Endorsed May 7, 2020

New Castle County Bicycle Plan

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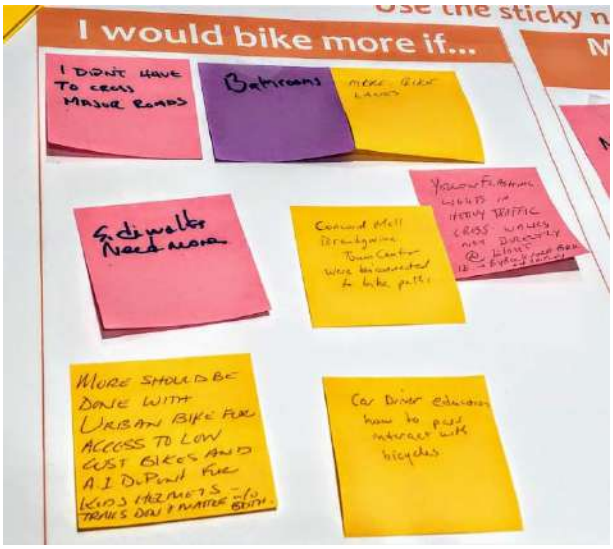
Introduction



The *New Castle County Bicycle Plan* recommends strategies to improve safety, access and comfort of bicycling, prioritizes infrastructure improvements, and identifies programs and policies for education, enforcement, and encouragement in New Castle County. WILMAPCO developed the Plan in coordination with New Castle County, the Delaware Department of Transportation (DelDOT), municipalities, cyclists and other stakeholders.

To develop this Plan, technical analysis and community feedback were used to identify and prioritize suggested bicycle facilities. This process builds upon past planning, including:

- *2017 Blueprint for a Bicycle-Friendly Delaware – A Statewide Policy Plan*
- *2005 Delaware Bicycle Facility Master Plan*
- First State Trails and Pathways Projects
- Municipal and County comprehensive plans and bicycle plans
- Subregional and corridor transportation plans
- Future of Trails of Northern Delaware Coalition

The recommendations in this Plan are meant to guide DelDOT, New Castle County, municipalities, and community organizations and assist them with incorporating bicycling improvements into transportation project selection and implementation, land use development, and organizational programs.

Why Develop a Bicycle Plan

More and improved bicycling contributes to achieving state, county, and local goals. Bicycling is not only a low-cost means of transportation but provides economic, environmental, health and quality of life benefits.

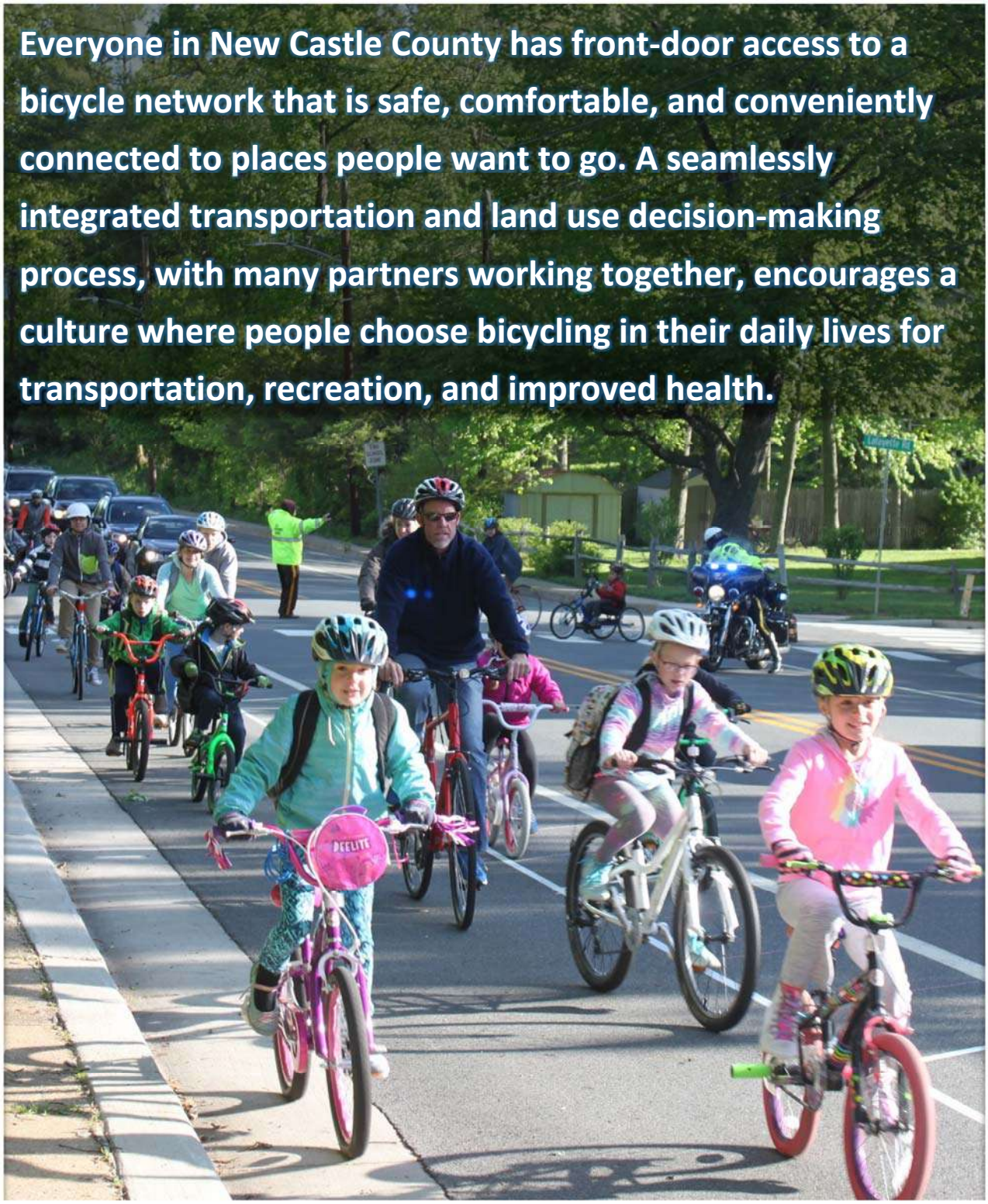
The *New Castle County Bicycle Plan* provides a guide for safer, more comfortable, and more accessible bicycling throughout the County. Investing in bicycling will promote healthy, environmentally friendly, and cost-effective travel, and developing a master Plan will help ensure wise use of our limited transportation funding.

Improved options for cycling are key to achieving our region's goals for improved quality of life, efficient transportation, and sustainable economic development. The *2050 WILMAPCO Regional Transportation Plan* calls for developing a complete, low-stress nonmotorized transportation network, improving safety, funding transportation choices, and planning for livable, sustainable and prosperous neighborhoods. According to the WILMAPCO public opinion survey, 74 percent feel more funding should be devoted to walking, bicycling, and transit.

Transportation	•Travel choices •Support transit •Reduce congestion •Affordable infrastructure
Health & happiness	•Healthy, active lifestyles •Recreation •Inspire community pride
Economic development	•Support local business •Attract new employers •Promote tourism •Increase land values
Environment	•Promote smarter growth •Improve air quality •Access to nature and historic resources

Those who live, work, and play in New Castle County are interested in bicycling for a variety of purposes and have a variety of levels of comfort with riding on streets. Promoting bicycling to a wider audience has a variety of benefits for all of New Castle County. Bicycling is an affordable, environmentally friendly means of active transportation. Further, bicycling for recreation can be a source of community pride and promote economic development and tourism. Finally, shifting trips to bicycling from driving can help alleviate congestion on our busy streets.

Vision


Everyone in New Castle County has front-door access to a bicycle network that is safe, comfortable, and conveniently connected to places people want to go. A seamlessly integrated transportation and land use decision-making process, with many partners working together, encourages a culture where people choose bicycling in their daily lives for transportation, recreation, and improved health.

Goals and Objectives

 **Identify bicycle transportation network**	• Provide access within ¼ mile of the network for all residents. • Focus on community destinations as points of access. • Identify key gaps and areas of safety concern. • Consider the needs of all population groups, including active recreation and transportation needs. • Develop, periodically update, and implement municipal and sub-regional bicycling plans.
 **Improve safety through design, maintenance, and enforcement**	• Recommend safe design and maintenance best practices for all bikeways and shared-use facilities, including lighting and signage. Identify strategic/critical locations for bicycle wayfinding (e.g. high-priority routes or complex/confusing areas). • Recommend measures to support enforcement of the rights and responsibilities of bicyclists. Target violations that cause the most injuries and fatalities for selective enforcement. • Identify possible resources for training to local enforcement agencies. • Develop signage and promotional programs aimed at motor vehicle drivers to improve awareness of the needs and rights of bicyclists.
 **Incorporate bicycle elements into land use planning and zoning**	• Consider bicycle accommodations in local development review procedures, and encourage incentives for bicycle accommodations. • Integrate the consideration of non-motorized facilities into all planning, design, construction, and maintenance activities of transportation or public works departments.
 **Expand equitable access**	• Use Transportation Justice data, to recommend improvements through biking to improve connectivity for identified populations. • Expand access to affordable bicycles. • Expand participation by all ages and abilities.
 **Provide bicycle access to transit**	• Recommend bus stop locations where adequate and secure bicycle parking be provided. • Identify safe and convenient bicycle routes to and from transit stations and stops.
 **Encourage bicycle parking and other end-of-trip facilities**	• Review bicycle parking requirements in zoning codes and recommend revisions as needed. • Identify locations where bicycle parking be provided.
 **Develop implementation and evaluation plan**	• Establish collaborative strategies to collect and share data. o Work with DelDOT and other partners to identify locations for bicycle counts. o Work with DelDOT and other partners to create and maintain a user-friendly experience that includes analog/digital mapping products, the updating of implementation information, and data sharing available for advocates, agencies, and users. • Prioritize recommended infrastructure projects, programs, and policies for implementation. • Identify funding programs for implementation. • Continue to expand community and agency involvement in bicycle activities.

Target Audience

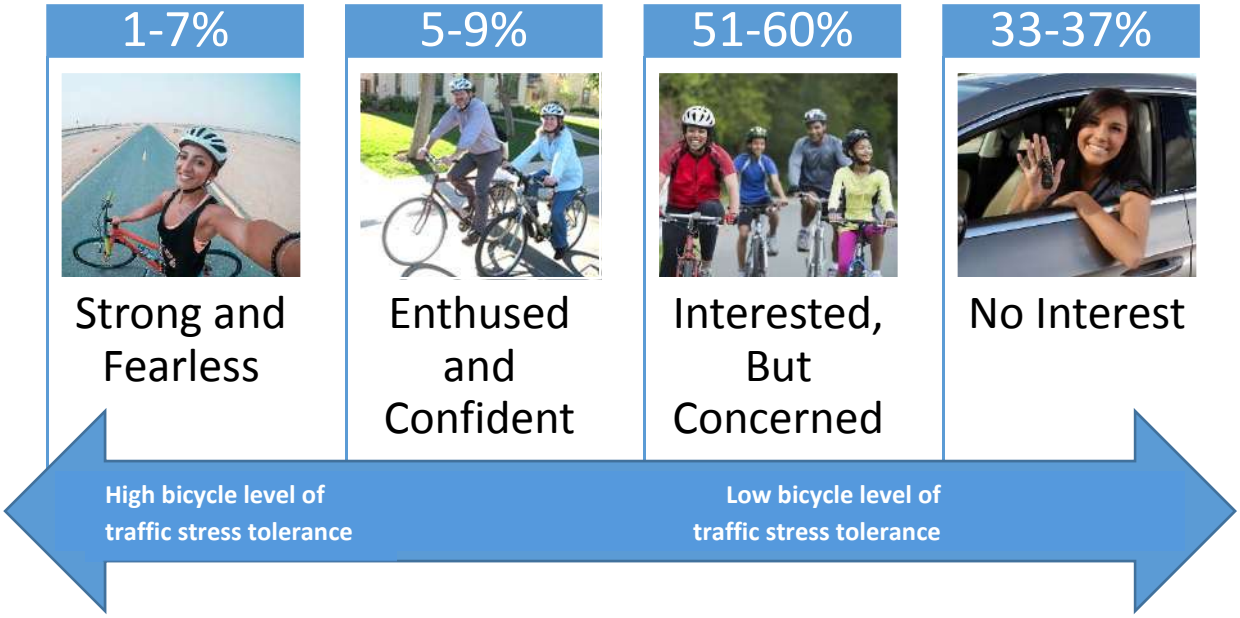
Riding a bicycle should not require bravery.

Yet, all too often, that is the perception among cyclists and non-cyclists alike.

Robert Geller

This Plan recognizes that only a small portion of potential users of the bicycle network have the skill level and confidence to ride with traffic on busier streets. Significant potential untapped demand for bicycling comes from the portion of the population considered "interested, but concerned," a view expressed in surveys done elsewhere as well as expressed through outreach for this Plan.

The Four Types of Bicyclists



Source: Roger Geller, "Four Types of Cyclists," www.portlandonline.com/transportation, https://jenniferdill.net/types-of-cyclists/

Bicycle facilities are not "one size fits all." Rather, a variety of bicycle facilities and programs are needed to provide for the very skilled rider who may need high-security bicycle parking and a shower after a long bicycle commute to the family who wishes to take a short ride for fitness and fun in a protected environment. Indeed, almost anyone can bicycle, regardless of income, age, or athletic ability, making it an easy way for many to travel and stay fit. Outlined in this Plan are measures meant to overcome the physical constraints and limited skills that make many reluctant to bicycle more often.

Just as there are many types of cyclists, there are many types of bicycles and similar forms of transportation. This document uses the term bicycle to refer to bikes and transportation such as electric pedal-assist bicycles, kick scooters or e-scooters, and other lightweight, low-speed vehicles without internal combustion engines. Likewise, many of the recommendations benefit people walking and using wheelchairs as well. Use of individual routes may be refined by state and local policies.

Planning Process

The development of this Plan was guided by a variety of stakeholders and agencies, including county and state officials, municipalities, community groups, and members of the public.

The roles of planning partners included the following:

- Assist in setting goals, strategies, and actions
- Assist in the bicycle network identification
- Identify important destinations
- Locate sites for bike parking
- Review maps and document drafts
- Assist with public outreach and supply leadership

Brandywine Hundred Library

The *New Castle County Bicycle Plan* development involved members of the public throughout the entire process. Outreach included providing information through the WILMAPCO website and newsletters, attending community events and meetings, and seeking input through interactive mapping, surveys, workshops and the Advisory Committee. Throughout the planning process, public feedback was sought at several public open-house workshops held at locations throughout the County. Public outreach included:

Goodley Park

Metroquest Online Survey

- 9 workshops and events throughout the county
  - Public Workshop: March 13, 2019, WILMAPCO
  - Our Town Public Workshop: February 7, 2019, The Tower at Star
  - Public Workshop: December 13, 2018, Elsmere Town Hall
  - Public Workshop: December 11, 2018, Brandywine Hundred Library
  - BikeNewark Community Night: October 26, 2018, Wooden Wheels
  - Pop-up Workshop at Halloween Event: October 20, 2018, Goodley Park
  - Southern New Castle County Master Plan Information Session: October 17, 2018, Odessa Fire Hall
  - Public Workshop and Briefing to Townsend Town Council: June 6, 2018, Townsend Town Hall
  - Briefing to Elsmere Town Council: March 8, 2018, Elsmere Town Hall
- Advisory committee of local officials and staff, and stakeholder groups
- Metroquest survey with 286 respondents from February 1 – May 1, 2019
- Submission form for local government project priorities

Key themes from the community outreach:

A DESIRE TO BICYCLE MORE Whether it's for work, errands, or recreation, many say they would like to bike more than they do now.

> *"I would cycle nearly every day if the routes were well-connected and safer. I used to cycle 3-4 days/week to work prior to having children. It is not safe for my children to currently cycle to school, and they would very much like that freedom. "*

SAFETY CONCERNS Safety was a widely identified barrier to bicycling. Participants said that safer streets and dedicated bicycle infrastructure would encourage them to ride more often.

> *"I'm terrified to ride my bike on the roads, it feels way to dangerous. I hope the improvements fix that."*

PEOPLE PREFER ENHANCED BIKE ROUTES Paths and buffered, green, and separated bike lanes were preferred. Shared travel lanes were identified as the least comfortable bike facility.

> *"More connected shared-use paths, protected bike lanes, and slowed streets to calm traffic would be great"*

A CONNECTED, CONTINUOUS BICYCLE NETWORK Participants expressed frustration about gaps in the network.

> *"I feel like a prisoner in my own subdivision."*

CONNECTING KEY DESTINATIONS People said that it is important to be able to reach important destinations by bike. Bicycle-friendly lane use was the second-highest scoring strategy.

> *"Multi-use zoning with greater, human-scale density including walkable distances to existing uses is essential "*

SAFER CROSSINGS ARE KEY People note that many existing paths, bike lanes, and neighborhood streets are enjoyable to ride until reaching a street crossing.

> *"I only bike to shops and restaurants on my neighborhood's side of the road because crossing the street is too frightening, especially with the kids."*

Details are provided in Appendix A.

Existing Conditions

Bicycle Use - Commuting

A desired outcome of this Plan is to increase the use of bicycling in New Castle County.

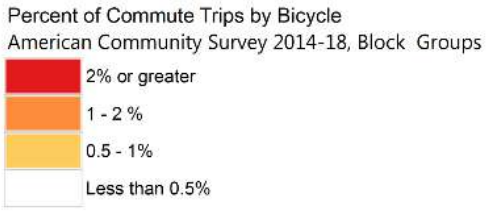
Mode	NCC 2000	NCC 2007-9	NCC 2008-10	NCC 2007-11	NCC 2008-12	NCC 2009-13	NCC 2010-14	NCC 2011-15	NCC 2012-16	NCC 2013-17	NCC 2014-18
Drove alone	79.0%	78.8%	78.8%	79.1%	79.2%	79.6%	79.7%	80.0%	80.2%	80.5%	79.9%
Carpool	10.9%	9.9%	9.7%	9.3%	9.0%	8.8%	8.6%	8.3%	8.1%	7.7%	8.1%
Transit	3.9%	4.4%	4.5%	4.7%	4.6%	4.5%	4.4%	4.3%	4.1%	4.0%	3.9%
Walk	0.7%	2.9%	2.8%	2.5%	2.4%	2.4%	2.3%	2.3%	2.4%	2.4%	2.5%
Bike	0.2%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.3%
Other	2.8%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.8%
Work @ home	2.6%	3.1%	3.3%	3.5%	3.8%	3.8%	4.1%	4.1%	4.2%	4.2%	4.5%

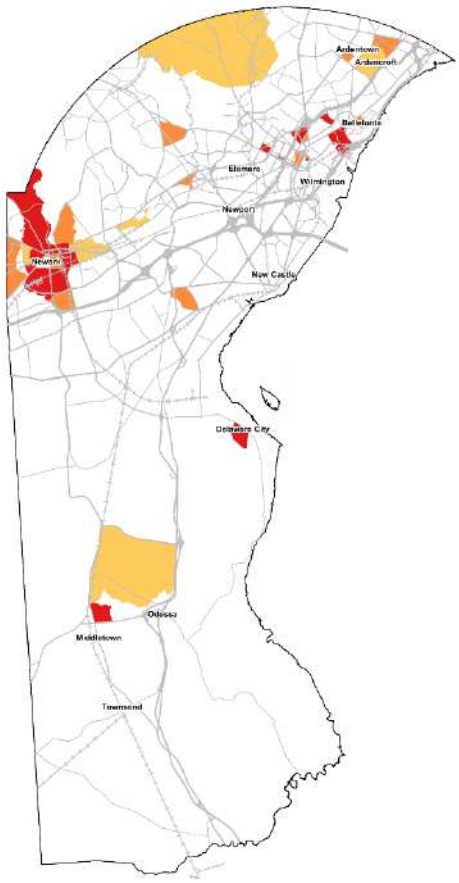
Data includes all workers aged 16 and older Sources: U.S. Census Bureau, Census 2000 Summary File 3 and American Community Survey Average 3 and 5 Year Estimates

While the current use of bicycling for commute trips is still low on average, some locations within the county have significantly more bicycle commuters. These places include some locations in Brandywine Hundred, City of Wilmington, Pike Creek, Marshallton, Bear, Newark, Delaware City, and Middletown.

