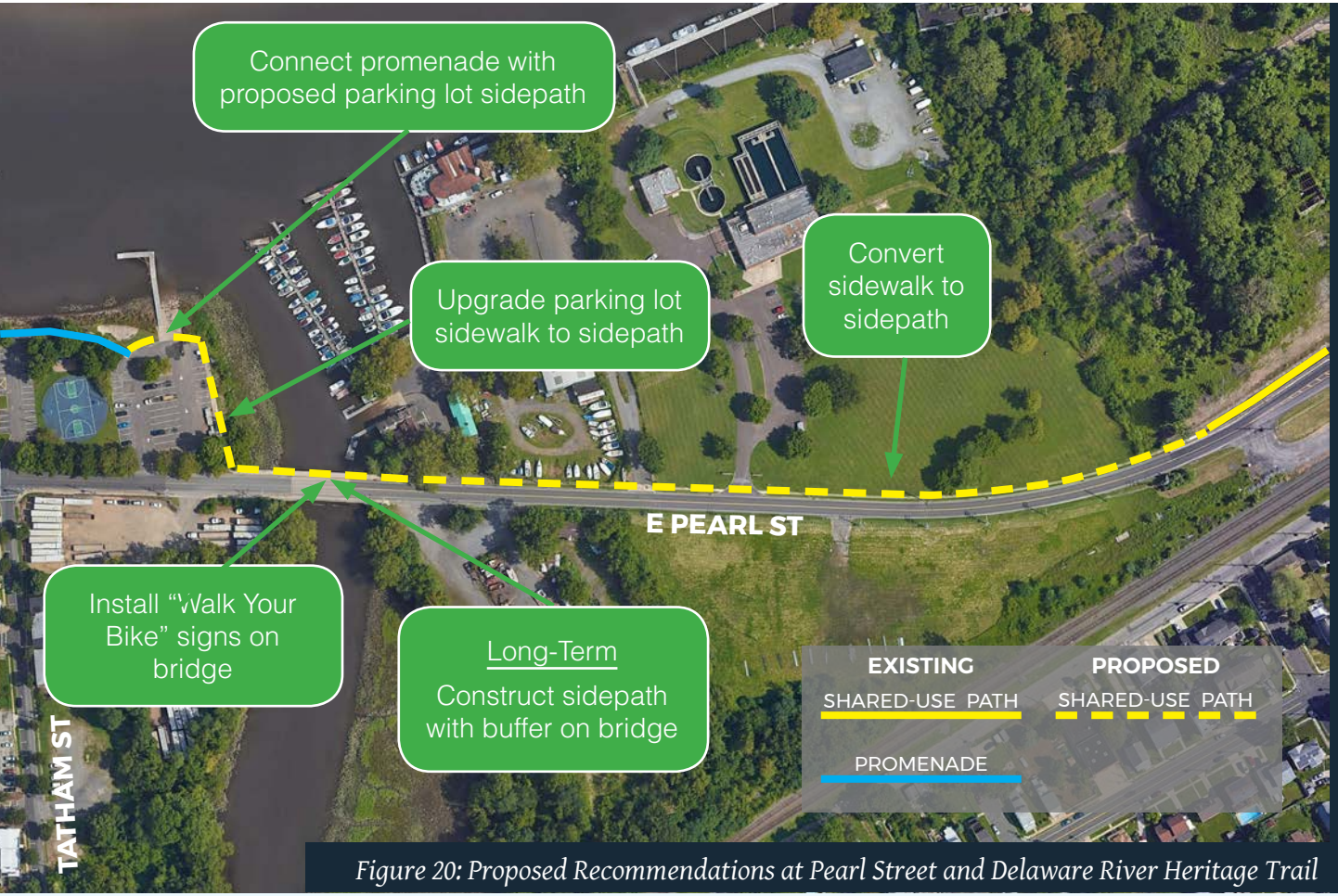


Figure 20: Proposed Recommendations at Pearl Street and Delaware River Heritage Trail

Pearl Street (CR 656) to Tatham Street - Delaware River Heritage Trail Connection

Existing Issues

1. Missing shared use path connection from newly constructed shared use path near Amazon Warehouse facility to the Delaware River Heritage Trail
2. Width constraint on Pearl Street bridge to accommodate bicyclists

Proposed Recommendations (see Figure 20)

- Convert sidewalk along Pearl Street through this area to shared use path by widening to a minimum 10 feet width. This would connect to the recently constructed shared use path in front of the Amazon Warehouse.
- Construct shared use path through the existing parking lot to connect the shared use path along Pearl Street to the promenade
- Install "Walk your Bike" signs on Pearl Street bridge to accommodate both pedestrians and bicyclists

Long Term Recommendations

- Construct shared use path on Pearl Street bridge by converting excess shoulder width to sidewalk space; or alternatively, implement when the bridge is replaced or rehabilitated.

Bicycle Parking

Bicycle parking facilities are needed to extend bicycle use from an opportunity for recreation to a feasible mode of transportation. Providing adequate, secure bicycle parking is an important measure to accommodate and encourage cycling. Proper parking facilities increase the convenience of cycling for commuting, utilitarian, or recreational purposes while also alleviating the threat of theft. Appropriate infrastructure design and siting standards, additional bicycle parking capacity, and a bicycle parking ordinance can all help improve options for bicycle parking in Burlington City.