New Castle County average share of commute trips by bicycle

0.3%

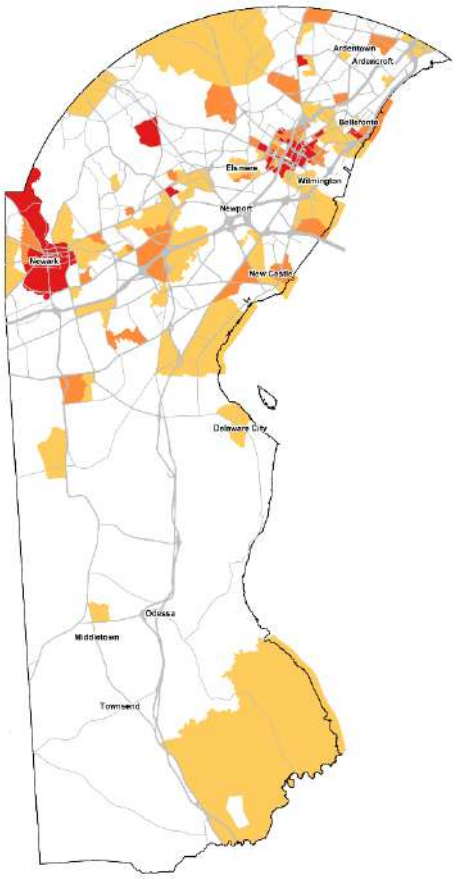




Commute trips by walking have also increased substantially since 2000. Pedestrians also will benefit from the numerous potential pathways shown in this Plan.

New Castle County average share of commute trips by bicycle and walking

2.8%



Bicycle Use - Recreation

The 2018 Delaware Statewide Comprehensive Outdoor Recreation Plan (SCORP) found that recreation involving walking and bicycling are among the most popular outdoor activities. Household participation, by area, is:

	REGION 1	REGION 2	Wilmington	Newark
Walking or jogging	84%	84%	80%	82%
Hiking	60%	58%	48%	70%
Dog walking	59%	57%	51%	61%
Bicycling	59%	60%	56%	61%

Recommendations

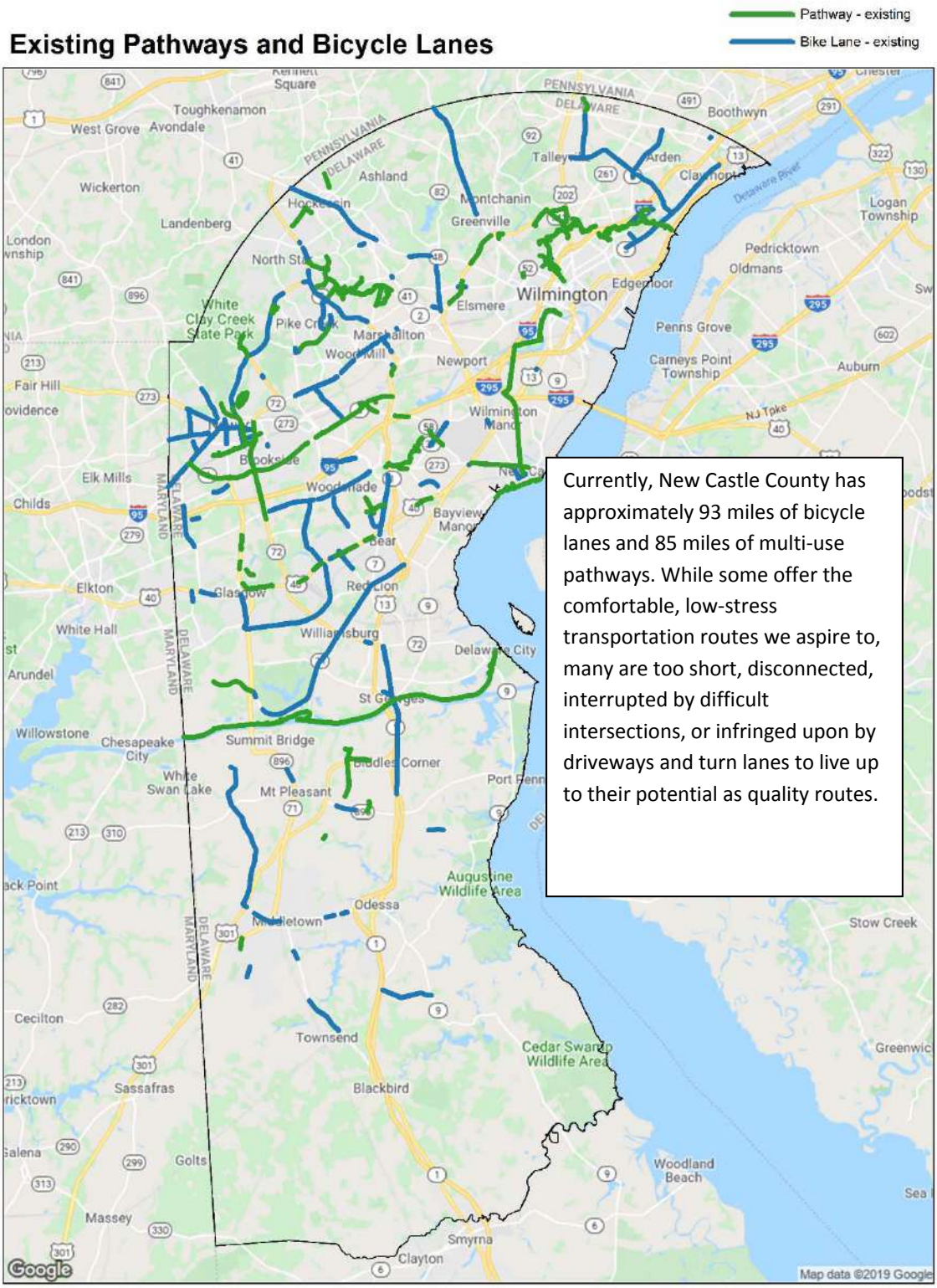
Identify Bicycle Transportation Network

 **Identify bicycle transportation network**	• Provide access within ¼ mile of the network for all residents. • Focus on community destinations as points of access. • Identify key gaps and areas of safety concern. • Consider the needs of all population groups, including active recreation and transportation needs. • Develop, periodically update, and implement municipal and subregional bicycling plans.

This section reviews the existing bicycle network and recommends bicycle route improvements to create a connected network that serves priority destinations for all ages and abilities. The section includes:

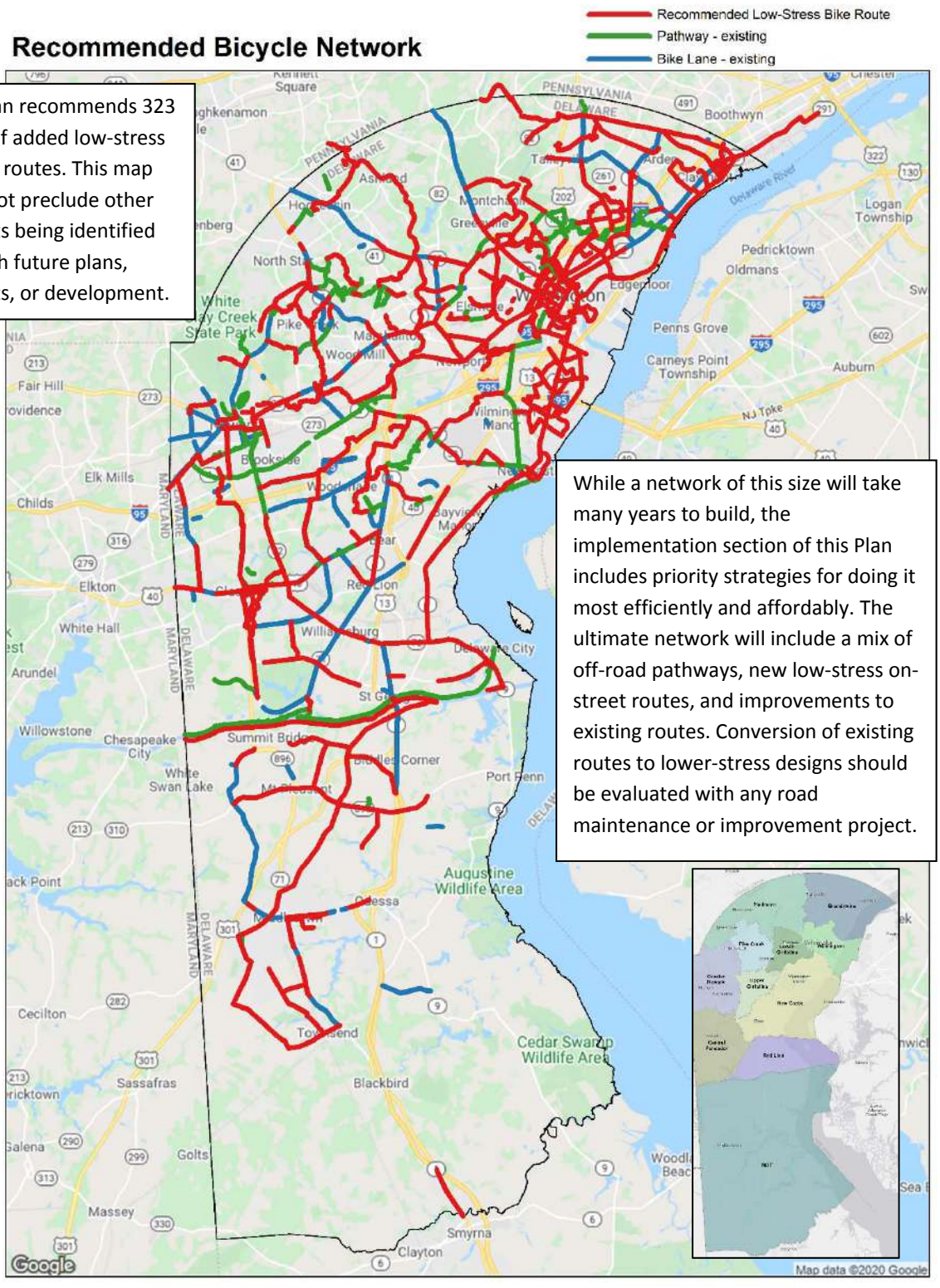
- Identification of existing pathways and bike lanes. Because the existing 93 miles of bicycle lanes and 85 miles of pathways in New Castle County are disconnected, often uncomfortable to most people who ride bikes, and are obstructed by difficult crossings, existing routes do not well serve the needs for many people.
- All streets and intersections have been analyzed and assigned a bicycle level of traffic stress that rates facilities based on their expected comfort to different types of bicyclists. This plan recommends that current routes be improved and new routes provided for comfortable, low-stress travel.
- Bicycle level of traffic stress analysis has identified isolated “islands” where disconnected low-stress trips by bicycle may occur. Redesigned intersections and new short connectors should emphasize linking low-stress islands to expand the network that is comfortable for most users.
- Connectivity analysis looks at the share of households within a 10-minute bike ride to important community destinations. Connectivity levels are much lower in more rural/suburban areas of New Castle County. In addition, connectivity using only low-stress routes is much lower than using all routes. Connectivity improvements to supermarkets, pharmacies, and other key destinations should work towards increasing the percentage of households with low-stress bicycle access to these places.
- This countywide Plan is not a substitute for the in-depth analysis that is part of municipal and subregional bicycle planning. The cities of Newark and Wilmington have each developed municipal bicycle plans; recommendations from those local plans are included in this Plan in their entireties. In addition, bicycling recommendations from existing and future multimodal, subregional studies are part of this Plan. Implementation of municipal and subregional bicycling recommendations should be monitored, and plans should be periodically reviewed and updated. Future bicycle planning is recommended for other municipalities and subregional areas.

Existing Bicycle Routes



Currently, New Castle County has approximately 93 miles of bicycle lanes and 85 miles of multi-use pathways. While some offer the comfortable, low-stress transportation routes we aspire to, many are too short, disconnected, interrupted by difficult intersections, or infringed upon by driveways and turn lanes to live up to their potential as quality routes.

Recommended Bicycle Network

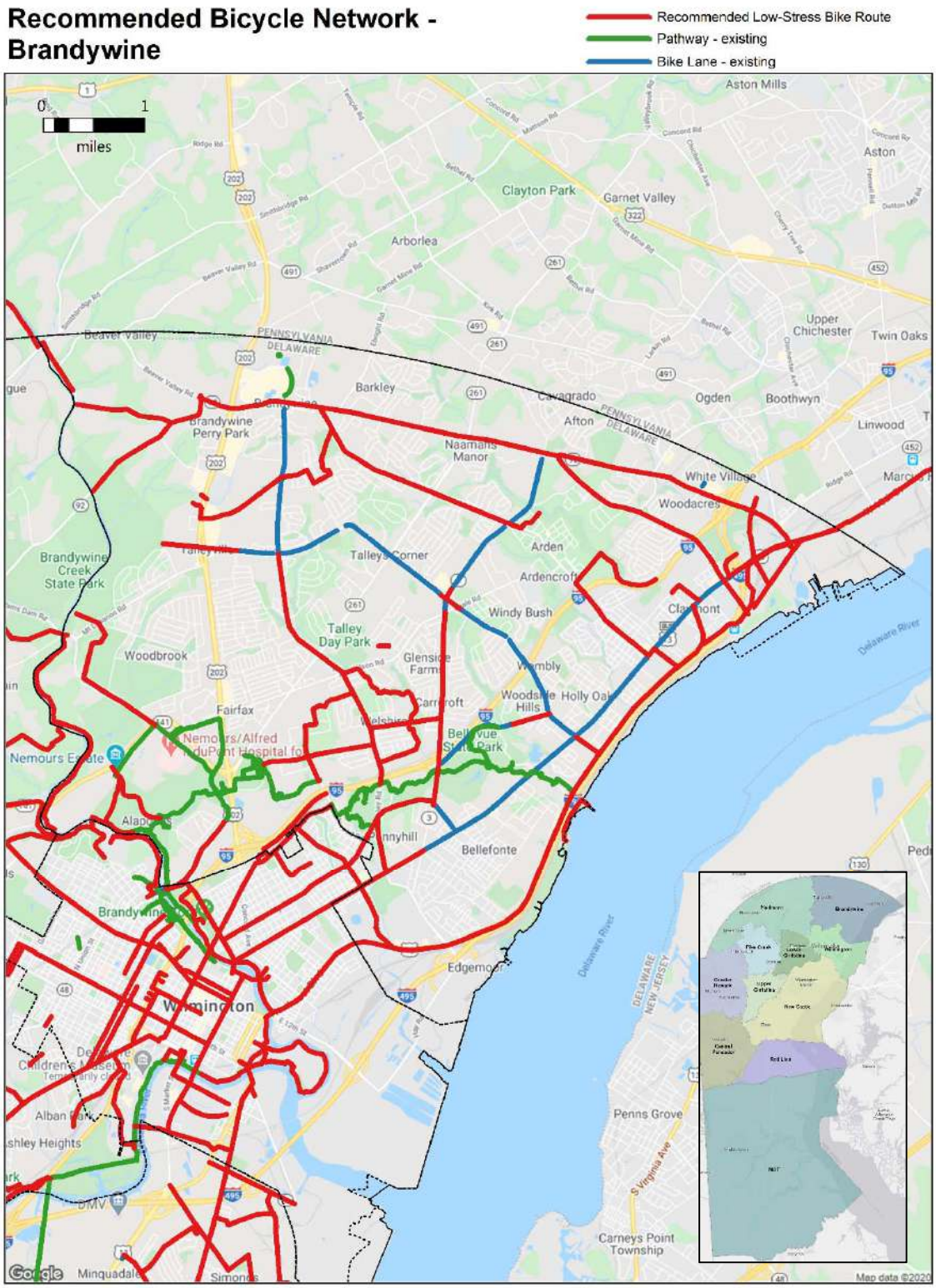


The Plan recommends 323 miles of added low-stress bicycle routes. This map does not preclude other projects being identified through future plans, projects, or development.

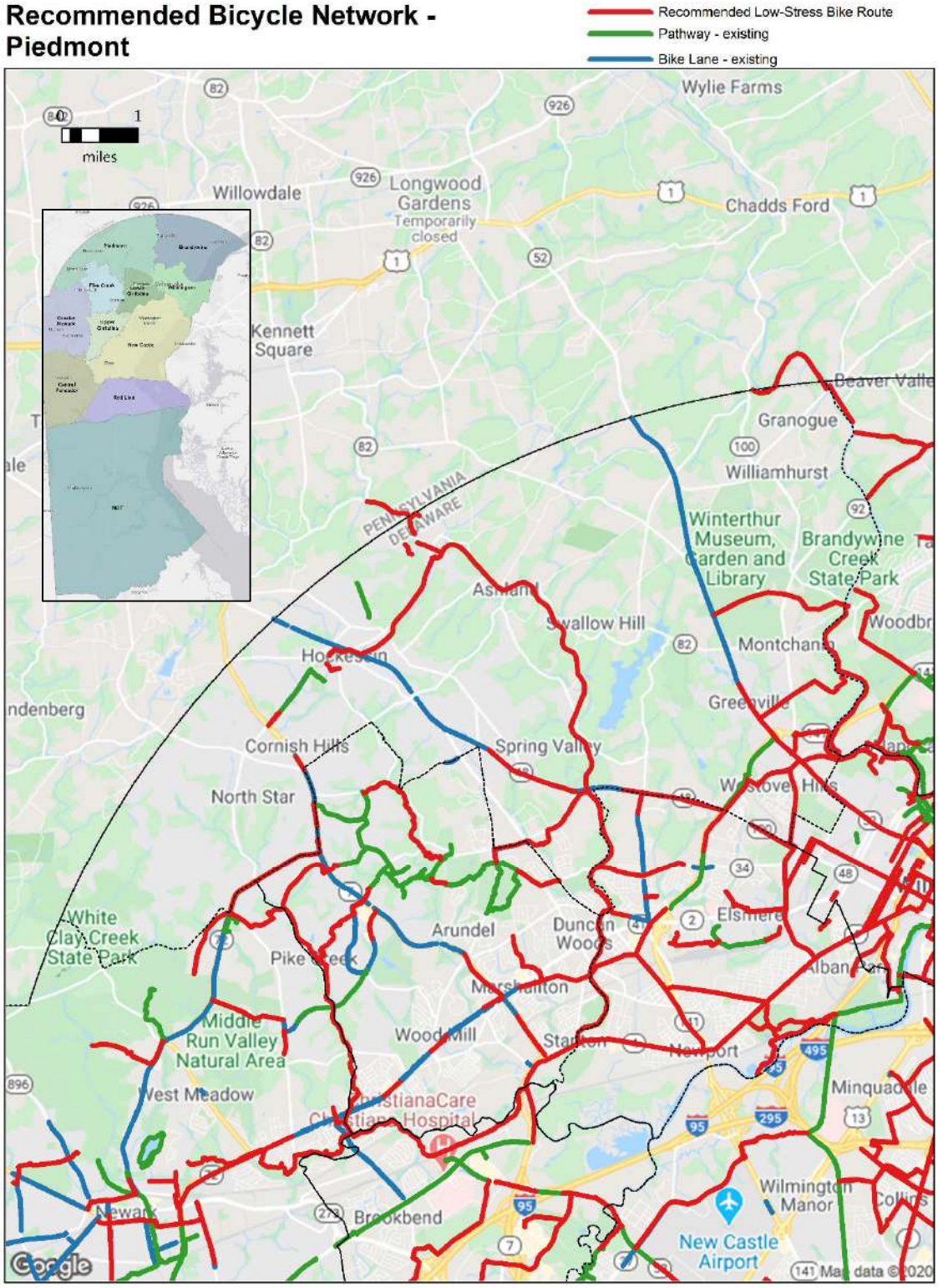
While a network of this size will take many years to build, the implementation section of this Plan includes priority strategies for doing it most efficiently and affordably. The ultimate network will include a mix of off-road pathways, new low-stress on-street routes, and improvements to existing routes. Conversion of existing routes to lower-stress designs should be evaluated with any road maintenance or improvement project.