Priority Locations

The existing conditions assessment identified several opportunities to expand bicycle parking throughout the community. Key locations include:

- **Schools:** while bicycle parking is provided at the City's schools, additional capacity should be considered to accommodate both existing students who bike to school as well as encouraging new students
- **Train Station:** Burlington South and Towne Centre to enhance access for transit riders
- **Downtown:** High Street and Broad Street to promote bicycle access to local businesses
- **Trails:** Delaware River Heritage Trail near Pearl Street and Tatham Street

Existing Bike Rack at Burlington South Station

Downtown Burlington City - High Street

Additional Recommendations

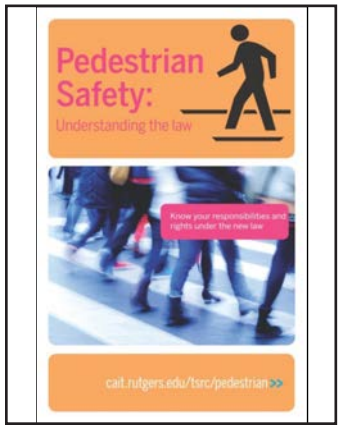
Policy and Program Recommendations

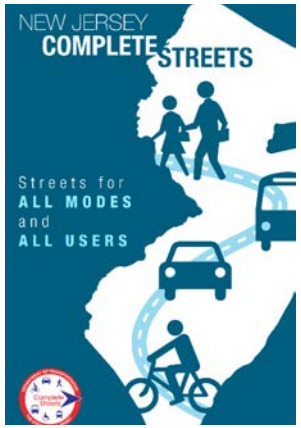
The bicycle and pedestrian recommendations outlined in this plan are designed to provide safe and convenient access to activity generators for non-motorized forms of transportation. While "engineering" solutions can go a long way to meet this need, a successful bicycle and pedestrian program also incorporates policy and program-related recommendations. Program recommendations can improve conditions for bicyclists and pedestrians through education, encouragement, and enforcement actions, while policy actions that benefit bicycle and pedestrian travel can have long-lasting effects with minimal or even no financial cost.

Education

Crash data analysis shows that engineering improvements alone will not reduce the incidence of pedestrian injuries and fatalities. Sustained education, coupled with encouragement and enforcement, has proven over time to be highly effective in changing behaviors and improving safety. The goal of an effective education program is to increase public awareness of non-motorized travel modes, and to teach safe behavior to walkers, cyclists, and motorists.

Pedestrians, cyclists, and motorists all need to be taught how to co-exist safely, and that each is a legitimate user of the road. Successful education strategies can help motivate a change in specific behavior, and teach safety skills that can reduce the risk of injury. These programs also help raise awareness of pedestrian and bicycle issues.





Street Smart NJ Campaign

Street Smart NJ campaign is a public education, awareness, and behavioral change pedestrian safety campaign created and coordinated by the North Jersey Transportation Planning Authority (NJTPA). This program has proved successful at changing travelers' behavior so that they are making smarter, safer decisions on the road. Education is geared towards all users - motorists, bicyclists, and pedestrians.

The Street Smart NJ campaign was first piloted in 2013 in five New Jersey communities – Hackettstown, Jersey City, Long Beach Island, Newark, and Woodbridge – and demonstrated the value of community-based efforts to change pedestrian and motorist behavior to improve safety. The program was expanded in 2016 to include the NJ Shore communities of Asbury Park, Bay Head, Bradley Beach, Long Branch, Manasquan, and Point Pleasant. The campaign uses radio, outdoor, and transit advertising – along with grassroots public awareness efforts and law enforcement – to address pedestrian safety. Communities and organizations can use the strategies and materials that are available on NJTPA's website to create their own campaigns that build on the successes realized in the initial pilot communities.

In May 2017, Cross County Connection TMA had conducted a successful Street Smart Campaign near Burlington High School and around the US 130 corridor. It is recommended to expand the Street Smart Campaign in collaboration with Cross County Connection throughout Burlington City to educate and inform the City residents and tourists.

Enforcement

Enforcement is a key component of a successful bicycle and pedestrian program. After engineering recommendations are implemented, and in conjunction with education and encouragement efforts, new roadway conditions require enforcement for patterns of behavior to change. A common problem with enforcement actions is that one side is labeled the enemy and the other a victim, creating animosity among users. An effective program focuses on awareness and education, and enforces legal behavior among all users. Enforcement alone will not always yield behavioral changes. Quite often, there is a physical condition that influences behavior. For example, a straight road with multiple and/or wide lanes often results in high speeds, regardless of the posted. In these situations, ticketing will not necessarily reduce speeds, and a change to the physical roadway is often required.

Enforcement should always be paired with education and encouragement to improve the bicycle and pedestrian environment. Without encouraging and increasing bicycle and pedestrian activity, motorists will not expect them to be in the roadway and will be less prepared for their presence.

Example mobile radar unit in Highland Park, NJ

Encouragement

Many strategies can be used to encourage people to walk or bike instead of driving, especially for short trips. Bicycle and pedestrian education programs for children help to encourage walking and cycling at an early age. The City should partner with the local transportation management association – Cross County Connection TMA – to develop and maintain bicycle/pedestrian programs at the local schools. Outreach to the adult population is equally important. The health benefits of active transportation can be a powerful encouragement tool when advertised and reinforced regularly. To reach City residents, Burlington City should publish materials explaining the health benefits of biking and walking on municipal and partner websites (Green Team, School District, Police Department, etc.).

Bicycle Maps & Brochures

Maps and/or brochures showing the bicycle network can help encourage cyclists to use designated routes – while also teaching motorists to expect cyclists on these routes. These routes can highlight the historic districts and buildings in the City. Historic bicycling maps and tours could be used to boost bicycle and pedestrian activity in the downtown as well as historic neighborhoods in the City. As the bicycle network in the City begins to develop, the City should create accompanying materials that identify existing bicycle and pedestrian routes, both local routes and connections to regional destinations. By highlighting preferred routes for walking and biking, these maps can be useful to both residents and visitors. Maps can also contain information about the benefits of non-motorized transportation, walking and biking safety tips, relevant traffic laws, bicycle parking locations, and information about local biking or walking groups.

Modifications to Municipal Codes

The portions of City's municipal code that cover walking, biking, and street design were reviewed to understand how these regulations influence bicycle and pedestrian conditions. Several modifications to the City's code are recommended to improve conditions for bicycle and pedestrian travel, both now and with future land development decisions. These include:

- **Sidewalk Width:** The code currently requires a minimum sidewalk width of four feet; however, four feet is not wide enough for two people to pass comfortably. Increase the minimum width to five feet to align with current best practices including design guidance (AASHTO/ITE) and accessibility guidance (Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way).
- **Driveway Treatments:** For subdivisions and new commercial developments, require pedestrian zones across driveways to be treated as continuous sidewalks (with concrete) instead of road crossings (with asphalt, crosswalks, ramps).

The City should also develop a bike parking ordinance to further support bicycling trips throughout the city. Bike parking ordinances typically require that bicycle parking is provided with new development and redevelopment. The number of required bike parking spaces is usually based on development characteristics such as square footage, number of residential units, number of employees, number of auto spaces, and/or minimum spaces per use (i.e. restaurants).

Though Burlington has a Complete Streets policy, the policy should be routinely reviewed to assure consistency with the latest research and practices. In 2020 NJDOT released an updated comprehensive guide to Complete Streets policies titled "Complete & Green Streets for All." This document includes a breakdown of considerations of a Complete Streets policy and resolution, as well as a Complete Streets checklist, model resolution, and model policy. An example policy and resolution are included in Appendix A.

Maintenance

Maintenance of sidewalk facilities is an important consideration for both the comfort and safety of walking throughout the City. In addition to keeping the pavement regular and even, it is important to trim any vegetation that may be intruding on sidewalk corridors. While sidewalk maintenance is ultimately the responsibility of adjacent property owners, the City should explore options to incentivize timely and adequate maintenance. Approaches range from the "carrot" approach of providing financial and/ or logistical incentives (for instance, providing advice on how to engage contractors), to the "stick" approach of using fines or other penalties to discourage non-compliance.

Maintenance of bicycle facilities is also an important consideration. New bicycle facilities will require active maintenance to keep dedicated bicycle pathways free of debris and snow, particularly during inclement weather months. Bicycle racks also need to be maintained so they provide stable and secure parking.

Initiatives for Further Study

Several initiatives were identified for further study during the development of this plan including:

- Conduct parking studies:
  - Along proposed bike routes
  - Downtown and train stations
  - Consider restriping High Street stalls
- Investigate transit access to Amazon facility
- Revisit no bike policy on promenade in front of Burlington Manor
- Create a historic walking/biking route for tourism


220
218
AVEDA
AVEDA
STATE LAW
STOP

Implementation

The concepts and recommendations presented in this plan were developed in accordance with current design guidance, but are not fully engineered. Implementation of many of the recommendations will require engineering studies to refine design elements related to traffic warrants, right of way, drainage design, utilities, and other considerations. This study did not investigate whether existing curb ramps or other pedestrian features are compliant with current ADA standards.

Recommendations from this study will also need to be advanced in accordance with state and federal regulations that govern environmentally-sensitive areas, which include coastal zones, wetlands, woodlands, and preserved open space. Projects adding new paved areas will also need to meet NJDEP Stormwater Management (SWM) Rules for groundwater recharge and runoff quantity. The use of pervious paving – whether asphalt, concrete, or gravel – can help to mitigate potential environmental impacts related to stormwater runoff.

An implementation table was developed to summarize the major plan recommendations (see Table 7). This table provides a brief description, order-of-magnitude, cost, timeframe, and jurisdiction for each recommendation. The table also provides an estimate of the complexity of each project to aid in the decision-making process.

Project Phasing

Since the projects and programs presented in this plan would be developed over many years, phasing of the recommendations is an important consideration. Recommended timeframes for major plan elements are included in the implementation table. Several of the project and program recommendations in this plan could be implemented soon after it is adopted. These immediate action items will improve pedestrian and bicycle conditions in specific areas, creating early successes. These items will also build momentum for implementing the other recommendations.

Project Funding

Multiple federal and state programs can be used to fund bicycle and pedestrian projects. Included in Appendix B is a presentation outlining the most common bicycle/pedestrian funding programs with basic information about each. Additional sources of funding could include regional, county, local, or philanthropic organizations. Burlington City can also pursue implementation of plan recommendations for locally owned streets through their planning and engineering policies and roadway resurfacing program.