The following 11 maps show the recommended network by New Castle County Planning District. Interactive maps may also be viewed at www.wilmapco.org/bikencc.

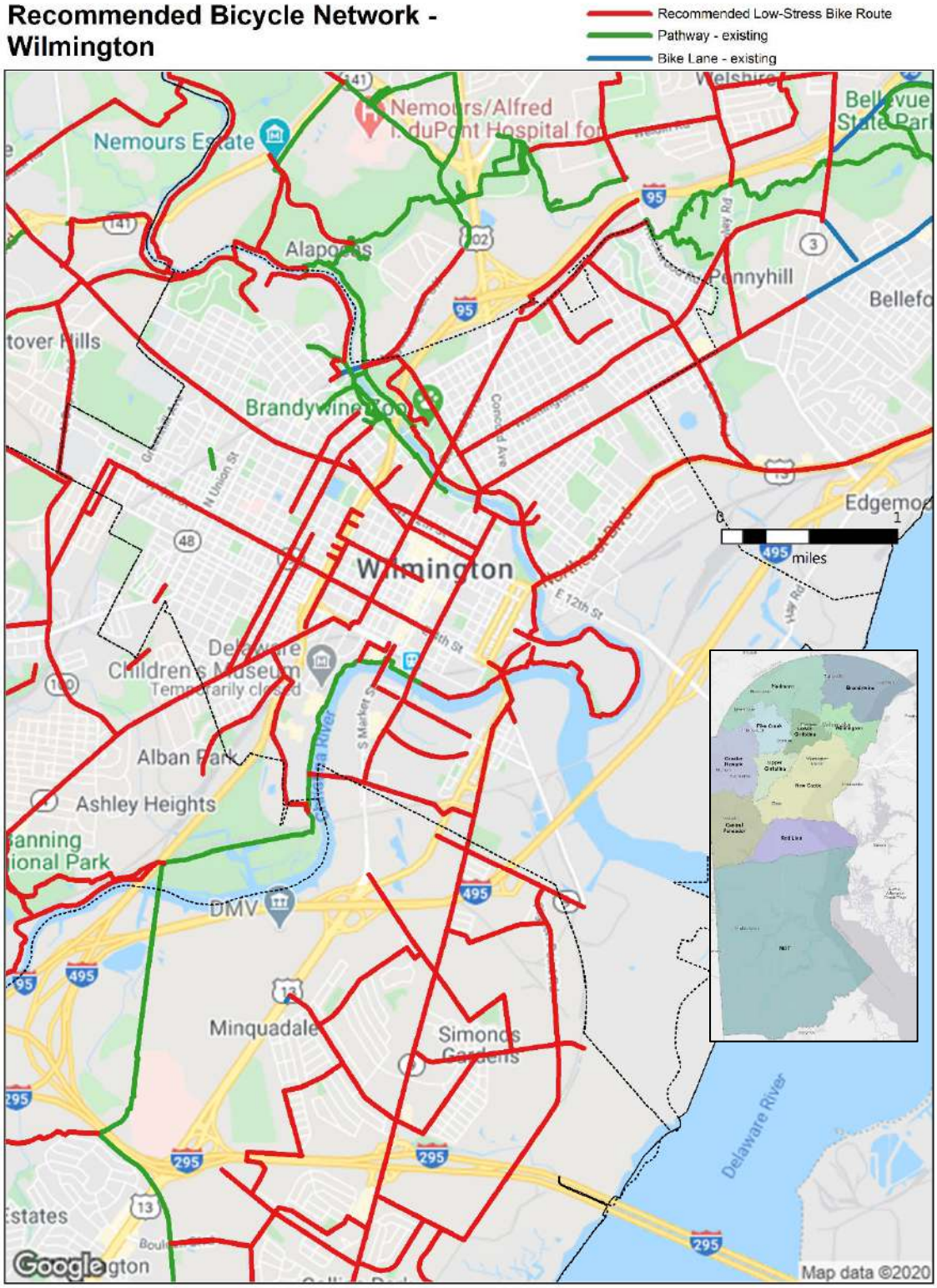
Recommended Bicycle Network - Brandywine



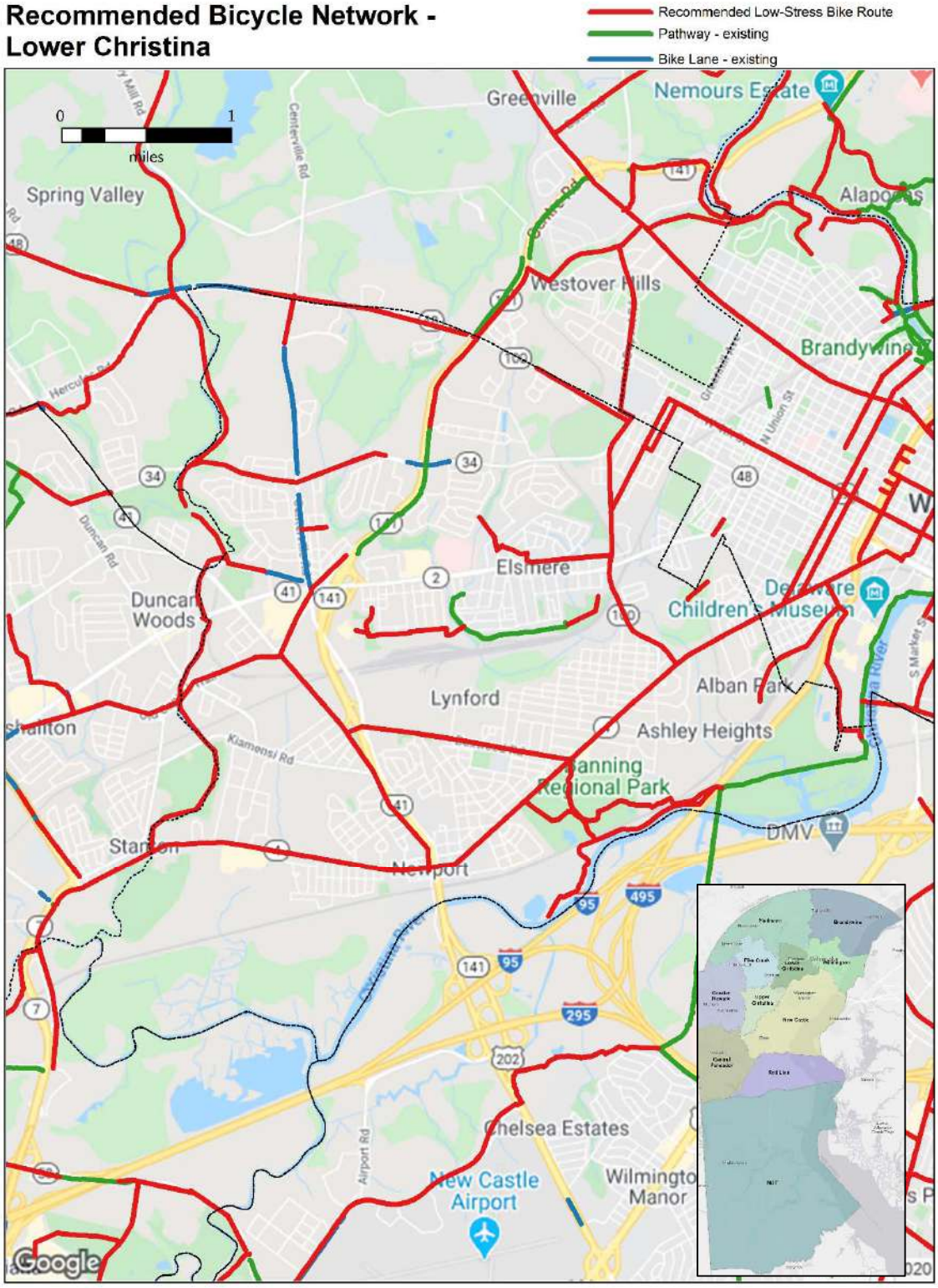
Recommended Bicycle Network - Piedmont



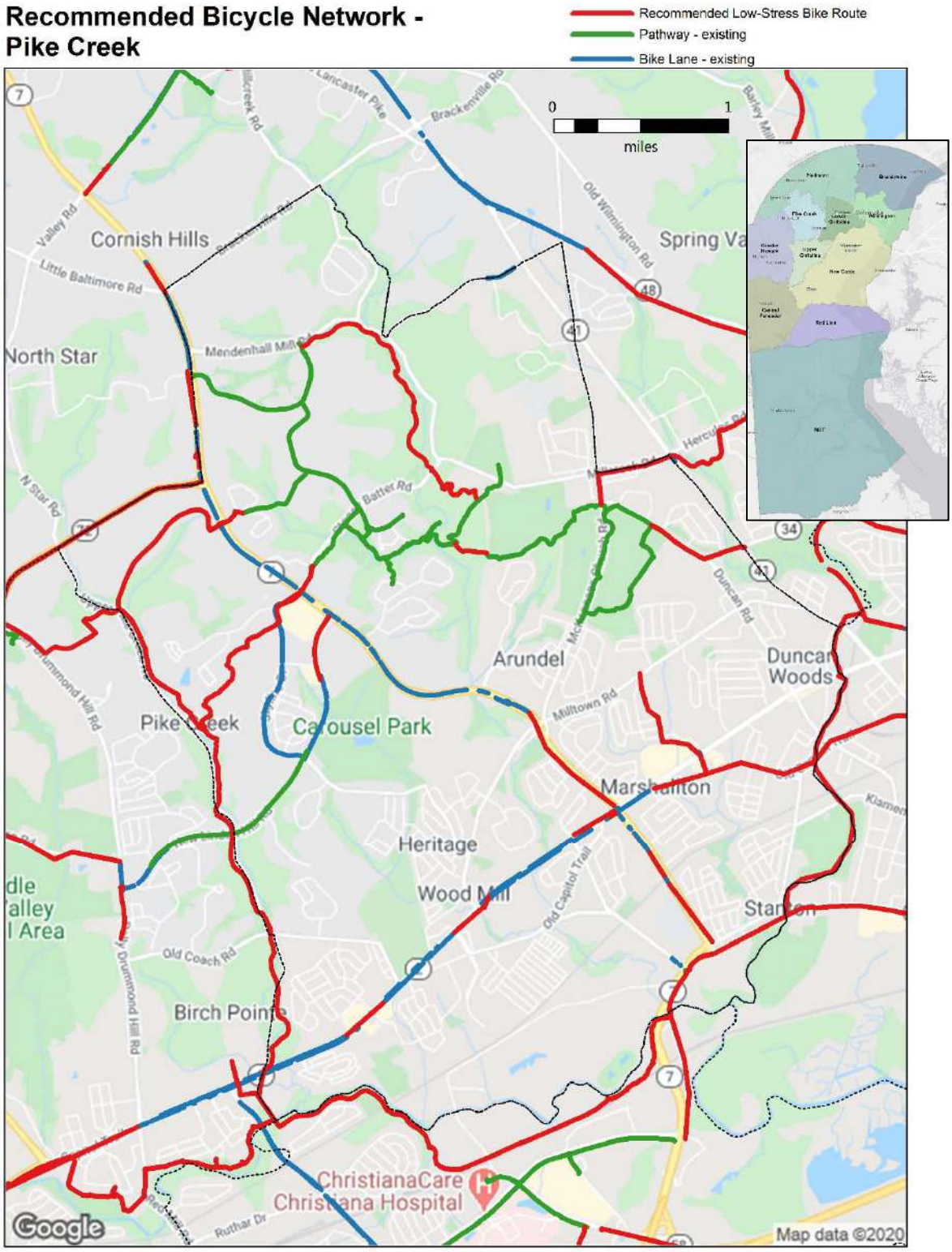
Recommended Bicycle Network - Wilmington



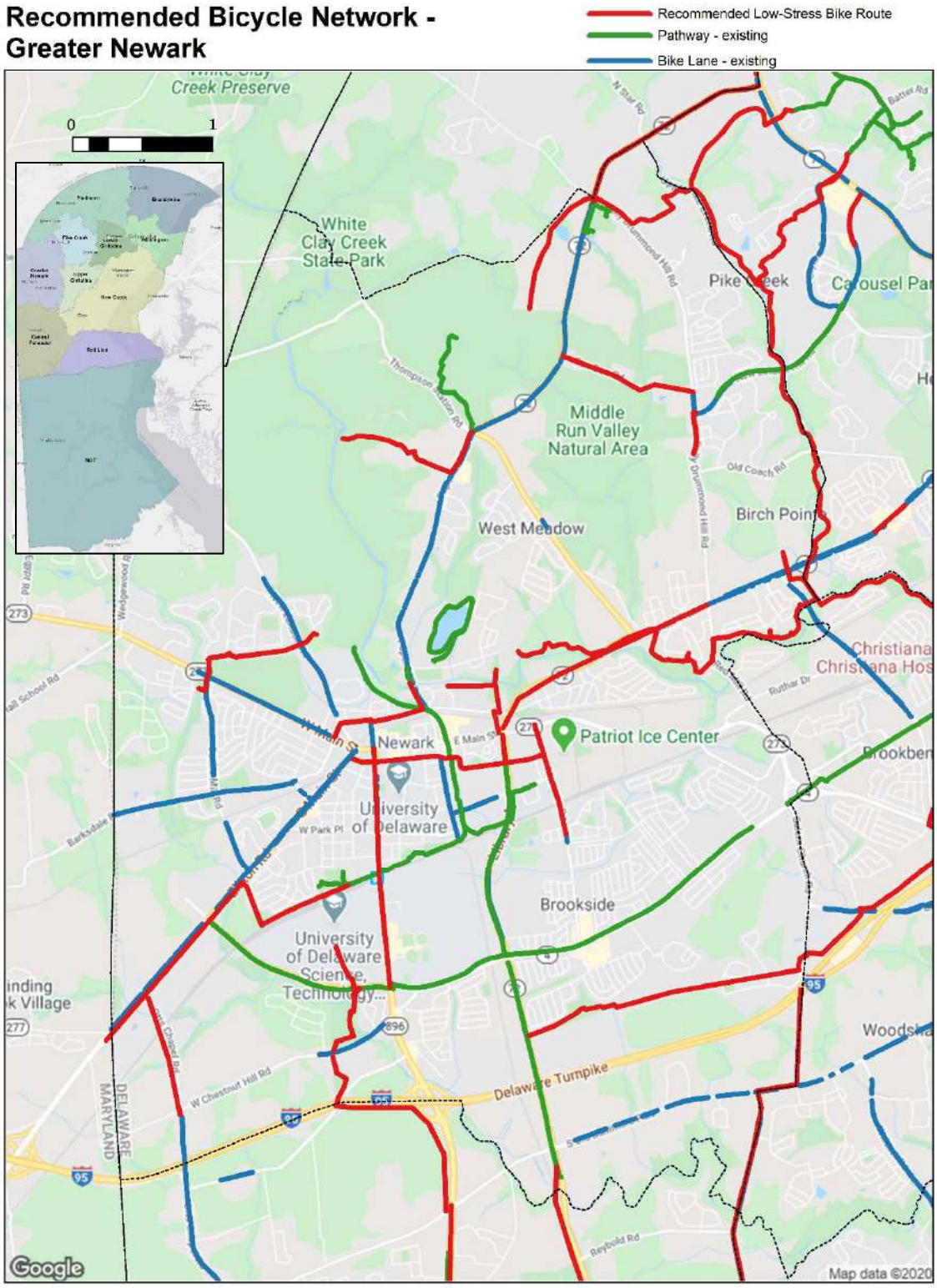
Recommended Bicycle Network - Lower Christina



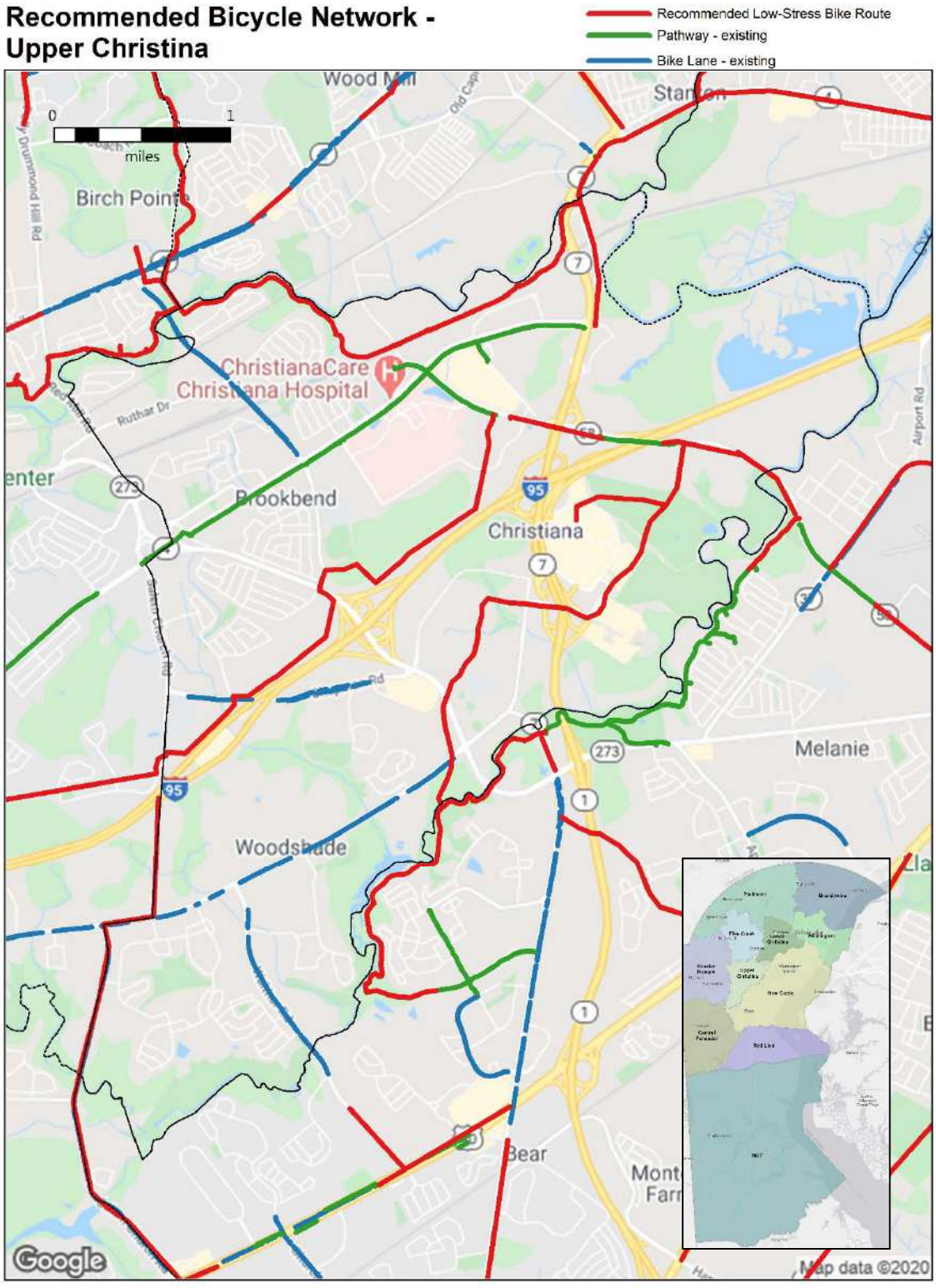
Recommended Bicycle Network - Pike Creek