Table 7: Implementation Matrix

Category	Location	Recommendation	Quantity (length or #)	Cost	Timefame	Jurisdiction
Pedestrian Improvements	Riverbank St - from Reed St to Ellis St	Install sidewalk	640’	$$	S	City
	Riverbank St - from High St to York St		950’	$$	S	City
	York St - from Riverbank St to D&R Heritage Trail		340’	$	S	City
	Keim Blvd - from US 130 to Veterans Dr		1,900’	$$	S	County & NJDOT
	Clarkson St - from Lawrence St to York St		450’	$$	S	City
	High St (CR 541) - from US 130 NB to US 130 SB		330’	$	S	County
	US 130 NB - from Logan Ave to Court Dr		1,500’	$$	S	NJDOT
	Mitchell Ave - from Mitchell Ct to Logan Ave		1,450’	$$	S	City
	Reed St @ Riverbank St	Install new pedestrian crossing	1	$	S	City
	Stacy St @ Pearl	Install new pedestrian crossing	1	$	S	City
	Columbus St @ Bordentown Rd	Intersection improvements	1	$$	M	County
	Columbus St @ Hulme St	Install new pedestrian crossing	1	$	S	County
	Washington Ave @ JFK Park	Install new pedestrian crossing	1	$	M	City
	Keim Blvd @ Oakland Ave	Intersection improvements	1	$$	M	County & NJDOT
	Keim Blvd @ Broad St	Intersection improvements	1	$$	M	County, NJDOT, NJ TRANSIT

Category	Location	Recommendation	Quantity (length or #)	Cost	Timefame	Jurisdiction
Pedestrian Improvements	Broad St @ Burlington South Station	Install new pedestrian crossing	1	$$	S	City
	US 130 @ Jacksonville Rd	Intersection improvements	1	$$	M	NJDOT
Bicycle Network Improvements	Riverbank St - from Reed St to York St	Install shared use path	3,600’	$$$	L	City
	Broad St - from Commerce Sq Blvd to Uhler Ave		1,300’	$$$	L	City
	JFK Park Trail		2,300’	$$	M	City
	E Pearl St (CR 656) - from D&R Heritage Trail to Jones St		1,450’	$$$	L	County
	Mitchell Ave - from St Mary’s St to Logan Ave		1,970’	$$	M	City
	US 130 NB - from Jacksonville Rd to Logan Ave		2,500’	$$$	M	County & NJDOT
	Broad St - from Keim Blvd to Tatham St	Install standard bicycle lane	8,900’	$$	M	City
	High St - from Riverbank St to US 130		7,200’	$$	M	City
	Stacy St - from Riverbank to Broad St		2,580’	$	S	City
	E Pearl St - from St Mary’s St to Pearl St bridge		2,040’	$	S	City
	E Pearl St - from High St to St Mary’s St	Install one-way bike lane	1,680’	$	S	City
	W Pearl St - from Pearl St to York St		850’	$	S	City
	Reed Street – from Broad Street to W Pearl Street	Install shared lane markings	850’	$	S	City
	Oakland Avenue – from Keim Boulevard to Taylor Avenue		330’	$	S	City

Category	Location	Recommendation	Quantity (length or #)	Cost	Timefame	Jurisdiction
Bicycle Improvements	W Pearl Street – one way from High Street to Reed Street	Install shared lane markings	2,580’	$	S	City
	Wood Street – one way from John F Kennedy Park Trail/Federal Street to W Pearl Street		2,300’	$	S	City
	Federal Street – from Washington Avenue to St Mary’s Street		3,500’	$	S	City
	Lawrence Street – from Federal Street to Broad Street		1,140’	$	S	City
	York Street – one way from Federal Street to Delaware River Heritage Trail		3,000’	$	S	City
	St Mary’s Street – one way from E Pearl Street to Federal Street		2,590’	$	S	City
Other Recommendations	Citywide	Bicycle parking ordinance	NA	NA	S	City
	Citywide	Modifications to municipal code	NA	NA	S	City
	Citywide	Expand StreetSmart Campaign	NA	$	S	City & CCCTMA
	Citywide	Develop historic walking/biking route map	NA	$	M	City
	Citywide	Conduct follow-up parking studies	NA	$$	S	City
	Citywide	Investigate transit access to Amazon facility	NA	$	S	City, CCCTMA & NJ TRANSIT

LEGEND

Jurisdiction

- **City** = City of Burlington
- **County** = Burlington County
- **CCCTMA** = Cross County Connection Transportation Management Association
- **NJDOT** = New Jersey Department of Transportation
- **NJ TRANSIT** = New Jersey Transit

Timeframe

- **S** = Short (1 to 3 years)
- **M** = Medium (3 to 5 years)
- **L** = Long (5 years +)

Cost

- **$** = Low
- **$$** = Medium
- **$$$** = High


Burlington City
Founded in Diversity
Established in 1677

Appendices

Appendix A: Complete Streets Policy Documents

Appendix B: Funding Resources

Appendix A- Complete Streets Policy Documents

Model Resolution

*A RESOLUTION OF THE [**MUNICIPAL COUNCIL/BOARD OF FREEHOLDERS**] ESTABLISHING AND ADOPTING A COMPLETE STREETS POLICY*

Resolution No. _____

WHEREAS, safe, convenient, accessible, equitable, healthy, and environmentally and economically beneficial transportation for all users is a priority of [***municipality/county***]; and

WHEREAS, Complete Streets is a means to provide a comprehensive, integrated, connected multi-modal network of transportation options through planning, design, construction, maintenance, and operation of new and retrofit transportation facilities along the entire right-of-way for all roadway users of all ages and abilities; and

WHEREAS, Complete Streets allow for safe, accessible, and convenient travel, reducing serious injuries and fatalities for all users of the roadway; and

WHEREAS, "all users" include motorists, bicyclists, pedestrians, public transportation vehicles and their passengers, delivery trucks and movers of commercial goods, persons with disabilities, older adults, residents of Priority Communities, and those who cannot afford a car or choose to reduce their car usage; and

WHEREAS, Complete Street policies support the goals of the [***municipality/county***] master plan and supporting elements; and

WHEREAS, New Jersey is federally designated as a Pedestrian and Bicycle Safety Focus State due to high numbers of pedestrian/bicycle-involved fatalities, and New Jersey's pedestrian fatality rate continues to significantly exceed the national average; and

WHEREAS, traffic crashes are preventable and the only acceptable number of traffic deaths for [***municipality/county***] is zero; and

WHEREAS, Complete Streets that incorporate sustainable Green Streets design elements, such as green storm water infrastructure, traffic calming treatments, shade trees, and the use of recycled materials, protect and create a healthier natural and social environment, improve air and water quality, and reduce localized flooding; and

WHEREAS, Complete Streets implementation enhances access to local businesses, encourages reinvestment, increases property values and employment, and stimulates private investment, especially in retail districts, downtowns, and tourist areas; and

WHEREAS, Complete Streets encourage an active lifestyle through increased physical activity, social connectivity, and sense of community belonging, thereby lowering risk of obesity, reducing

chronic disease, improving mental health, and promoting wellness; and

WHEREAS, Complete Streets implementation provides the opportunity to enhance the historic character of our communities and our understanding of our shared history in a way that promotes the economic and social vitality of our communities and should be considered in the design of infrastructure improvements; and

WHEREAS, procedures should be implemented that ensure fair treatment, equitable funding and resource distribution, and meaningful involvement of all communities in all phases from selection, planning, and design to construction and long-term maintenance; and

WHEREAS, a balanced and flexible transportation system where all people can easily and safely walk and bicycle to everyday destinations — such as schools, shops, restaurants, businesses, parks, transit, and jobs — enhances neighborhood economic vitality and livability; and

WHEREAS, low- and moderate-income areas, whether in rural, urban, or suburban communities, are typically the least safe for pedestrians and bicyclists, especially for children walking and biking to school, due to long-standing infrastructure disparities and higher concentration of streets with faster-moving and higher-volume traffic; and

WHEREAS, implementation of the Complete Streets policy should not negatively impact the affordability of the neighborhood for current residents; and

WHEREAS, the Complete Streets policy applies to new, reconstruction, retrofit, and resurfacing projects, including design, planning, construction, maintenance and operations, for the entire right-of-way; and

WHEREAS requests for all exceptions must be submitted in writing, with supporting documentation, and made publicly available with a minimum of 30 days allowed for public input; and

WHEREAS, all initial planning, concept and design studies of infrastructure projects consider design elements that improve public health, environment, economy, equity, and safety.

NOW THEREFORE, BE IT RESOLVED, by the [***municipality/county***], the [***municipality/ county***] adopts the Complete Streets Policy attached hereto, and made part of this Resolution;

BE IT FURTHER RESOLVED that copies of this Resolution shall be forwarded to all [***municipal/county***] departments within thirty (30) days of the adoption of this Resolution.

Model Complete Streets Policy

[Municipality/County] shall develop an integrated and connected multimodal transportation system of Complete Streets that serve all neighborhoods and populations. Towards this end:

1. All transportation projects shall result in Complete Streets that allow safe, environmentally healthy, economically sound, equitable, accessible, and convenient travel along and across streets for users of all ages and abilities and for all modes of transportation, including motorists, bicyclists, pedestrians, public transportation vehicles and their passengers, delivery trucks and movers of commercial goods [***insert other significant local users if desired, e.g. drivers of agricultural vehicles, emergency vehicles, freight, etc.***] and strive to meet the following goals:
   a. Environment: Improve air and water quality; reduce flooding; mitigate traffic congestion.
   b. Safety: Eliminate all road fatalities, significantly reduce crash severity and injury, eliminate all road fatalities, significantly reduce crash severity and injury, and improve personal safety through increasing the number of people of walking and bicycling.
   c. Economic: Stimulate economic prosperity.
   d. Health: Increase physical activity and social connectivity with the goal of lowering the risk of obesity, reducing chronic disease and promoting wellness.
   e. Equity: Implement policies and distribute funding and other resources equitably and responsibly in all neighborhoods, particularly in Priority Communities; improve non-motor vehicle transportation systems.

2. This section shall apply to all public and/or private transportation projects, including those using funds awarded by federal, state, regional, county, municipal, or any other public agency. This shall include new construction, reconstruction, resurfacing, restoration, repaving, rehabilitation, private development projects, and maintenance of highways, roads, and streets.

3. The [***decision-making body***], and the [***municipal/county planner and engineer***] shall routinely work in coordination with each other and adjacent jurisdictions, and any relevant advisory committees/teams, to create Complete Streets and to ensure consistency with the [***Municipal/County***] Master Plan and Elements and any other existing Pedestrian/Bicycle/Multimodal Plans, Stormwater Management Plans, Pollution Prevention Plans, and Historic Preservation Plans.

4. Within two years of the effective date of this Policy, the [***decision-making body***] shall inventory and audit procedures, policies, plans, documents, training programs, performance measures and other guidance documents to be consistent with this policy. The purpose of this audit is to identify areas where tenets of this policy will need to be incorporated. This includes, but is not limited to, funding, planning, designing, operating, and maintaining transportation infrastructure. The [***decision-making body***] will use this audit to incorporate this policy as it updates its procedures, plans, policies, etc.

5. Transportation projects and Master and Capital Plans shall include, when appropriate, sustainable design elements, including, but not limited to:
   a. Green stormwater infrastructure practices

   b. Traffic calming
   c. Shade trees and other vegetation
   d. Rain gardens
   e. Bioswales
   f. Permeable pavements — including those made from recycled materials such as rubber, concrete, glass, and plastic.

6. Transportation projects and Master and Capital Plans shall include, where appropriate, pedestrian and bicycle design elements and transit amenities, including but not limited to: curb extensions, sidewalks, radar feedback signs, pedestrian countdown signals, pedestrian refuge islands, road diets, lane width reductions, chicanes, roundabouts, bike lanes, protected bike lanes, bike parking, lighting, wayfinding, seating, trash receptacles, transit amenities, etc.