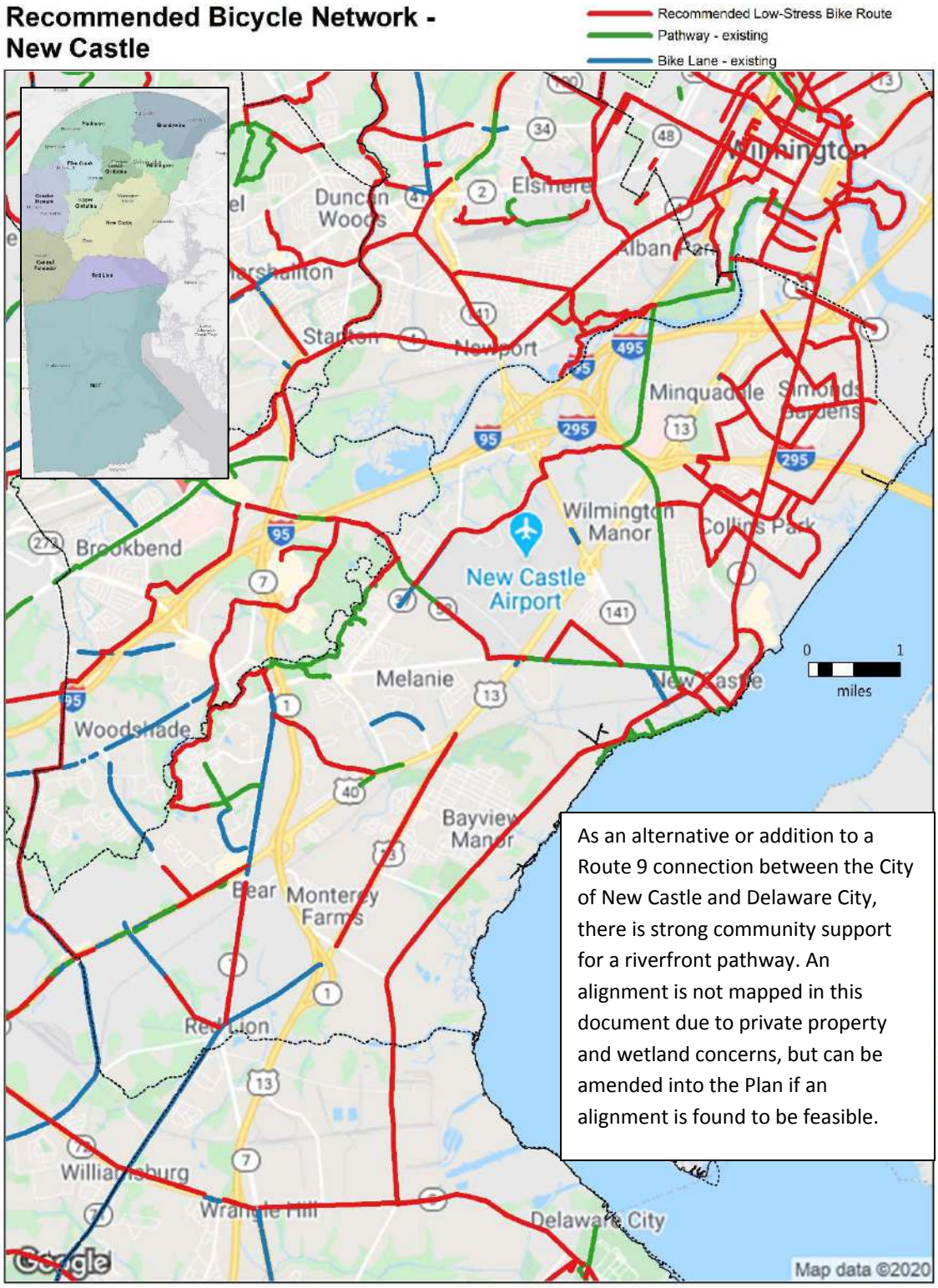
Recommended Bicycle Network - Greater Newark



Recommended Bicycle Network - Upper Christina

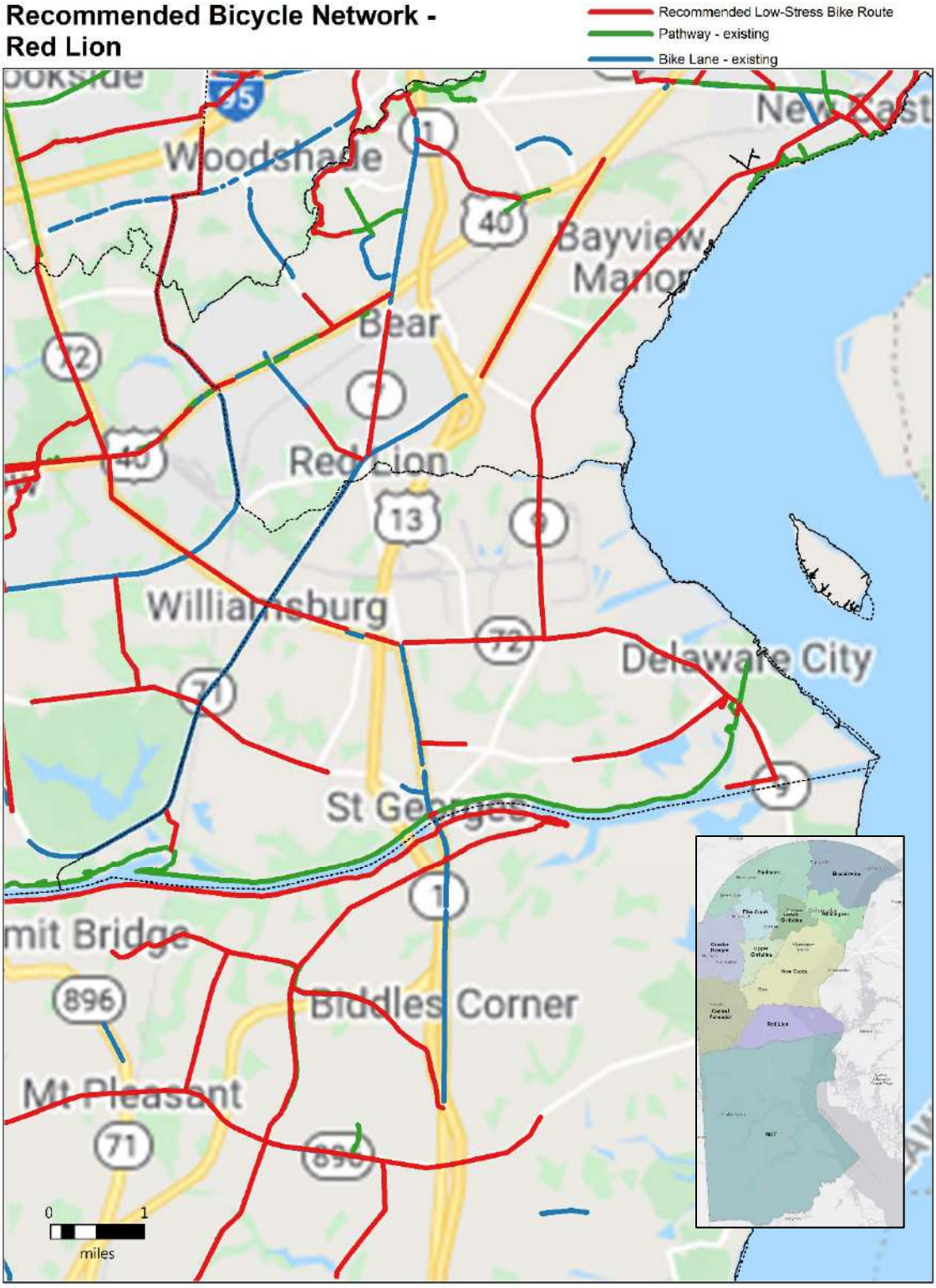


Recommended Bicycle Network - New Castle

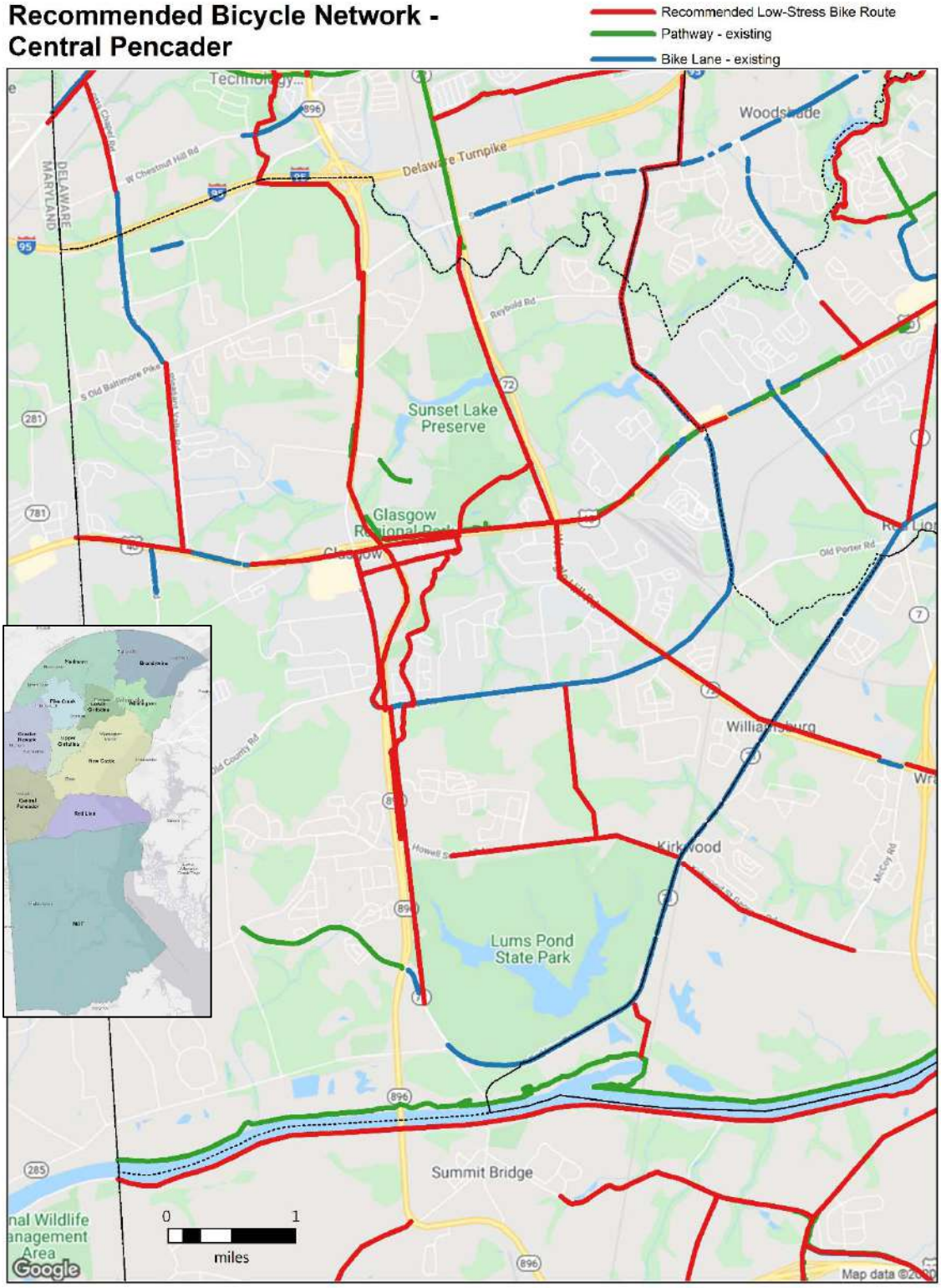


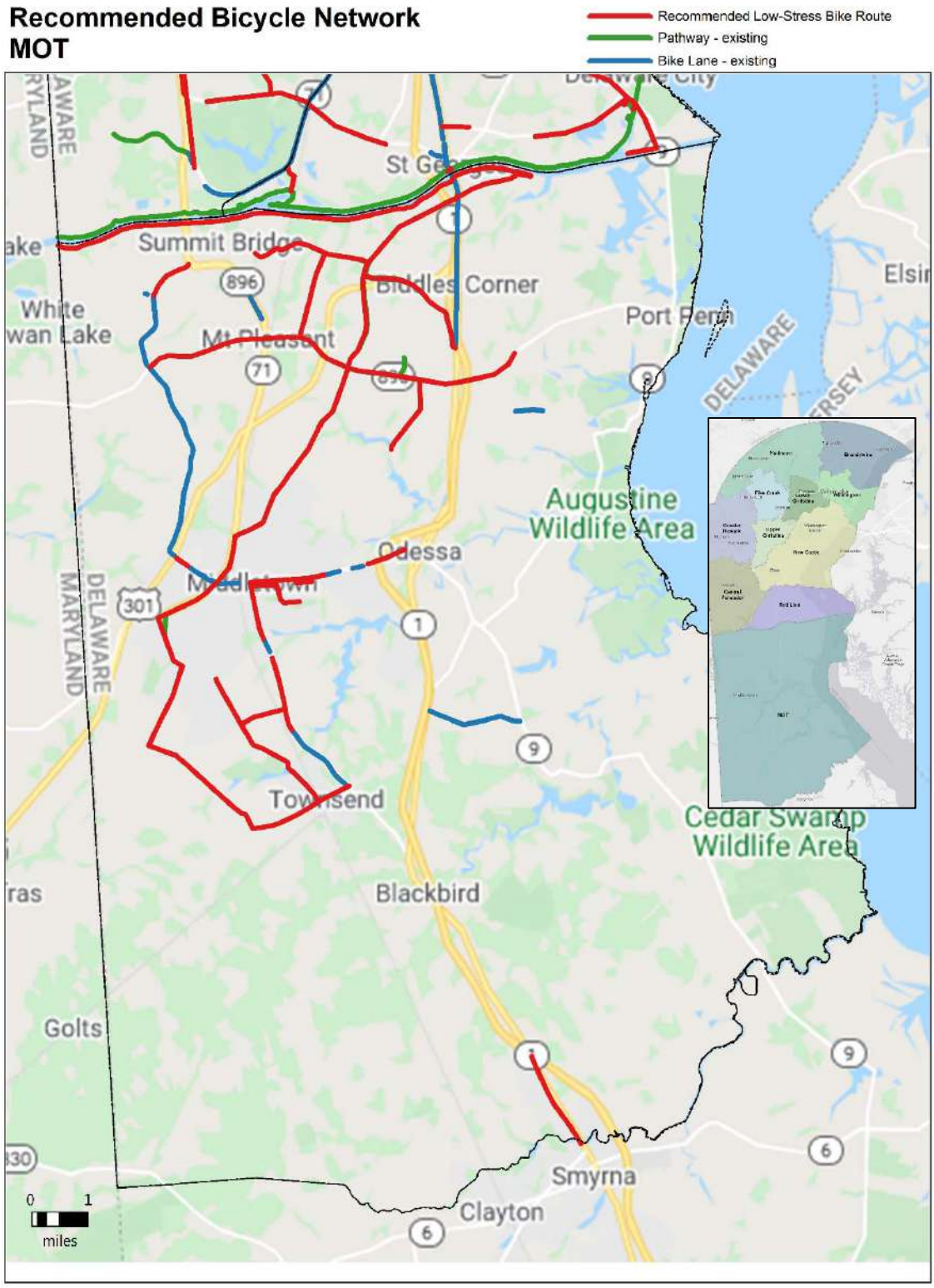
As an alternative or addition to a Route 9 connection between the City of New Castle and Delaware City, there is strong community support for a riverfront pathway. An alignment is not mapped in this document due to private property and wetland concerns, but can be amended into the Plan if an alignment is found to be feasible.

Recommended Bicycle Network - Red Lion



Recommended Bicycle Network - Central Pencader




Recommended Bicycle Network
MOT
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
Summit Bridge
Biddles Corner
White
Port Penn
DELAWARE
Augustine
Wildlife Area
Odessa
DELAWARE
MARYLAND
Townsend
Cedar Swamp
Wildlife Area
Blackbird
Golts
Smyrna
Clayton
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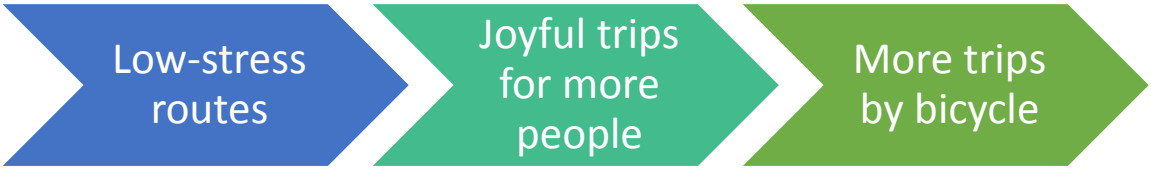
miles

Bicycle Level of Traffic Stress



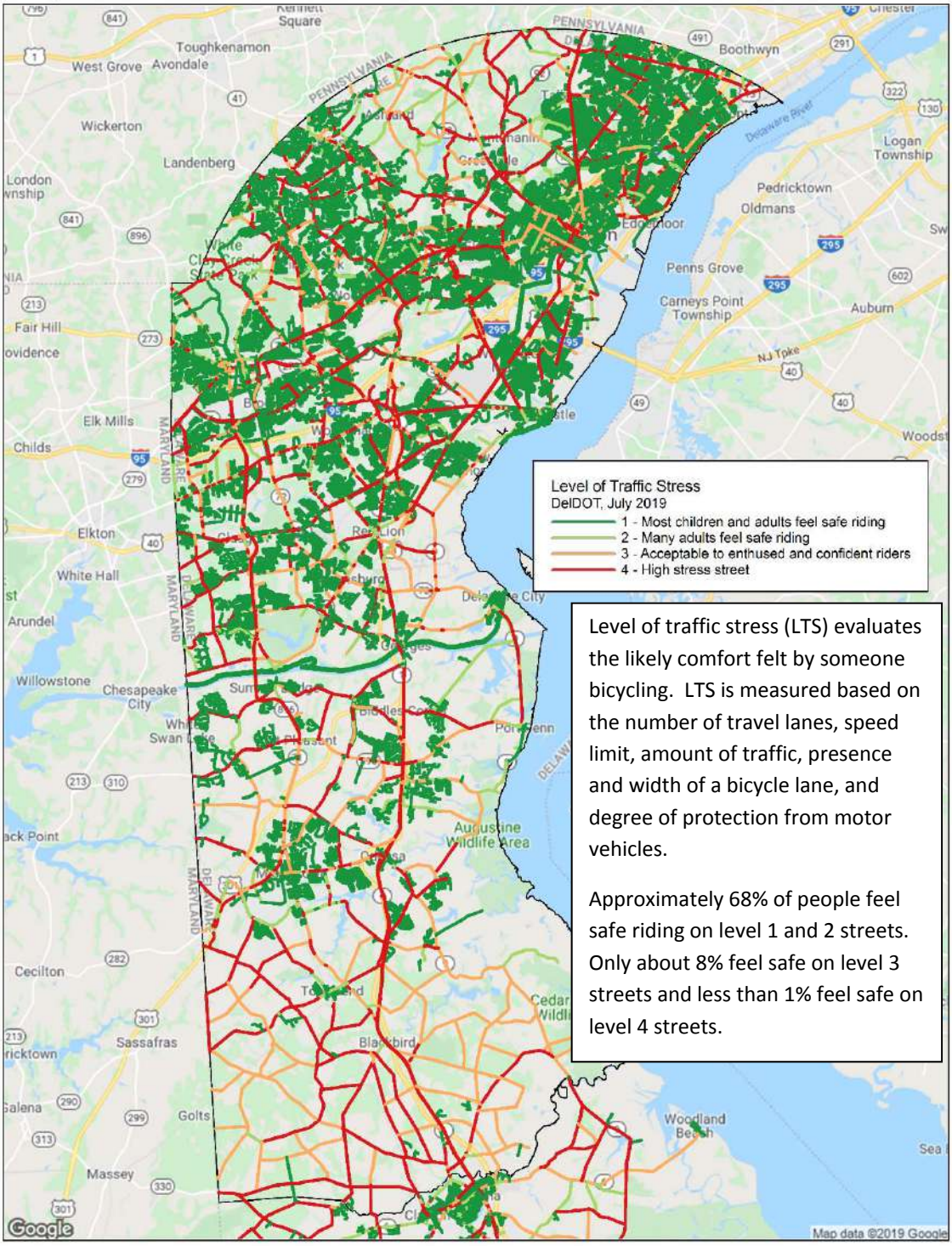
This plan proposes a network of interconnected bicycle routes and street crossings that make bicycling practical and appealing to a broader range of people who live, work, and play in New Castle County. New routes should be designed to provide a low-stress bike ride, and existing routes should be improved to reduce the level of traffic stress.