7. The [***decision-making body***] shall utilize the most current editions of guides, manuals, and best practices on street design, historic preservation, construction, operations, and maintenance that apply to bicycle, pedestrian, transit, stormwater and highway facilities. All manuals, standards, and guidelines shall be made publicly available online.

8. The [***person to be identified by the decision-making body***] shall lead the implementation of this Policy and formally coordinate with [planner, engineer, economic development, public works, health, etc.] with advice and input from [***Planning Board, Complete Streets Advisory Committee, Land Use Committee, Green Team, etc.***] to set benchmarks to ensure the successful implementation of the Complete Streets Policy, including in Priority Communities.

Public Participation

1. The [***decision-making body***] shall establish a Complete Streets Advisory Committee to help the [***municipality/county/department***] comply with the Complete Streets Policy and to provide ongoing feedback to [***municipality/county/department***] related to the implementation of the Complete Streets Policy. The Complete Streets Advisory Committee shall consist of a broad group of stakeholders including:
   a. [***Municipal/County***] Elected Officials
   b. Law Enforcement
   c. Public Works
   d. Planners
   e. Engineers
   f. Emergency Medical Services (EMS)
   g. Appointed Municipal or County Commissioners
   h. Fire
   i. Schools
   j. Business and Developer Community
   k. Civic and Advocacy Groups
   l. Public Health Professionals
   m. Transit Professionals

n. Community Members, including Persons with Disabilities, Senior and Youth Organizations, Persons Representing Priority Communities.

2. Beginning with the planning stage, [***municipality/county/ department***] shall identify an existing process or develop a new process that allows for public participation in decision-making concerning the planning, design, and use of streets and roadways covered by this Policy.

Exceptions

1. A transportation project may not be required to accommodate the needs of a particular user group if the [***person to be identified by the decision-making body***] determines in writing that:
    a. The use of the transportation facility by the particular user group is prohibited by law;
    b. Regulatory compliance requirements preclude accommodations.
    c. There is a demonstrated absence of both a current and future need to accommodate the category of user (absence of future need may be shown via demographic, school, employment, and public transportation route data that demonstrate, for example, a low likelihood of bicycle, pedestrian, or transit activity in an area over the next 20 years); and
    d. The adverse impacts of implementing this Complete Streets Policy significantly outweigh the benefits.

    However, every effort to work within the flexibility allowed should be made, including Design Exceptions for roadway projects.

2. An exception shall be granted only if:
    a. Request for an exception is submitted **in writing** to the [***decision-making body***], with supporting documentation, and made publicly available with a minimum of 30 days allowed for public input; and
    b. The exception is approved **in writing** by the [***decision-making body***], and the written approval is made publicly available.

Program Reporting

1. The [***department identified by the decision-making body***] shall establish benchmarks reflecting the ability of all users to travel safely and conveniently along highways, roads and streets.

2. Each such [***department identified by the decision-making body***] shall also develop plans and set benchmarks to ensure the successful implementation of the Complete Streets Policy in Priority Communities. On or before [***end of the fiscal year***] each such agency shall prepare an initial report to identify barriers, and propose solutions to successful implementation of the Complete Streets policy, including in Priority Communities.

3. Each such [***department identified by the decision-making body***] shall assign appropriate responsibility to collect and monitor data under [***municipal/county/department***] jurisdiction,

including in Priority Communities, to determine compliance with the [***municipal/county/department***] benchmarks. Benchmarks shall include but are not limited to:
    a. Mileage of new and existing bicycle infrastructure, including in Priority Communities (e.g., bicycle lanes, bike parking, paths, and boulevards)
    b. Linear feet (or mileage) of new and existing pedestrian infrastructure (e.g., sidewalks, trails, transit amenities)
    c. Number of new and existing ADA-compliant infrastructure (e.g., curb ramps, pedestrian buttons)
    d. Number of new and existing street trees
    e. Number of green street practices (e.g., rain gardens, bioswales, permeable pavement)
    f. Number of new and existing pedestrian and bicycle lighting improvements
    g. Bicycle and pedestrian counts
    h. Commute mode percentages (e.g., drive alone, carpool, transit, bicycle, walk)
    i. The number and percentage of designated transit stops accessible via sidewalks and curb ramps
    j. The number, locations, and causes of collisions, injuries, and fatalities by each mode of transportation
    k. The percentage of children walking or bicycling to school

4. All benchmarks established by the ***[municipality/county/department***] shall be disaggregated by race/ethnicity, neighborhood, and vehicle ownership when feasible.

5. Each such [***department identified by the decision-making body***] shall provide a report on an annual basis to the [***decision-making body***] to allow them to evaluate implementation of the Complete Street policy. Each annual report shall include the data collected pursuant to Program Reporting, as well as a list of ongoing and completed transportation projects during that fiscal year. If any exceptions are applied to transportation projects pursuant to Exceptions to Complete Streets Requirements herein, such projects and the relevant exceptions should be identified in the annual report. All benchmarks and reports shall be made publicly available online.

Adoption of Complete Streets Checklists

1. The ***[department identified by the decision-making body***] shall develop and adopt one or more Complete Streets Checklists to be used during the project selection, planning, designing, construction, funding and maintenance of all transportation projects.

2. Each item in the checklist must include an area to provide a brief description for how the item is addressed, not addressed, or not applicable to the Complete Streets policy.

3. The checklist shall explain the process for granting exceptions and indicate who is responsible for approving any exceptions before they are granted.

4. The ***[department identified by the decision-making body]*** shall be responsible for completing the checklists and/or reviewing the checklists.

5. A complete streets checklist shall entail but is not limited to:
    a. Existing pedestrian, bicycle, transit, motor vehicle, and truck/freight accommodations (facilities) and operations
    b. Traffic volumes
    c. Existing safety and/or access issues, and Americans with Disabilities Act (ADA) compliance
    d. Land use within the study area, including trip generators
    e. Existing and proposed streetscape elements including furniture, trees or other environmental and stormwater enhancements
    f. Review of existing plans
    g. Proposed pedestrian, bicycle, transit, motor vehicle, and truck/freight accommodations (facilities) and desired future operations
    h. ADA compliance of the proposed design
    i. Compatibility with the surrounding land use and density
    j. Consistency with applicable design standards and guidelines
    k. Opportunities to improve public health through physical activity and mobility options
    l. Opportunities to manage stormwater through green infrastructure

6. All Complete Streets checklists shall be made accessible online and available to the Complete Streets Advisory Body.

Effective Date

The Complete Streets Policy shall take effect on ***[date]***, provided that it shall not apply to any transportation project for which a preliminary design has been completed on or before ***[date].***

Key Terms & Definitions

Complete Streets: An integrated transportation network designed to enable safe and convenient travel and access along and across streets for all users of all ages and abilities, including pedestrians, bicyclists, motorists, movers of commercial goods, and transit riders.

Environmental Justice: Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that:

1. People have an opportunity to participate in decisions about activities that may affect their environment and/or health.
2. The public's contribution can influence the regulatory agency's decision.
3. Community concerns will be considered in the decision-making process; and

4. Decision makers will seek out and facilitate the involvement of those potentially affected.

Green Streets: Streets with landscaped features installed in the right-of-ways that capture and allow stormwater runoff to soak into the ground, while still preserving the primary function of a street as a conduit for pedestrians, bicyclists, motorists, and transit riders. Stormwater runoff is excess water generated from rain and snowmelt events that flow over impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground.

1. **Green Stormwater Infrastructure:** An approach to managing stormwater by infiltrating it in the ground where it is generated using vegetation or porous surfaces, or by capturing it for later reuse. Infiltration is when water falls to the earth as precipitation and seeps into the soil.
2. **Green Street Stormwater Infrastructure Practices:** Includes types of green infrastructure techniques used to manage stormwater, including but not limited to:
    a. Street tree trenches/boxes: utilize soil, gravel, and plants to infiltrate and filter stormwater runoff from impervious surfaces
    b. Bioswales: shallow channels that convey, slow down, and infiltrate stormwater runoff.
    c. Vegetated curb bump outs: a vegetated curb extension that protrudes into the street either mid-block or at an intersection, creating a new curb some distance from the existing curb.
    d. Permeable pavement: a stormwater drainage system that allows rainwater and runoff to move through the pavement's surface to a storage layer below, with water eventually seeping into underlying soil. Types of permeable pavement include pervious concrete, porous asphalt, interlocking concrete pavers, and grid pavers.

Priority Communities: The term Priority Communities refers to categories of underserved and adversely impacted populations. There is a wide range of definitions used to quantify and locate underserved populations developed by agencies and organizations dedicated to social equity by law or mission. Each county or municipality should evaluate who and where there are concentrations of underserved or marginalized populations based on available data. Below are some of the categories to consider when defining Priority Communities:

1. Minority Concentrations
2. Low-Income Concentrations
3. Other Indicators of Underserved and Adversely Impacted Populations:
    a. Female Head of Household with Children
    b. Persons with Limited English Proficiency
    c. Carless Households
    d. Elderly Populations/Children
    e. Persons with Disabilities
    f. Hispanic Populations
    g. Other Ethnic Minorities
    h. Families in Poverty with Children

Traffic Calming: The combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users. Traffic calming objectives include:

1. Achieving slow speeds for motor vehicles
2. Reducing collision frequency and severity
3. Increasing the safety and the perception of safety for non-motorized users of the street(s)
4. Reducing the need for police enforcement
5. Enhancing the street environment (e.g., streetscaping)
6. Encouraging water infiltration into the ground using Green Street stormwater infrastructure practices
7. Increasing access for all modes of transportation, and reducing cut-through motor vehicle traffic

Transit Amenities: Include seating, shelter and shade, wayfinding signage, trash and recycling cans, lighting, route information, bike infrastructure (lockers, racks, fix-it stations, depots, bikeshare, etc.).

Transportation Facility: A facility consisting of the means and equipment necessary for the movement of people or goods; any road, bridge, tunnel, overpass, ferry, airport, mass transit facility, vehicle parking facility, port facility or similar commercial facility used for the transportation of persons or goods together with any buildings, structures, parking areas, appurtenances, and other property needed to operate such facility; however, a commercial or retail use or enterprise not essential to the transportation of people or goods shall not be considered a transportation facility.

Transportation Project: Any public and/or private land development, project, program, or practice that affects the transportation network or occurs in the public right-of-way, including any construction, reconstruction, retrofit, signalization operations, resurfacing, restriping, rehabilitation, maintenance (excluding routine maintenance that does not change the roadway geometry or operations, such as mowing, sweeping, and spot repair), operations, alteration, and repair of any public street or roadway within a jurisdiction (including alleys, bridges, frontage roads, and other elements of the transportation system).