Level of traffic stress is a method to rate routes and intersections from one to four using factors such as traffic speeds, volumes, and the number of lanes to predict how comfortable a route might be to different types of riders. This plan recommends that routes be designed and retrofitted to provide the lowest stress experience practical.

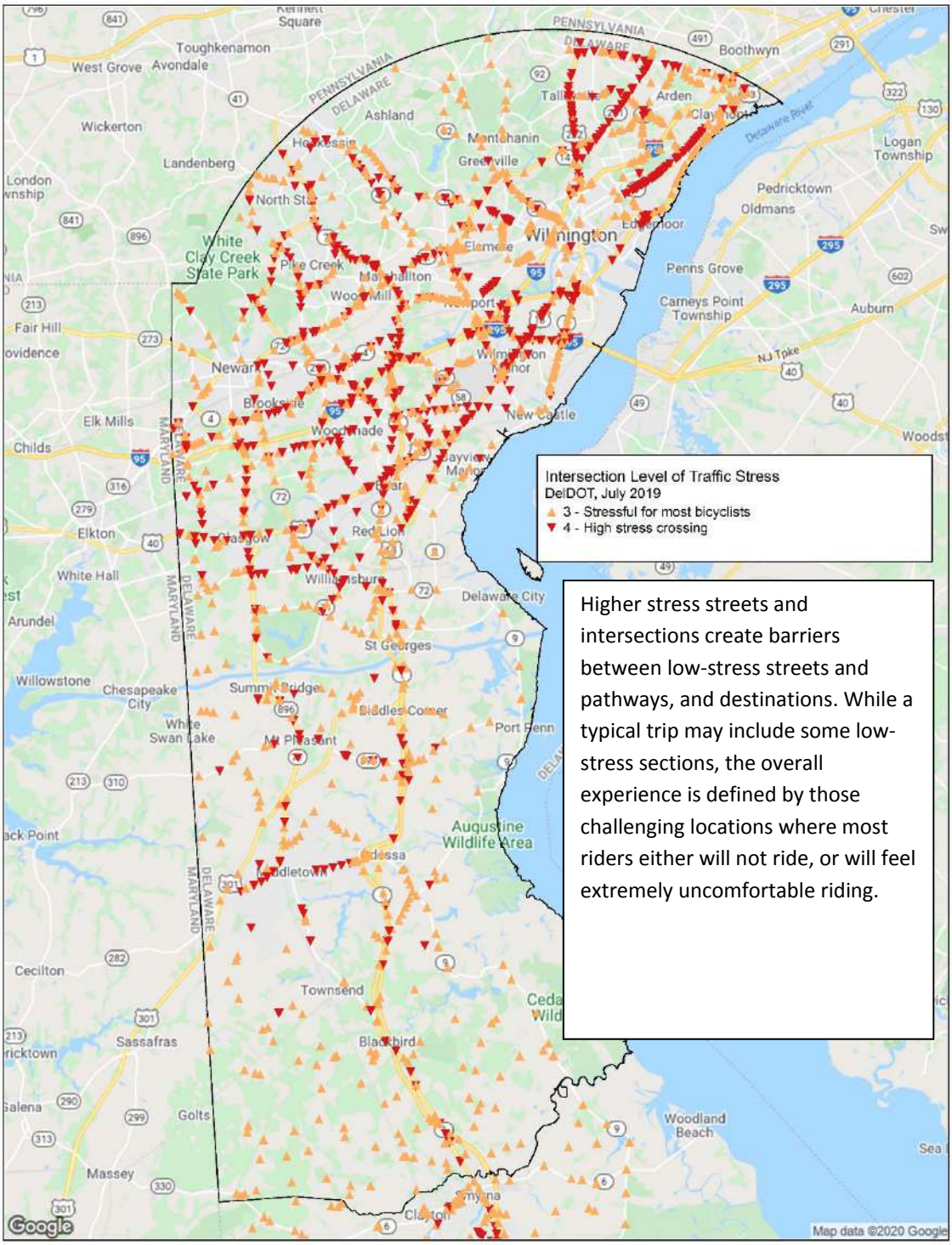
A low-stress network provides a trip that is safe and comfortable to all ages and abilities. Implementing agencies should use the priority areas shown in the recommendations section "Develop Implementation and Evaluation Plan," guide investments to the areas with the greatest needs. Recommendations for facility types in the section "Improve Safety through Design Maintenance, and Enforcement" are suggested to help with selecting practical options.

Level of Traffic Stress	Description	Example
1	Safe for children to use; Usually completely separated from auto traffic	
2	Tolerated by most mainstream adult populations of cyclists; Roads with low volume and low speed auto traffic	
3	Tolerated by riders who are enthused and confident; Heavy traffic with separated bike facility	
4	Only tolerated by strong and fearless riders; cyclists must interact with high volumes or speeds of auto traffic.	

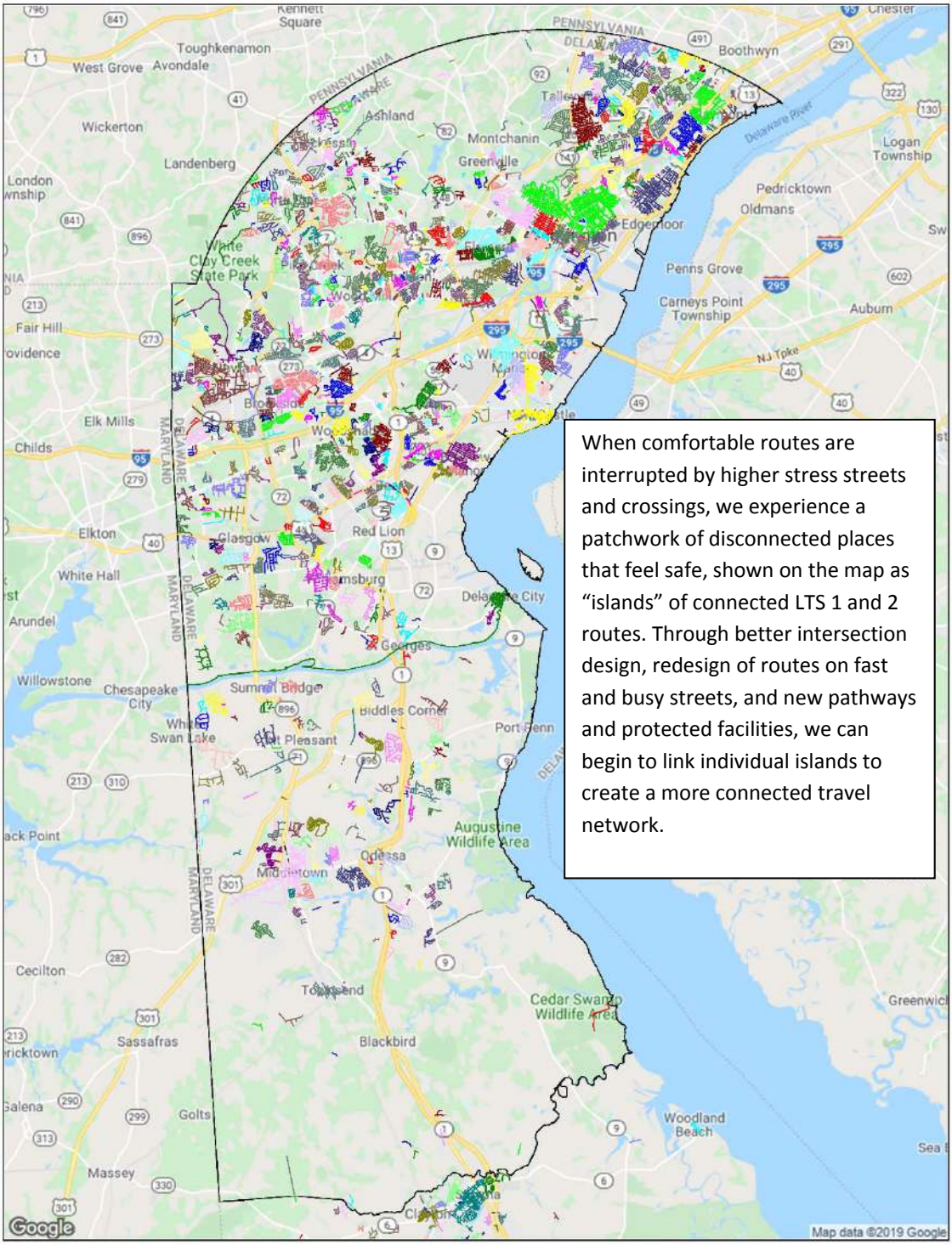
Bicycle Level of Traffic Stress



Intersection Level of Traffic Stress



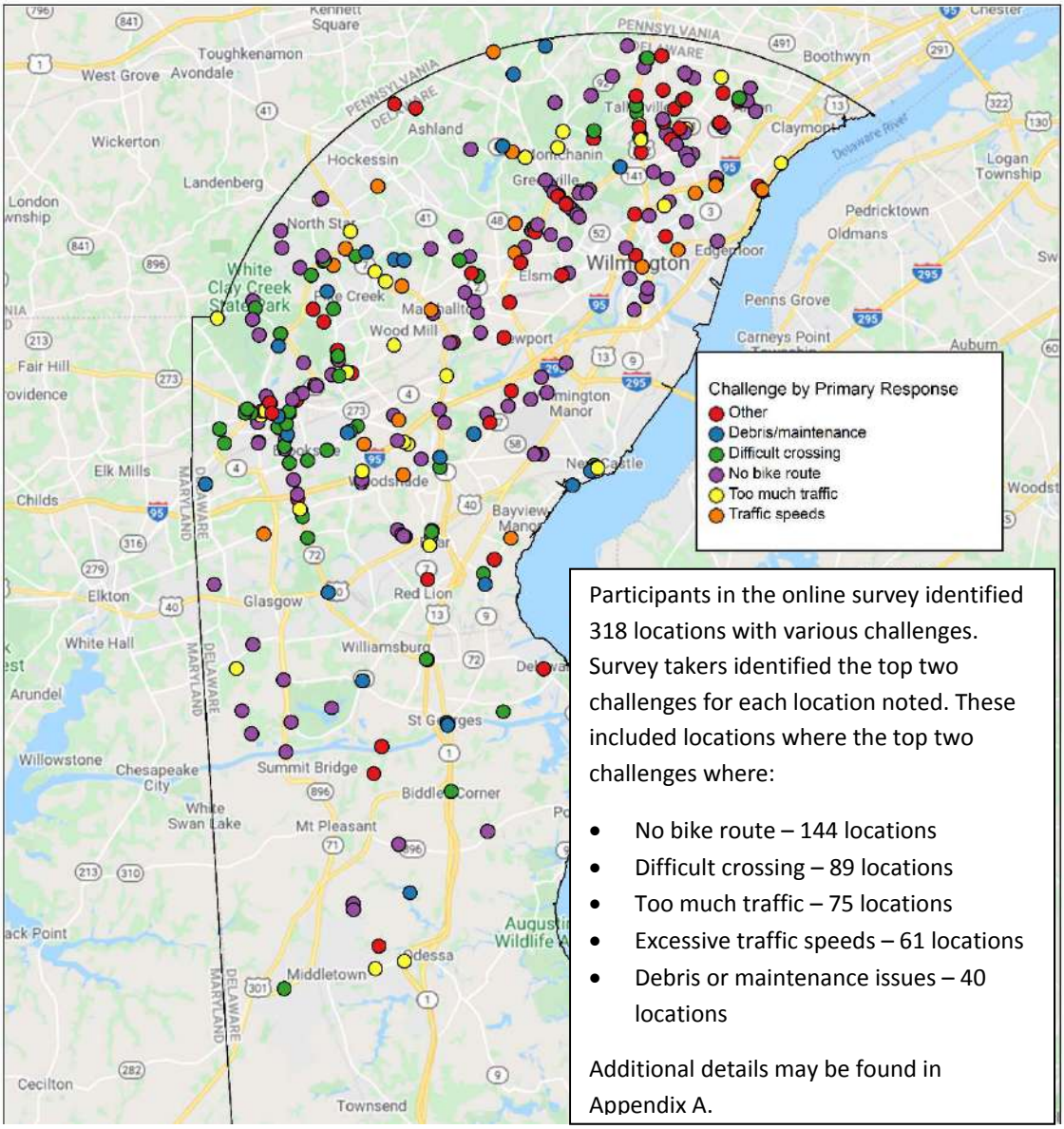
Low Level of Traffic Stress Islands



Primary barriers identified through the Plan's outreach process and their solutions include:

- Limited highway, river, and rail crossings for bicycles restrict direct bicycle trips – *improve facilities on bridges and underpasses.*
- Existing bikeways on roadways are unsuitable for all ages and abilities - *retrofit with lower stress designs*
- Bike facilities end before the intersection – *connect bike routes across intersections and mid-block trail crossings.*
- Existing bikeways are disconnected – *use prioritization process to target key gaps*
- Existing bikeways are not well maintained – *use prioritization process and simplified community reporting system to target which facilities to better maintain*

Locations with Challenges Submitted through Online Survey



Participants in the online survey identified 318 locations with various challenges. Survey takers identified the top two challenges for each location noted. These included locations where the top two challenges where:

- No bike route – 144 locations
- Difficult crossing – 89 locations
- Too much traffic – 75 locations
- Excessive traffic speeds – 61 locations
- Debris or maintenance issues – 40 locations

Additional details may be found in Appendix A.

Connectivity Analysis

Working with the University of Delaware's Center for Applied Demography and Survey Research (CADSR), the WILMAPCO 2019 Transportation Justice Report analyzed our region's transportation connectivity. Connectivity to nine destination types from every housing unit in the region was determined for walking, bicycling, transit, and car trips. Neighborhoods (census block groups) were evaluated based on the overall level of housing unit connectivity to at least one destination within these destination types. The analysis provided a detailed survey of regional connectivity—or, as it more commonly turned out, dis-connectivity. Further still, it enabled us to consider transportation connectivity through the lens of social equity.

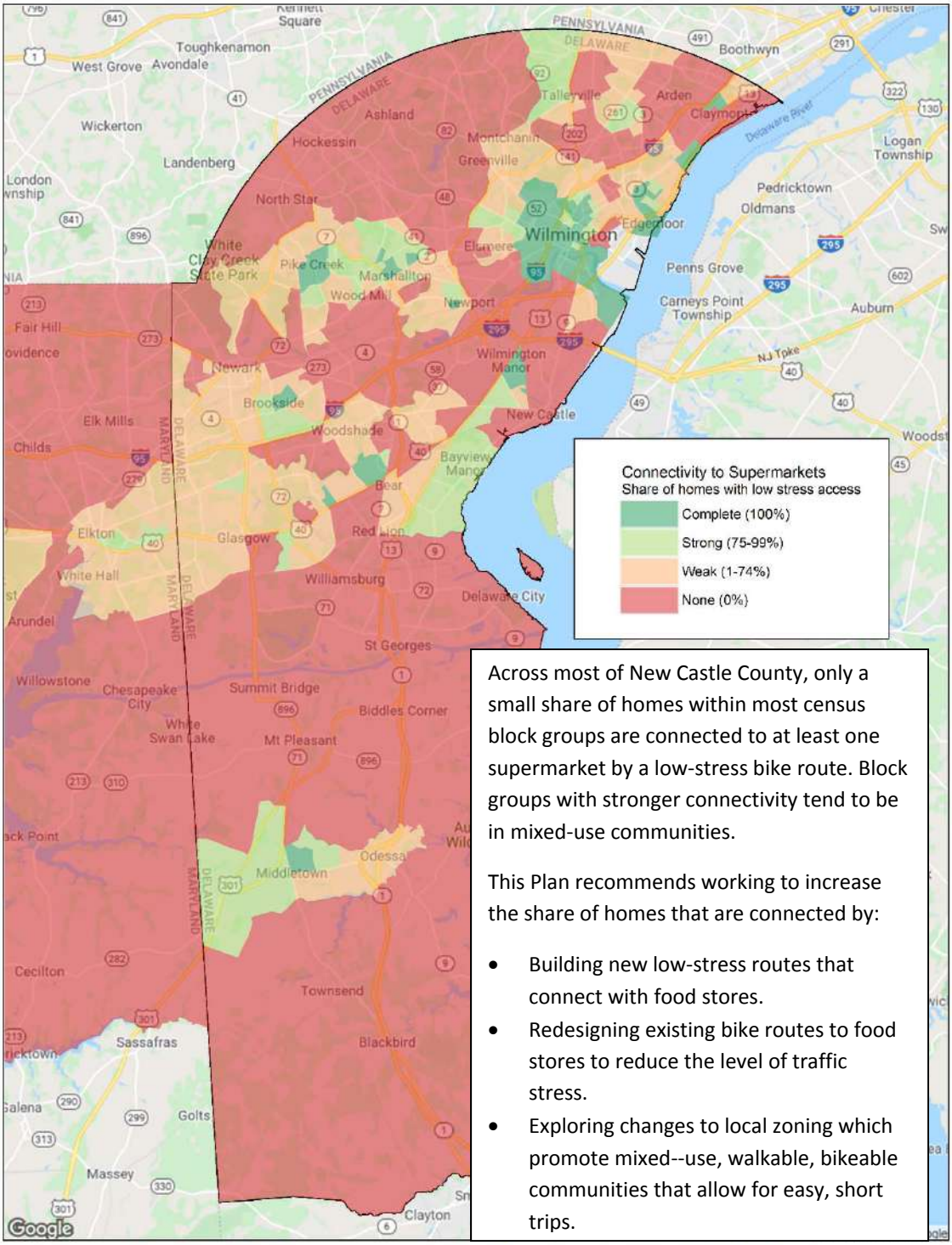
The overall percentage of homes within New Castle County that are connected by walking, biking, taking the bus, or driving to important destinations is as follows:

	Bike **10-minute ride along a route with low traffic stress**	Bike **10-minute ride along a route with all levels of traffic stress**	Walking **10-minute walk along subdivision streets, trails, or sidewalk**	Bus **30-minute door-to-door peak trip including up to 10 minutes walking**	Drive **15-minute ride along any road**
Supermarket	31%	80%	17%	26%	100%
Pharmacy	44%	92%	20%	38%	100%
Hospital	13%	27%	2%	8%	99%
Library	25%	61%	6%	19%	100%
Low-Wage Emp. Center	19%	52%	3%	20%	96%
Medical Center	27%	71%	7%	23%	99%
Community Center	27%	49%	9%	19%	99%
Senior Center	31%	56%	9%	18%	99%
State Service Center	17%	37%	3%	10%	99%

Connections by bike to most destinations along low-stress routes are better than by walking or transit, but far worse than by driving. By reducing stress levels on existing bike routes, we can vastly improve the share of homes connected to important destinations.