Appendix B- Funding Resources

| Funding Complete Streets Implementation

| Funding Sources

Federal Sources

- **US Department of Transportation (USDOT)**
  - Better Utilizing Investments to Leverage Development (BUILD)
- **Federal Highway Administration (FHWA)**
  - Transportation Alternatives Program (TAP)
  - Safe Routes to School (SRTS)
  - Surface Transportation Program (STP)
  - Highway Safety Improvement Program (HSIP)
  - Local Safety / High Risk Rural Roads Program (HRRR)
  - Congestion Mitigation and Air Quality Improvement (CMAQ)
  - National Highway Performance Program (NHPP)
  - National Highway System (NHS)
  - Recreational Trails Program
  - Federal Lands Access Program (FLAP)
  - Emergency Relief

| Funding Sources

Federal Sources

- **National Highway Traffic Safety Administration**
  - Section 402 State Highway Safety Program
  - Section 405 Non-Motorized Safety Grants
- **Federal Transit Administration**
  - Fixed Guideway Capital Investments Grants
  - Bus and Bus Facilities Formula Grants
  - Enhanced Mobility of Seniors and Individuals with Disabilities
  - Urbanized Area Formula Program (UZA)
- **Department of Homeland Security**
  - Transit Security Grant Program (TSGP)

| Funding Sources

State Sources

- **Municipal Aid**
- **County Aid**
- **Local Aid Infrastructure Fund**
- **Urban Aid**
- **Safe Streets to Transit**
- **Bikeways**
- **NJ Division of Highway Traffic Safety**
- **County Capital Programs**
  - Open Space and Farmland Preservation
  - Municipal Capital Programs
- **Technical Assistance Partnerships**
- New Jersey Trails Program
- Regional / Local CMAQ Initiatives
- Transit Village

Federal Funding

Basics

- **Provided on a reimbursement basis**
  - Costs incurred prior to authorization of funds NOT eligible for reimbursement
- **Project must receive authorization within 2 years of notification of project selection**
- **NJDOT serves as the pass-through**

Federal Funding

Safe Routes to School

- **Encourage and enable grades K-8 to walk and bike to school**
- **Eligible Applicants**
- **Highly Competitive**
  - $5.59 million available in 2018
- **Selection Criteria**
- **Extra Consideration**
- **Extra Points**
- **Five Major Requirements**
- **2018 Applications Due by August 23, 2018**

Federal Funding

Transportation Alternatives Program

- **Community Based Projects**
- **Eligible Applicants**
- **Highly Competitive**
  - $14.1 million available in 2018
- **Seven Eligible Categories**
- **Selection Criteria**
- **Bonus Criteria**
- **Five Major Requirements**
- **2018 Applications Due by August 23, 2018**

Federal Funding

Highway Safety Improvement Program (HSIP)

- **$57 million annually**
  - 40% state highway, 60% county and municipal roadways
- **Data driven**
- **Focus on lane departure, intersections, and pedestrians**
  - Areas identified with NJDOT screening tools
- **Project Types**

Federal Funding

Complete Streets Technical Assistance

- Available through NJTPA
- Supports 9 municipalities implementing Complete Streets
- Direct technical assistance available
- Application Deadline: Friday, July 27, 2018
- http://www.sustainablejersey.com/grants-resources/complete-streets-technical-assistance-program/
- Email Renee Haider at haiderr@tcnj.edu with a "cc" to Douglas Greenfeld, dgreenfeld@njtpa

State Funding

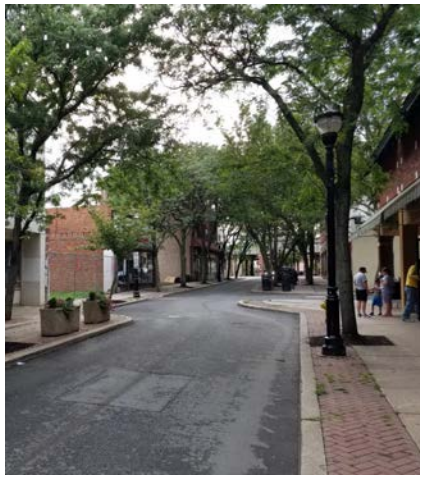
County Aid

- Counties eligible
- $158.75 million annually until 2024
- Allocation based on formula
- Any public road or bridge
- Same improvement types as municipal aid

State Funding

Municipal Aid

- All 565 municipalities eligible
- Transportation-based grants to supplement transportation programs
- $158.75 million annually until 2024
- Up to 2 applications per year
- 7 Eligible Categories
- Selection Criteria
- Urban Aid
  - 60 eligible municipalities
  - $5 million annually



State Funding

Local Aid Infrastructure Fund

- $7.5 million annually
- Emergencies and regional needs
- Open to counties and municipalities
- Approved at discretion of Commissioner
- Open at all times

State Funding
Safe Streets to Transit

- Counties and municipalities
- $1 million annually
- Pedestrians ONLY
- Improve access to transit facilities and all nodes of public transportation
- Eligible Projects
- Selection Criteria

State Funding
NJ Division of Highway Traffic Safety

- Counties, municipalities, law enforcement agencies, and non-profits
- Local traffic safety needs
- Pedestrian Safety, Enforcement and Education Fund Grant Program
  - $425,000 annually
- State and Community Highway Safety Grant Project
  - $14 million annually

State Funding
Bikeways

- Counties and municipalities
- $1 million annually
- Support goal of 1,000 new miles of dedicated bike paths
- Projects seeking funding under other aid programs will not be considered
- Eligible Projects
- Selection Criteria

State Funding
Assistance Program

- Design Assistance Program
- Bike/Pedestrian Planning Assistance
- Transportation Management Associations
- VTC Workshops

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