Source Jamie Magee

Share of homes with low-stress connections to supermarkets

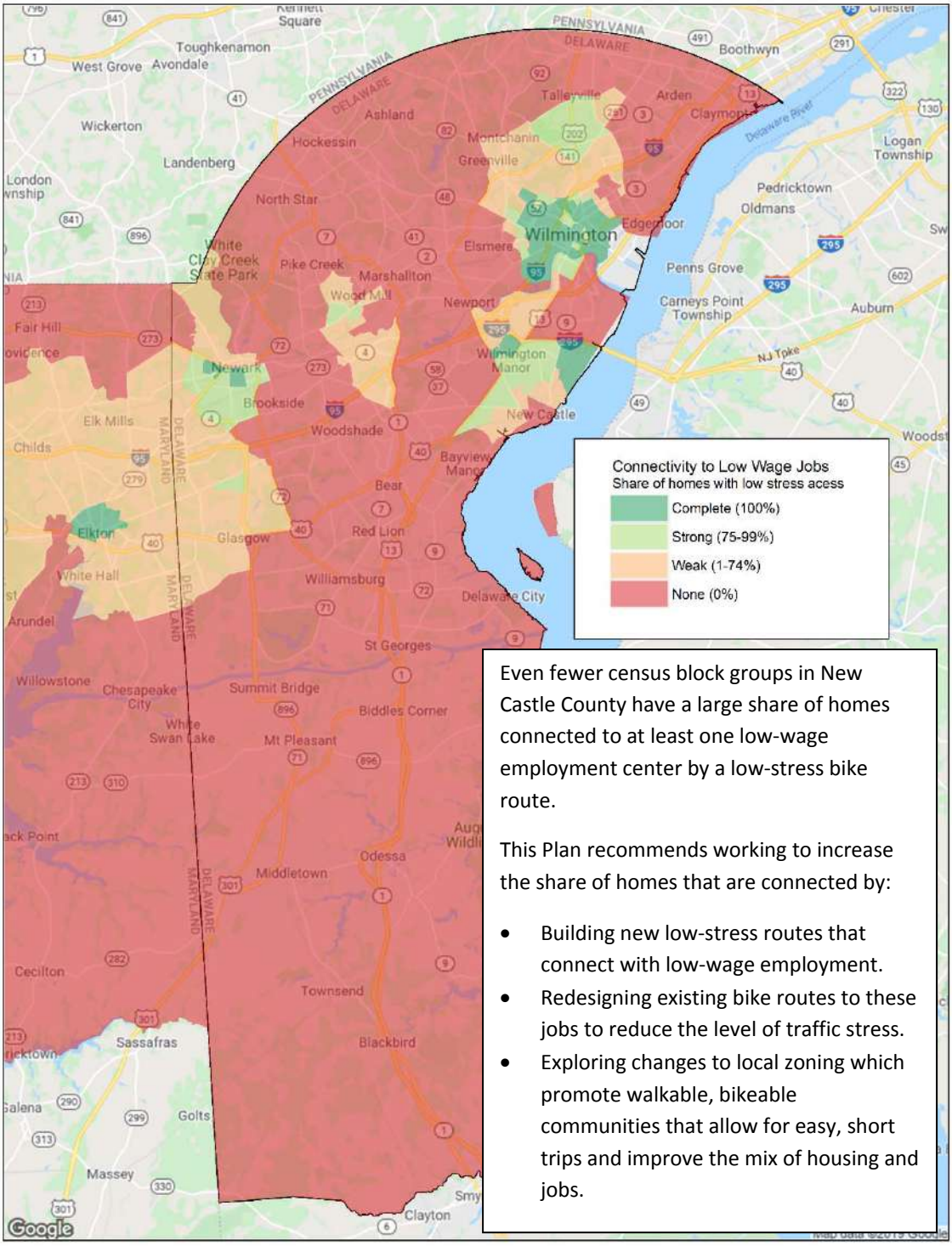


Across most of New Castle County, only a small share of homes within most census block groups are connected to at least one supermarket by a low-stress bike route. Block groups with stronger connectivity tend to be in mixed-use communities.

This Plan recommends working to increase the share of homes that are connected by:

- Building new low-stress routes that connect with food stores.
- Redesigning existing bike routes to food stores to reduce the level of traffic stress.
- Exploring changes to local zoning which promote mixed--use, walkable, bikeable communities that allow for easy, short trips.

Share of homes with low-stress connections to low-wage jobs



Even fewer census block groups in New Castle County have a large share of homes connected to at least one low-wage employment center by a low-stress bike route.

This Plan recommends working to increase the share of homes that are connected by:

- Building new low-stress routes that connect with low-wage employment.
- Redesigning existing bike routes to these jobs to reduce the level of traffic stress.
- Exploring changes to local zoning which promote walkable, bikeable communities that allow for easy, short trips and improve the mix of housing and jobs.

Local and Subregional Plans

This countywide Plan complements the 2050 Regional Transportation Plan (RTP), which documents WILMAPCO's long-range vision and goals, and details specific programs, policies, and projects for achieving them. Both the RTP and this Plan reflect ideas we have heard from communities about their desired futures. The most effective way to engage the community about their concerns and priorities is to plan at the local level.

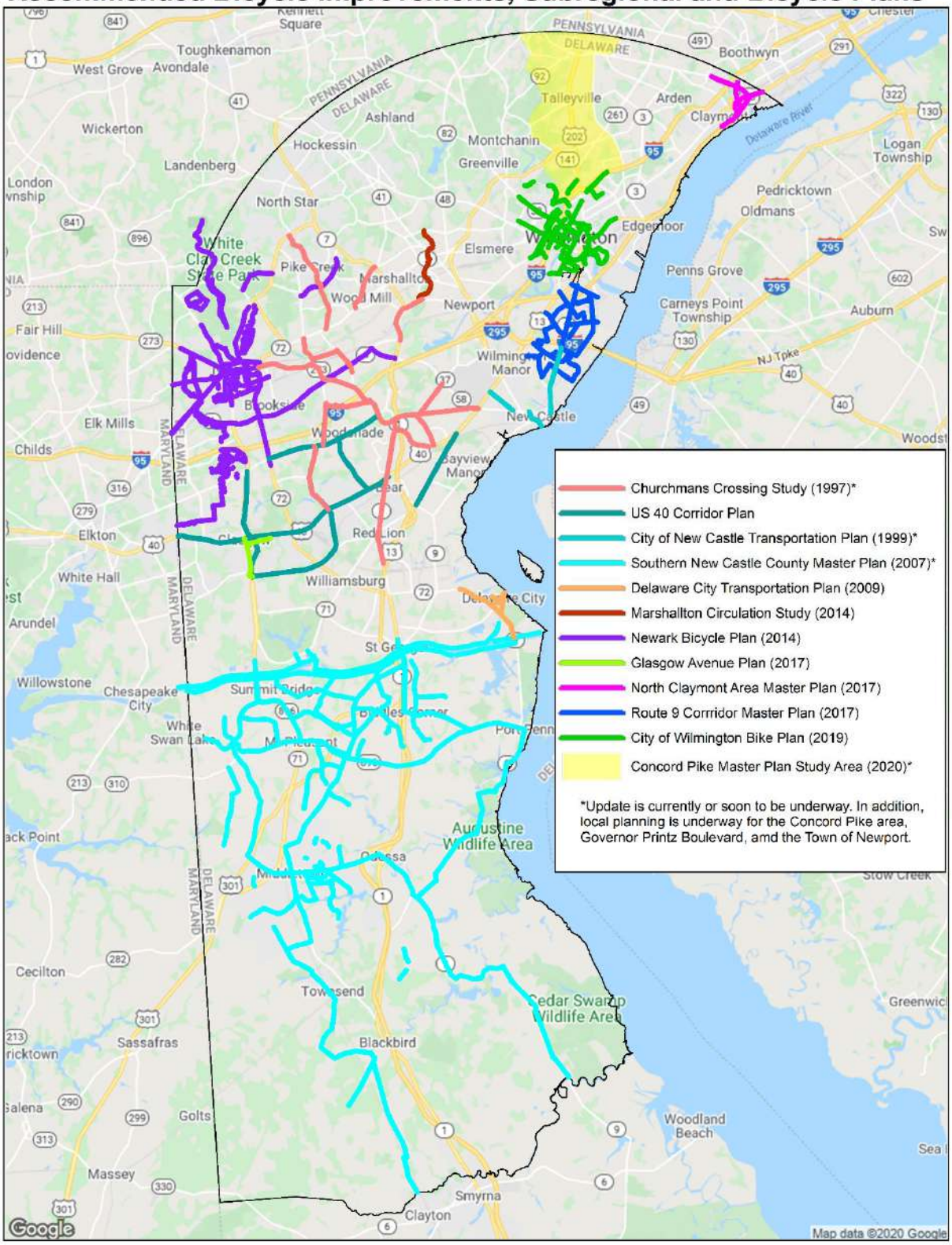
Implement Local Bicycle Plans. Two municipalities have adopted bicycle plans: the 2014 Newark Bicycle Plan and the 2019 City of Wilmington Bike Plan. Recommendations from each are included in their entirety in this Plan. Implementation of these plans should be evaluated, and the plans should be periodically updated to ensure that they stay up to date. In addition, Delaware Greenways formed the Future Trails of Northern Delaware in 2017 to bring together local organizations, agencies, and businesses to coordinate growing the network of trails and pathways in northern New Castle County.

Local bicycle plans have been adopted by the Cities of Newark and Wilmington. Local planning gives an in-depth look at a community's needs.

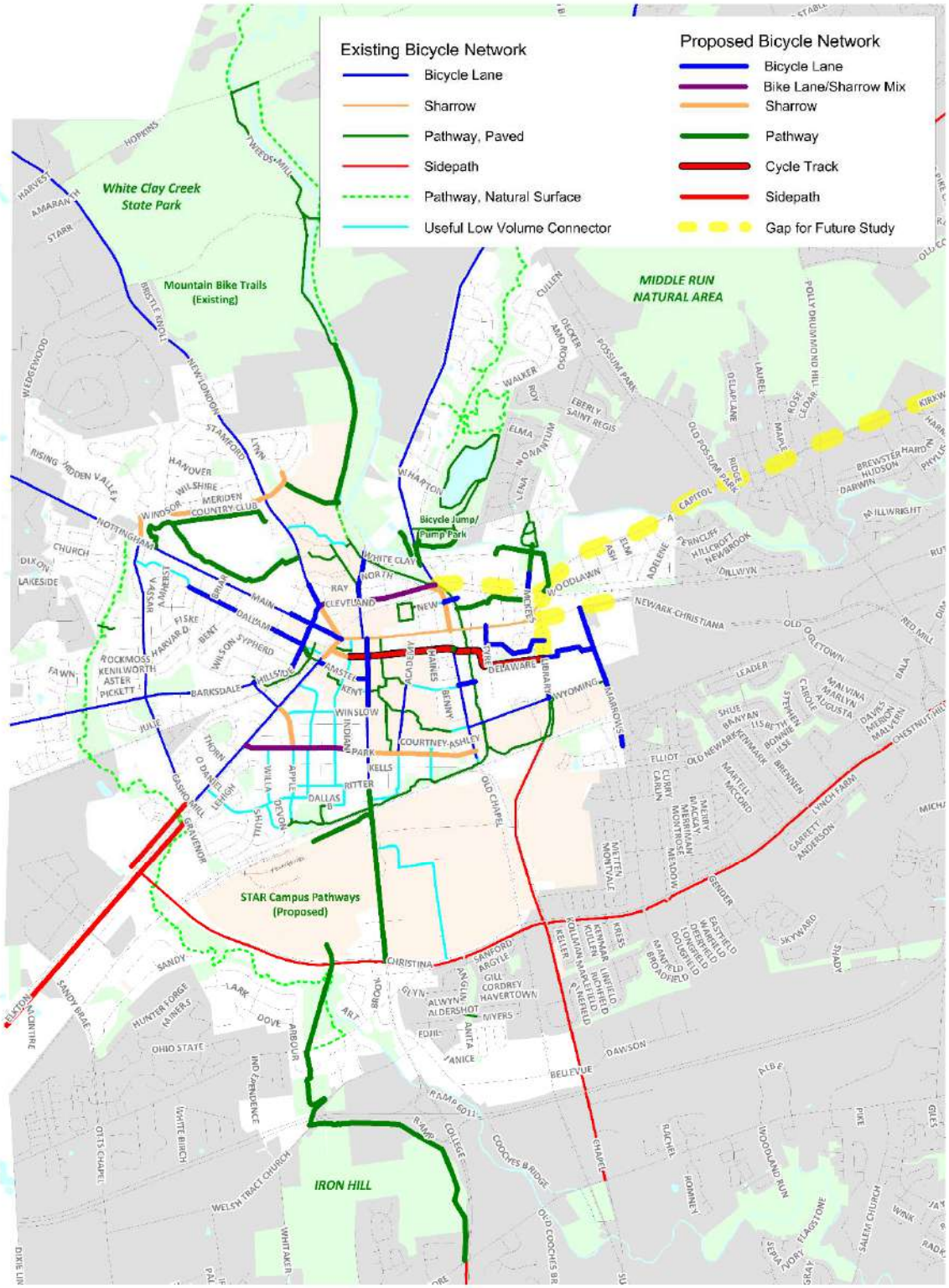
Implement Subregional Plans. WILMAPCO has worked in partnership with state and local agencies and the community to develop dozens of local subregional and corridor plans. These plans holistically evaluate an area's future needs and make recommendations for bicycle, pedestrian, transit, and motor vehicle travel improvements. As appropriate, recommendations from these plans are included in this Plan. Several other local plans are underway; recommendations from these and other future plans will be added to this Plan periodically (with each RTP update at minimum).

Develop New Local Plans. Local governments are encouraged to reach out to WILMAPCO and DelDOT for technical assistance in developing municipal bicycle plans and subregional plans. WILMAPCO offers staff assistance through the Unified Planning Work Program for local bicycle plans and may be able to provide up to 80 percent of the needed funding for multimodal local plans. In addition, DelDOT has implemented a funding assistance program for towns wishing to develop local bicycle plans.

Recommended Bicycle Improvements, Subregional and Bicycle Plans



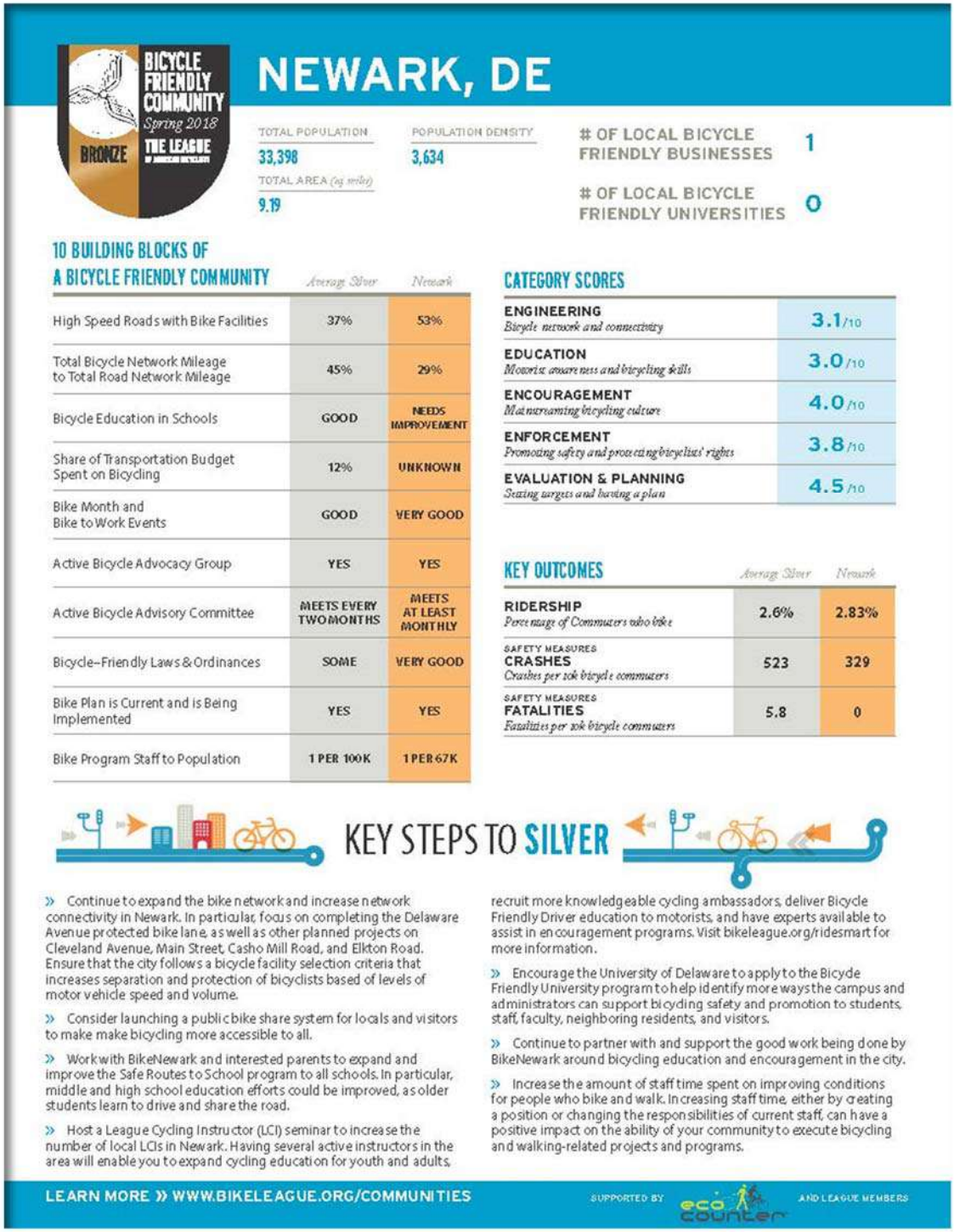
2014 Newark Bicycle Plan Recommended Network



2019 City of Wilmington Bike Plan Recommended Network

Future Trails of Northern Delaware Recommended Network

Apply for Bicycle-Friendly Community Status. The League of American Bicyclists created the Bicycle Friendly Community (BFC) program in 1995 and has since recognized 488 communities. Even places that are early in their route towards becoming bicycle friendly communities are encouraged to apply. New Castle County has one designated BFC, the City of Newark. Completing the application and feedback from the League of American Bicyclists will provide insight on strengths and weaknesses. Each community is given a report card that shows a jurisdiction's current strengths and areas for improvement.



BICYCLE FRIENDLY COMMUNITY
Spring 2018
BRONZE
THE LEAGUE

NEWARK, DE

TOTAL POPULATION 33,398
POPULATION DENSITY 3,634
TOTAL AREA (sq miles) 9.19
OF LOCAL BICYCLE FRIENDLY BUSINESSES 1
OF LOCAL BICYCLE FRIENDLY UNIVERSITIES 0

10 BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY

	Average Silver	Newark
High Speed Roads with Bike Facilities	37%	53%
Total Bicycle Network Mileage to Total Road Network Mileage	45%	29%
Bicycle Education in Schools	GOOD	NEEDS IMPROVEMENT
Share of Transportation Budget Spent on Bicycling	12%	UNKNOWN
Bike Month and Bike to Work Events	GOOD	VERY GOOD
Active Bicycle Advocacy Group	YES	YES
Active Bicycle Advisory Committee	MEETS EVERY TWO MONTHS	MEETS AT LEAST MONTHLY
Bicycle-Friendly Laws & Ordinances	SOME	VERY GOOD
Bike Plan is Current and is Being Implemented	YES	YES
Bike Program Staff to Population	1 PER 100K	1 PER 67K

CATEGORY SCORES

ENGINEERING *Bicycle network and connectivity*	3.1/10
EDUCATION *Motorist awareness and bicycling skills*	3.0/10
ENCOURAGEMENT *Mainstreaming bicycling culture*	4.0/10
ENFORCEMENT *Promoting safety and protecting bicyclists' rights*	3.8/10
EVALUATION & PLANNING *Setting targets and having a plan*	4.5/10

KEY OUTCOMES

	Average Silver	Newark
RIDERSHIP *Percentage of Commuters who bike*	2.6%	2.83%
SAFETY MEASURES CRASHES *Crashes per 10k bicycle commuters*	523	329
SAFETY MEASURES FATALITIES *Fatalities per 10k bicycle commuters*	5.8	0

KEY STEPS TO SILVER

» Continue to expand the bike network and increase network connectivity in Newark. In particular, focus on completing the Delaware Avenue protected bike lane, as well as other planned projects on Cleveland Avenue, Main Street, Casho Mill Road, and Elkton Road. Ensure that the city follows a bicycle facility selection criteria that increases separation and protection of bicyclists based of levels of motor vehicle speed and volume.

» Consider launching a public bike share system for locals and visitors to make make bicycling more accessible to all.

» Work with BikeNewark and interested parents to expand and improve the Safe Routes to School program to all schools. In particular, middle and high school education efforts could be improved, as older students learn to drive and share the road.

» Host a League Cycling Instructor (LCI) seminar to increase the number of local LCIs in Newark. Having several active instructors in the area will enable you to expand cycling education for youth and adults, recruit more knowledgeable cycling ambassadors, deliver Bicycle Friendly Driver education to motorists, and have experts available to assist in encouragement programs. Visit bikeleague.org/ridesmart for more information.

» Encourage the University of Delaware to apply to the Bicycle Friendly University program to help identify more ways the campus and administrators can support bicycling safety and promotion to students, staff, faculty, neighboring residents, and visitors.

» Continue to partner with and support the good work being done by BikeNewark around bicycling education and encouragement in the city.

» Increase the amount of staff time spent on improving conditions for people who bike and walk. Increasing staff time, either by creating a position or changing the responsibilities of current staff, can have a positive impact on the ability of your community to execute bicycling and walking-related projects and programs.

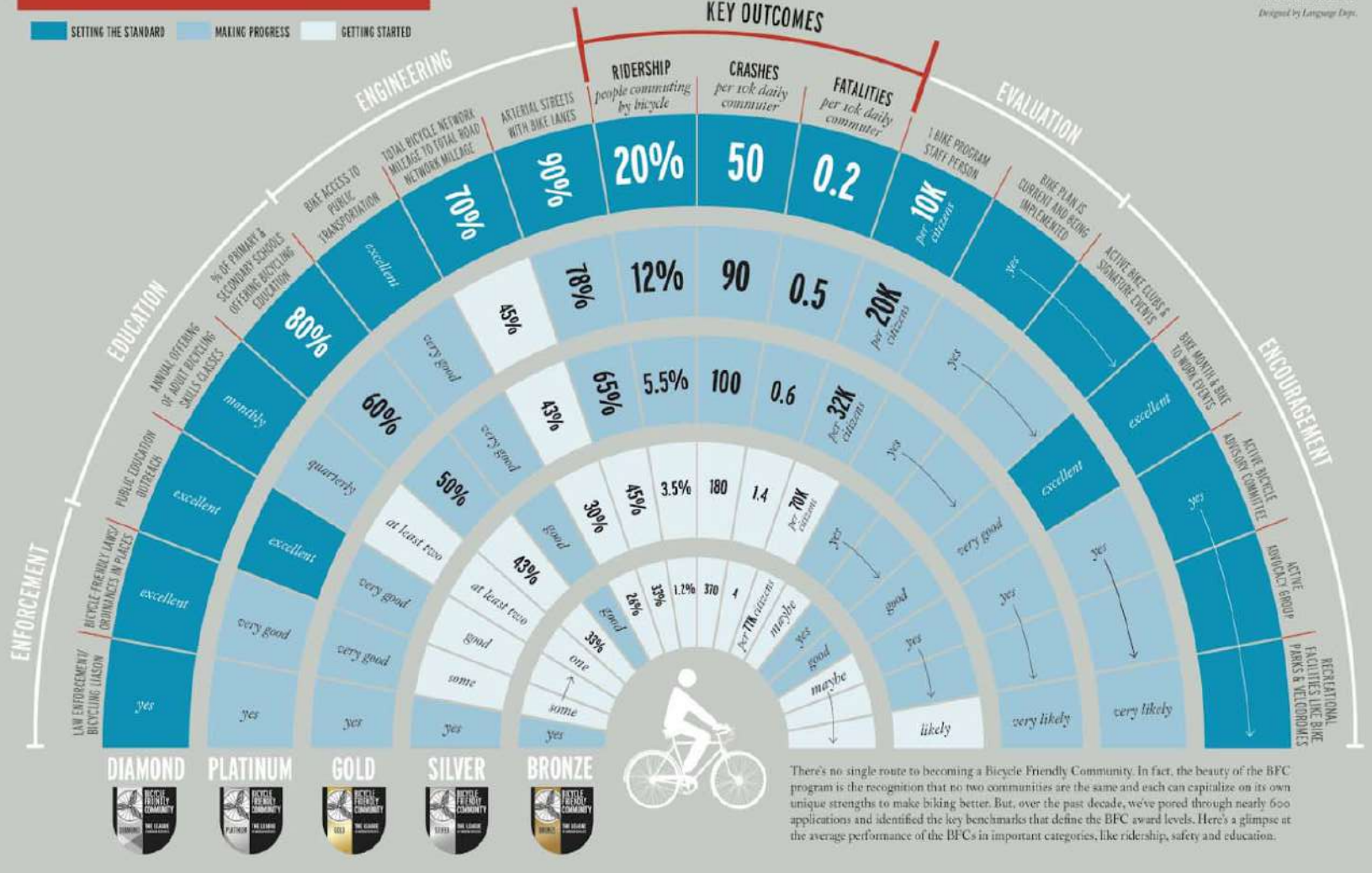
LEARN MORE » WWW.BIKELEAGUE.ORG/COMMUNITIES

SUPPORTED BY eco counter AND LEAGUE MEMBERS

THE BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY

produced by
THE LEAGUE OF AMERICAN BICYCLISTS
WWW.BIKELEAGUE.ORG
Designed by Language Dept.

SETTING THE STANDARD | MAKING PROGRESS | GETTING STARTED



There's no single route to becoming a Bicycle Friendly Community. In fact, the beauty of the BFC program is the recognition that no two communities are the same and each can capitalize on its own unique strengths to make biking better. But, over the past decade, we've pored through nearly 600 applications and identified the key benchmarks that define the BFC award levels. Here's a glimpse at the average performance of the BFCs in important categories, like ridership, safety and education.

Improve Safety through Design, Maintenance, and Enforcement

Improve safety through design, maintenance, and enforcement

- Recommend safe design and maintenance best practices for all bikeways and shared-use facilities, including lighting and signage. Identify strategic/critical locations for bicycle wayfinding (e.g. high-priority routes or complex/confusing areas)
- Recommend measures to support enforcement of the rights and responsibilities of bicyclists. Target violations that cause the most injuries and fatalities for selective enforcement.
- Identify possible resources for training to local enforcement agencies.
- Develop signage and promotional programs aimed at motor vehicle drivers to improve awareness of the needs and rights of bicyclists.

Safety is one of the top concerns reported by people referring to why they do not ride more often. In 2018, bicyclists were involved in 53 reported crashes, 40 of which resulted in injuries, though thankfully none were fatal. We can work towards reducing the severity of bicycle crashes and overcoming people's fear to ride by providing more low-stress routes (including better crossings), addressing maintenance issues that result in unsafe conditions, educating about and enforcing existing laws that promote safer behavior by drivers and bicyclists, and teaching safer bicycling.

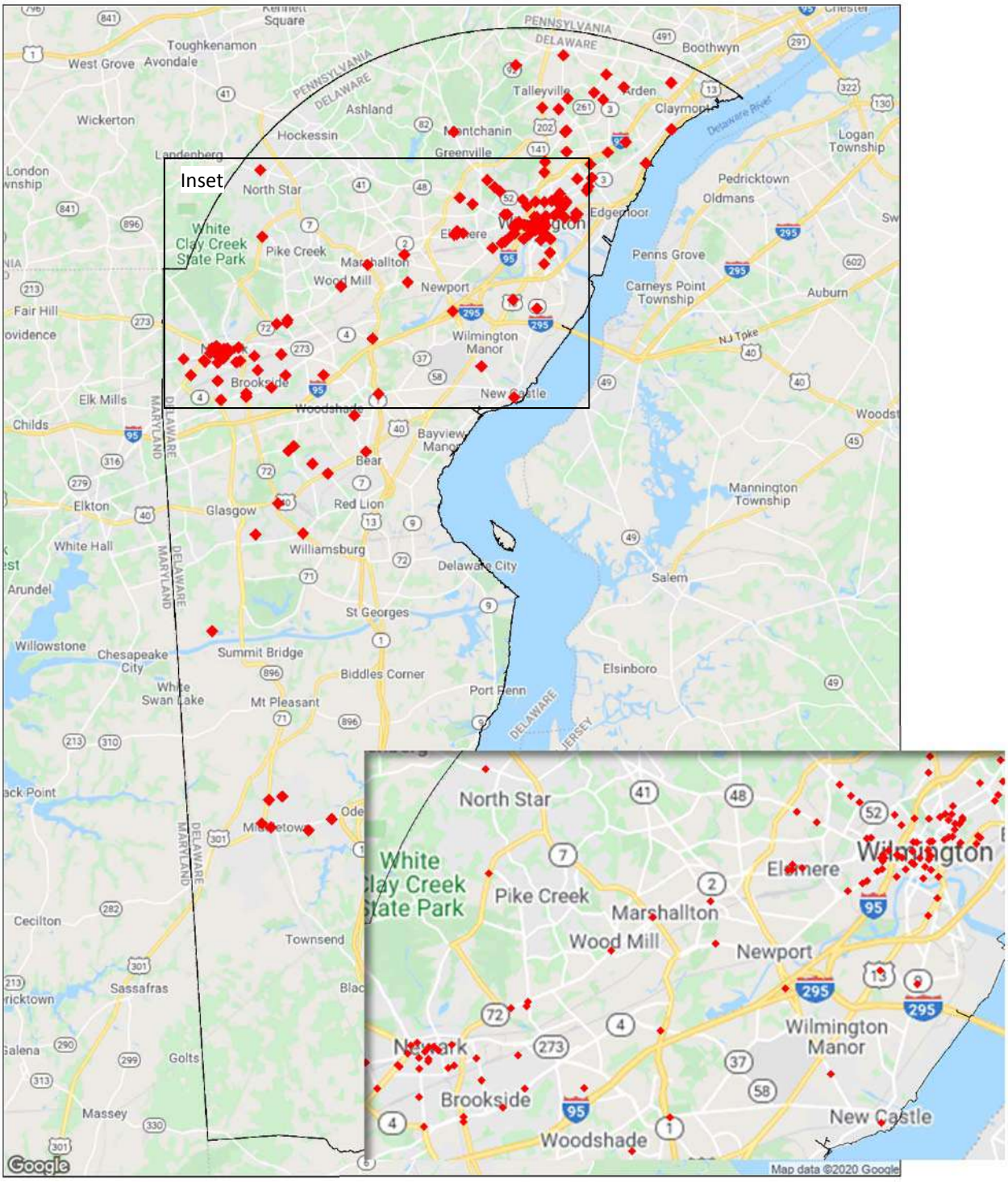
Safety in Numbers

"Over the last few decades, research suggests that bicyclist risk decreases as the number of bicyclists increases. This phenomenon is known as "safety in numbers." Greater safety attracts more bicyclists, resulting in safer cycling conditions overall. Multiple studies show that the presence of bikeways, particularly low-stress, connected bikeways, positively correlates with increased bicycling. This, in turn, results in improvements in bicyclists' overall safety."

FHWA Bikeway Selection Guide

https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

Bicycle Crashes, 2016-2018

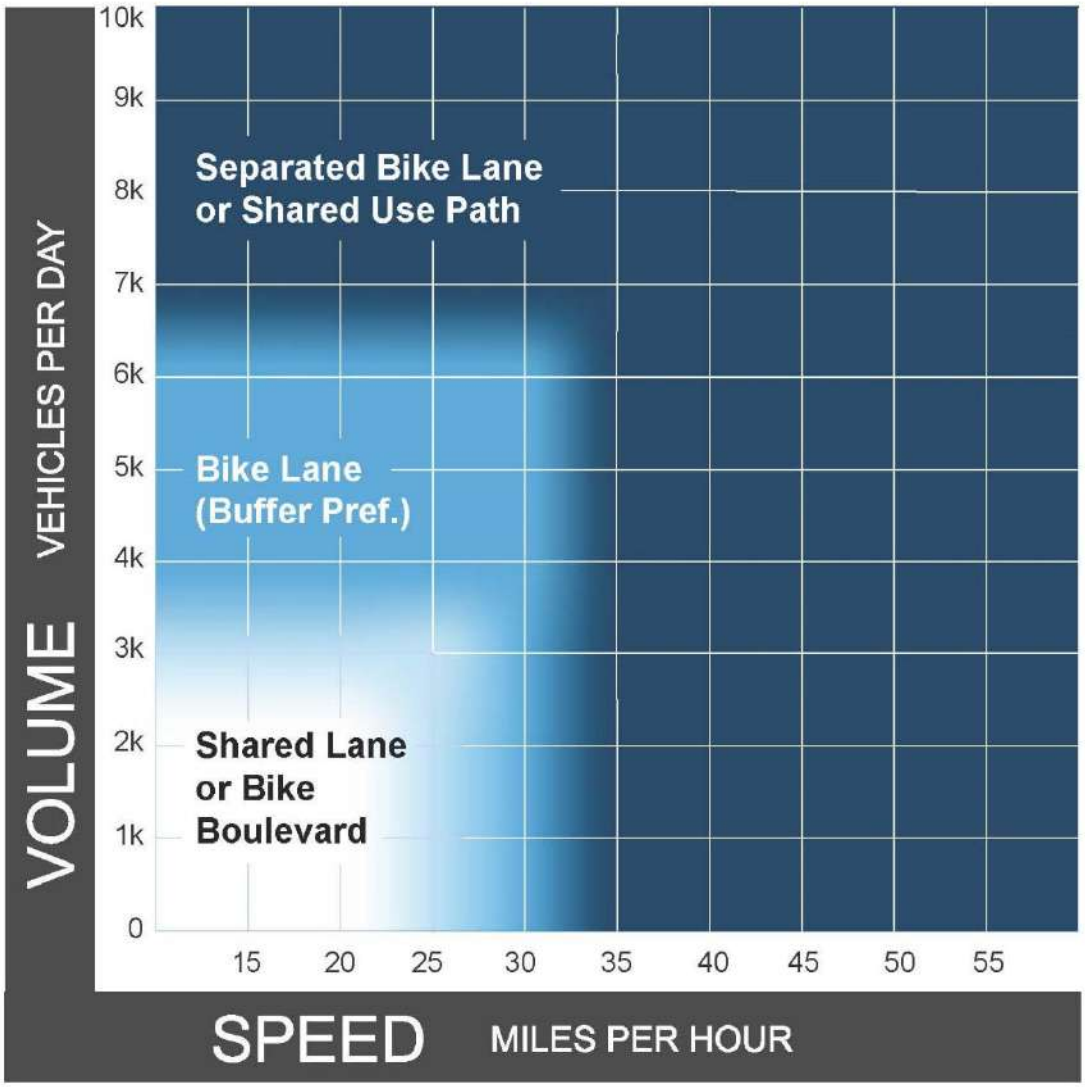


Design

The design of bicycle routes should focus on safer, lower-stress facilities (BLS Level 1 and 2 where most adults feel comfortable) that seek to minimize the future maintenance costs. Design decision-making needs to balance what is ideal, with what is achievable based on funding, right-of-way, environmental, and other constraints. This Plan encourages those implementing projects to dream big, striving for the best low-stress design. If ideal designs are not achievable in the near term, other next-best options should be done using designs that don't preclude future long-term ideal improvements.

The type of bikeway that is considered low-stress varies based on the location, particularly in relation to the speeds, amount of traffic, and the width of the road. Also, an otherwise low-stress route will still have high-stress trips if there are challenging gaps and intersections.

The *FHWA Bikeway Selection Guide* offers the following guidance regarding preferred route designs:



Notes

1 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.

2 Advisory bike lanes may be an option where traffic volume is <3K ADT.

The NACTO publication, *Designing for All Ages & Abilities*, suggests the following preferred route designs:

Contextual Guidance for Selecting All Ages & Abilities Bikeways

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
	≤ 500 – 1,500			
≤ 25 mph	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane, or Bicycle Path**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

* While posted or 85th percentile motor vehicle speed are commonly used design speed targets, 95th percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

† Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed as a threshold for protected bikeways, consistent with providing Level of Traffic Stress level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.[18]

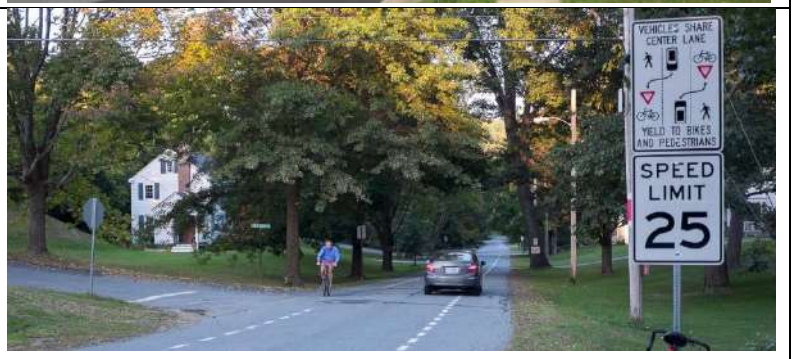
‡ Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speed and volume.

Slow, low traffic streets require to least improvements. As traffic volumes and speeds increase, so does the need for greater separation between people bicycling and driving.

Types of Bikeways

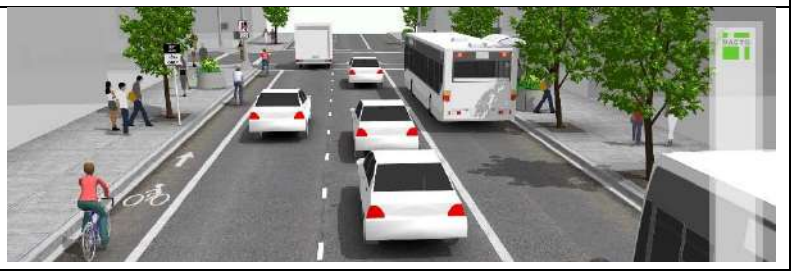
SHARED STREETS

Little of no separation from traffic, low cost, and best for slow, low traffic streets. These options are only considered low stress of slow streets with little traffic. The speeds of a street should be based on measurements, rather than posted speed limits.

Bicycle Boulevards – Slow streets ideal for walking, biking, and local traffic using traffic calming, bike/walk signs/wayfinding, and sometimes bicycle-only connectors and green stormwater management. Motor vehicles (except local) may be diverted to nearby streets. Sometimes called neighborhood greenways.	
Sharrows or Shared Lane Markings – Only useful for roads too narrow for bicycle lanes. Shows proper lane positioning to bicyclists and alerts drivers that bikes may use the full lane. May be on a green background to enhance the visibility of the pavement markings.	
Shared Streets – Only useful for very slow, low volume streets. In urban locations, these may use special paving and other features to create a plaza-like corridor.	
Advisory Lanes- Striped facility with a two-way driving lane in the center and dashed, advisory walking/biking lanes on either side. Drivers can pass using the advisory lanes after yielding to people walking or bicycling. Useful for slow, low volume rural streets.	

BIKE LANES

Bike lanes provide some separation from traffic and are best for wide, slow, and low traffic streets. These options are only considered low stress of slow streets with little traffic. The speeds of a street should be based on measurements, rather than posted speed limits.

Striped Bike Lanes – Lanes for preferred or exclusive use by people bicycling that include pavement markings and optional signs. The suggested width is 5 feet, or 6 feet when on-street parking is present. Standard bike lanes are generally not low-stress routes due to driveways, turn lanes, and intersections, enhanced bike lanes (buffered and/or green) are preferred.	
Buffered Bike Lanes – A marked buffer gives people bicycling and drivers a feeling of greater separation. Buffers give space for people bicycling to pass one another, can be used for marking the door zone of parked cars, and helps deter cars from driving into the bike lane.	
Green Bike Lane – Green pavement increases the visibility of the bicycle lane—ideal for where it crosses driveways, highway ramps, and intersections.	
Contraflow Bike Lane – Contraflow lanes allow for two-way bicycle travel on one-way streets. Contraflow lanes may be the best option along routes where cyclists would need to otherwise travel out of their way or along a high-stress route.	
Left Side Bike Lane – Bike lanes may be placed on the left side, particularly on one-way streets with heavy delivery or transit use, frequent parking turnover on the right side, high volumes of right-turning cars, or high volumes of left-turning bicyclists.	

SEPARATED BIKEWAYS

Provides good separation between motor vehicles and people on bicycles for a lower stress route, but may cost more than other facilities. Provided these facilities have low-stress intersections and crossings, there routes are usually comfortable for all ages and abilities. A wider separation is desirable along very high speed streets.

Sidepath – A path for two-way walking and bicycling that is parallel to a road. Sidepaths provide a comfortable route for all ages and abilities along faster, busier streets, and access to places along the road.	
Cycletrack – Route that is separate from both motor vehicles and the sidewalk to provide a route along faster, higher-volume streets. May be one-way or two-way, and can be raised or use bollards, curbs, posts, etc., to protect riders.	

PATHS

Used for walking and bicycling, providing the greatest separation from motor vehicles. Can use a stream, utility, rail, or other corridor. Provided these facilities have low-stress intersections and crossings, there routes are comfortable for all ages and abilities.

Off-street Path – Route that is away from traffic and shared by people walking and bicycling. Thus, they are best for slower speed bicycling. Paths can be paved or have a natural, all-weather surface. Usually, paths are at least 10 feet wide, but 8 feet may be acceptable in low use, park settings.	
Neighborhood Connectors – Very short links can connect two low-stress routes, often saving cyclists an indirect trip and saving implementing agencies from building a longer, circuitous route. Connectors are shared by people walking and on bikes, and are usually 5-10 feet wide.	
Trail – Trails are routes for mountain, or possibly hybrid, bikes and are narrower and shared by people biking and hiking. Since they are usually not suitable for all-weather transportation use, they are not a focus of this Plan. Trails, however, are important for recreation, tourism, and physical activity in New Castle County and nearby Cecil County.	

INTERSECTIONS AND CROSSINGS

Intersections and mid-block crossings are frequently the most challenging part of a bicyclist's trip. Places where bike routes cross streets should be improved to slow speeding traffic, make bicyclists more visible, and give vulnerable users (bicyclists and pedestrians) priority.

Protected Intersections – Protected intersections use a variety of elements to create a separated space for bicyclists to cross an intersection.	
Refuge Islands – Refuge islands are space in the center of the street so that people walking/bicycling only need to cross one direction at a time. Refuge islands also help to slow speeding traffic.	
Bicycle Signals – Bicycle signals signify specific movements for people on bikes. Enhanced pedestrian crossing signals—High Intensity Activated Crosswalks (HAWK) and Rectangular Rapid Flashing Beacons—also may be used to improve crossing safety for people on bicycles at mid-block locations or trail crossings.	
Signal Actuation – Bicycles need a way to be detected at signals. Bicycle detection can use push-buttons or automated means such as in-pavement loops, video, microwave, etc.	 

Bike Boxes – A bike box is a designated area in front of the traffic lane(s) at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal.	
Dotted Lines – Dotted or dashed lines, sometimes combined with sharrows, may be used at intersections to guide a clear path for cyclists.	
Two-stage Turn-queue Boxes – At a multi-lane intersections or midblock crossing, turn-queue boxes simplify the crossing for people on bikes by providing a place to wait.	

Resources:

FHWA

- FHWA Bikeway Selection Guide - https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf
- Small Town and Rural Multimodal Networks - https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/
- Manual of Uniform Traffic Control Devices - https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part9.pdf
- Separated Bike Lane Planning and Design Guide - https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/

NACTO

- Designing for All Ages & Abilities - https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/
- Urban Bikeway Design Guide - https://nacto.org/publication/urban-bikeway-design-guide/
- Don't Give Up at the Intersection - https://nacto.org/publication/urban-bikeway-design-guide/dont-give-up-at-the-intersection/

Other

AASHTO Guide for the Development of Bicycle Facilities – 2020 version is in draft form. Once complete, this is likely to be a valuable resource. The current version was adopted in 2012 and lacks many of the newer innovative designs and best practices. https://njdotlocalaidrc.com/perch/resources/aashto-gbf-4-2012-bicycle.pdf

Maintenance

Well-maintained bicycle infrastructure is crucial for the safety and comfort of people who ride bicycles. For instance, approximately half of bike crashes are from falls, often caused by poorly kept surfaces and debris. Management responsibilities are shared by DelDOT for state roads and the multiuse pathways beside them, local government for locally maintained streets, pathways, and code enforcement, and Delaware State Parks for trails in State Parks.

- Incorporate bicycle facilities into transportation asset management systems by DelDOT and local public works departments. Transportation asset management is a process for making improved decisions regarding performance, operations, safety, and maintenance of transportation infrastructure. Systematically evaluating bicycle facilities can help assure that the limited resources address the facilities with the greatest needs based on condition and expected use. Asset management systems should examine:
    - What is the current condition of bicycle infrastructure including pavement, markings, signage along on-street bike lanes, shoulders used as bike routes, and off-road multiuse pathways? Maintenance costs and remaining service life should be considered in the evaluation.
    - What is the desired level of service/ performance/pavement condition for bicycle infrastructure?
    - Which bicycle routes' assets are priorities for more frequent and substantial maintenance?
    - What is the best long-term funding strategy to ensure maintenance standards are achieved?
    - What is the quality of the maintenance work and how well is the asset management program performing?
- Consider bicycle prioritization recommendations in the Implementation section of this plan to aid in prioritization of asset management and ongoing care such as removal of encroaching vegetation, sweeping frequency, and snow removal.
- Evaluate durability/service life and ongoing maintenance cost when selecting materials for paving, pavement markings, and signs.
- Ongoing on-road maintenance should include, at a minimum:
    - Inspections - 2 times per year
    - Sweeping - as needed
    - Pavement sealing, pothole repair-as needed and at least every 15 years
    - Culvert and drainage grate inspection - before winter and major storms
    - Pavement marking replacement--1-3 years depending upon the material used
    - Sign replacement--as needed
- Ongoing off-road maintenance should include, at a minimum:
    - Vegetation management including mowing and vegetation control. Landscaping should be selected to reduce maintenance needs, particularly the need for herbicide use.
    - Litter and trash removal
    - Vandalism and graffiti removal
    - Facility surface maintenance
    - Drainage structure inspection and maintenance.
    - Snow and leaf removal
- Create an ongoing spot improvement/maintenance process to ensure that reported issues are resolved quickly.
- Better promotion of participation in existing "adopt a bikeway" programs and use of volunteers from recreational cycling clubs for field evaluations and reporting of concerns.

- Promote a single contact where issues and concerns may be reported. DelDOT, State Parks, New Castle County, and municipalities should coordinate to ensure that the appropriate agency addresses the issue and follows up with the person making the report.
- Work towards reducing bicycle level of stress as part of roadway paving and rehabilitation. Each paving and rehab project should assess pavement markings and work towards narrowed travel lanes, wider bike lanes, and inclusion of a striped buffer or protected bikeway as appropriate.
- Establish a process for periodically reviewing bike racks, tagging bikes, and removing abandoned bikes. Encourage private property owners to work with local police for the removal of abandoned bikes.

Maintenance resources:

https://journals.sagepub.com/doi/full/10.1177/0361198119840610

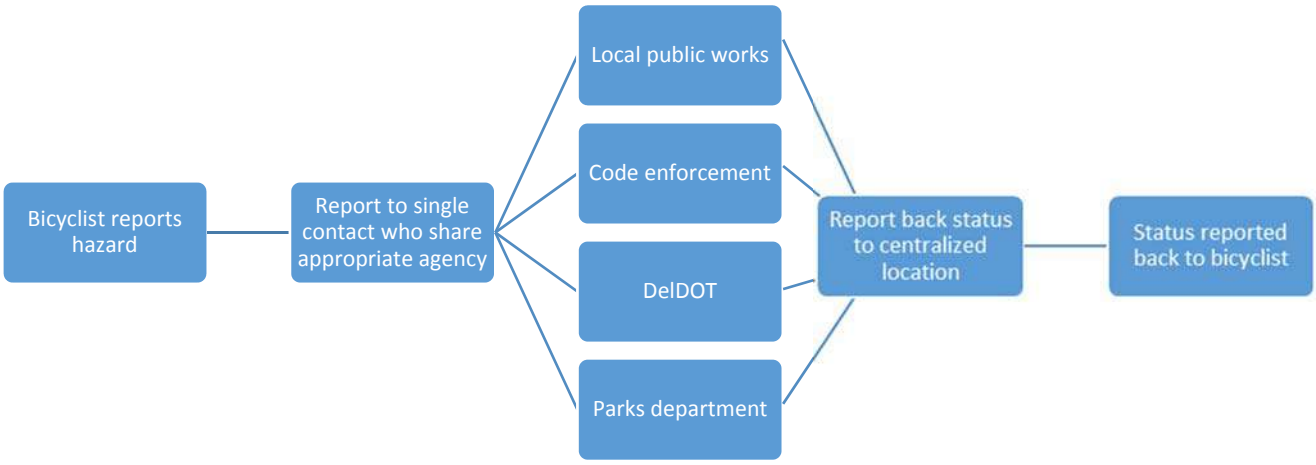
https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/chapt16.cfm

https://altaplanning.com/wp-content/uploads/winter-bike-riding-white-paper-alta.pdf

http://www.cts.umn.edu/sites/default/files/files/sessions/10_Kocak.pdf

https://bikeleague.org/sites/default/files/AA_MaintenanceReport.pdf

Providing bicycists with one centralized place to report road and pathway hazards will simplify the reporting of concerns (most people don't know who to contact) and lead to quicker correction of safety hazards.



Enforcement

Delaware has enacted a strong set of laws designed to protect bicyclists and encourage safe riding (https://deldot.gov/Programs/bike/biking_in_delaware/pdfs/DelawareBicycleLaws.pdf). Highlights include:

- Bicycle traffic signals defined and enabled as an engineering tool.
- Motorists are required to provide at least three feet distance when passing someone bicycling, including changing lanes when travel lanes are too narrow for side-by-side passing.
- Motorists forbidden to honk horns at bicyclists unless there is an imminent danger.
- Bicycle riders may treat stop signs as yields (Delaware Yield).

Enforcement is primarily done by local jurisdictions. Currently, enforcement is sporadic. Also, there has been little education and outreach regarding laws and safety.

Suggested enforcement activities:

- Priorities for motorist enforcement include failure to yield right of way, unsafe passing, harassment or assault, inattentive or impaired driving, and speeding and aggressive driving.
- Priorities for bicyclist enforcement include riding against traffic, red-light running, and riding at night without lights/reflectors.
- Bike Citation Diversion Classes - In lieu of fines or court for a bicycle citation, bicyclists should be permitted to attend bicycle safety classes.

Enforcement should be supplemented with education and promotion about safe interactions between drivers, people on bikes, and pedestrians. The bicycling section of the Delaware Drivers Manual can be enhanced to highlight applicable laws and safer behaviors.

Enforcement education can also promote smart cycling behavior including:

- Light and helmet giveaways or incentives at bike shops.
- Bike maintenance safety checkpoints.
- Youth bicycle rodeos and curriculum.
- Defensive driver bicycle information.
- Police bicycle patrols.

Incorporate Bicycle Elements into Land Use Planning and Zoning

Incorporate bicycle elements into land use planning and zoning

- Consider bicycle accommodations in local development review procedures, and encourage incentives for bicycle accommodations.
- Integrate the consideration of non-motorized facilities into all planning, design, construction, and maintenance activities of transportation or public works departments

There is an important synergy between land use and transportation. Local land-use planning, policies and zoning significantly influence both the development and successful use of the bicycle network. Denser, mixed-use places depend upon places to walk, bicycle, and where appropriate, use transit, in order to successfully serve transportation needs. Likewise, people walking and bicycling for transportation need a mix of destinations close by. In addition, people will walk and bike further and more often in appealing places.

Local building blocks for a successful bicycle transportation network

Local bicycle policies should be addressed in both Comprehensive Development Plans and Development Code. Policies fall under two broad categories: developer-provided facilities (bike parking and Complete Streets) and creation of bicycle-friendly development (efficient land use, mixed-use zoning, and design standards). A model bicycle parking ordinance is included in Appendix B. Other model ordinances, including a review of existing measures in New Castle County, are included in Appendix C.

Developer-provided Facilities

- Bike Parking Requirements. Suggested bicycle parking is described in the section, “Encourage Bicycle Parking and Other End of Trip Facilities.” A model bicycle parking ordinance is included in Appendix B.

- Complete Streets. Complete Streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Local governments should adopt complete streets policies that address both municipal and private streets. Complete Streets policies should not take a one-size fits all approach, but should allow flexibility to achieve a desired outcome of better walking, bicycling and transit conditions. Requirements should extend beyond the public right-of-way to accommodate trips all the way to the destination. Policies should encompass:
    - All Users and All Modes: All users and all modes should benefit.
    - All Projects and Phases: All transportation projects from new construction to maintenance should evaluate how safety and connectivity can be improved.
    - Network: Complete Streets policy should encourage a complete network and the removal of obstacles in a way that balances efficient implementation with quality travel experience. This might include walking and bicycling routes along the street or pathways away from traffic, including short connectors between developments.
    - Jurisdiction: Policy should address all agencies involved in transportation including public works and land use departments.
    - Design: Standards and guidelines shall refer to latest best practices including AASHTO, FHWA, U.S. Access Board, and NACTO.
    - Exceptions: Clear criteria and processes should be detailed.
    - Context Sensitivity: Land use context and flexibility shall be considered.
    - Performance Standards: Performance standards shall be established with measurable outcomes.

Bicycle-friendly Development

Bicycle-friendly Development is a form of efficient land use, i.e. Complete Communities or Smart Growth. Bicycle-friendly Development refers to policies that result in more compact, mixed-use development that encourages trips by walking, transit, and bicycle.

This type of land use can help provide easier access within places, improve transportation choices, create more livable communities, and reduce public service costs. These Land Use patterns go by many different names—Complete Communities, Traditional Neighborhood development, Transit Oriented Development, Walkable Communities, etc.—but all use a similar toolbox of policies. Tools include:

- Affordable Housing Incentives—strategies for affordable housing and transportation to allow people to live near their jobs.
- Unified Development Code-- consolidates development-related requirements for more a more flexible and

Land Use Strategies

- Mix land uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable (and bike-friendly) neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost effective.
- Encourage community and stakeholder collaboration in development decisions.

Source: EPA/Smart Growth Network

comprehensive approach to design, which leads to a more consistent treatment of different types of development.

- Form-Based Code—places greater emphasis on controlling land use form rather than individual use.
- Transit-Oriented Development-- a type of development that maximizes the amount of homes, businesses and recreation within walking distance of public transport.
- Design Guidelines—Foster walkability and bike ability by placing buildings close to the street, parking along the street and behind buildings, and requiring diverse facades and landscaping.
- Street Design Standards—requiring short, interconnected blocks, narrow travel lanes, and quality places to walk, ride transit and bike. Use access management strategies to limit the number of driveways, such as shared entrances or alleys.
- Zoning Overlays-- Overlay zoning is a regulatory tool that creates a special district, placed over an existing zoning, with special provisions, including potential ones to promote nodes of bicycle-friendly development.
- Parking Ordinances—In addition to requirements for the amount and design of bicycle parking, tools include shared parking within a mixed-use area, pay to park, elimination or reduction of parking minimums, and parking designs to promote walkable environments.
- Mixed-use Zoning—provides flexibility for a variety of uses within a single parcel or neighborhood.
- Bike Design Standards—Bicycle connections from the street to the building, directional signs to bike parking, trails and pathways, storage, showers, bike-share stations, fix-it stations, neighborhood connectors between parcels, etc.

Source: Trailnet

Existing local policies and plans are identified below and summarized in Appendix C. All local governments have included bicycling recommendations in their Comprehensive Development Plans, though many of fairly vague. In addition, Delaware City, City of New Castle, Newark, Wilmington, and subregional areas of New Castle County have multimodal transportation plans with extensive bicycle recommendations, and Newark and Wilmington have municipal bicycle plans. It is recommended that local governments incorporate this Plan, plus additional local ideas, into future Comp Plan updates.

	Bike Parking Requirement	Bike-specific Design Standards	Bicycling in Comp and/or Transportation Plan	Local Bicycle Plan
Arden	Zoning and comp plan maintained by New Castle Co.			
Ardencroft	Zoning and comp plan maintained by New Castle Co.			
Ardentown	Zoning and comp plan maintained by New Castle Co.			
Bellefonte			★	
Delaware City		★	★	
Elsmere			★	
Middletown			★	
New Castle			★	
New Castle County	★	★	★	★
Newark	★	★	★	★
Newport			★	
Odessa		★	★	
Townsend			★	
Wilmington			★	★

At the State level, the Delaware Complete Community Enterprise District (CCED) helps enable communities to become more biking and walking friendly. Recognizing that successful mixed-use, walkable, bikeable, and transit-serve communities depend on the coordination of land use planning and transportation investment, this legislation establishes policies to foster this coordination. CCED's are established through a partnership between local governments and DelDOT, and must be compact, zoned at a density to support frequent transit, and exempted from off-street parking requirements. DelDOT, in turn, will invest in transit, walking, and bicycling improvements within the CCED.

Bicycle Economic Development and Pathwy-Oriented Development

Bicycle facilities have helped communities thrive economically, supported by branding, wayfinding, public art and partnerships with businesses. Pathway-oriented development orients land uses around the bicycle and pedestrian network to promote their use, benefit people of all incomes by reducing the need to drive, foster economic activity, and often boost property values.

Desirable elements include:

- Mixed-use zoning around route to promote higher density of residential uses and commercial destinations.

- Building entrance oriented to pathway if route runs behind structure.
- Direct connections from pathways and bikeways to building entrances.
- Short and long term bicycle parking.
- Wide hallways and elevators in residential and office buildings for indoor storage.
- A bike repair cleaning stations
- Shower and/or locker room facilities at employment sites.
- Design building facades to provide visual interest.
- On-site bike rentals or a bike-share system.
- Buffered motor vehicle parking away from pathway. The required amount of parking may be reduced thanks to a greater number of trips by walking and bicycling.
- Wayfinding and system-wide branding.
- Public art, landscaping and other placemaking elements.
- Green stormwater management.
- Pedestrian scale lighting for year-round commuter use.
- Trail- adjacent recreation and amenities such as playgrounds, benches, and dog parks.
- Community events held along the trail.
- Treat street crossings like intersections with signs identifying the trail name. Prioritize safe bicycle and pedestrian access across road.

Resources:

www.bicyclebenefits.org
https://www.trailtowns.org/
https://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf
https://indyculturaltrail.org/
https://beltline.org/
https://www.ihrp.uic.edu/files/Zoning_Primer_508.pdf
https://www.cnu.org/sites/default/files/PCR-9-15-18.pdf
https://americas.uli.org/report/active-transportation-real-estate-next-frontier/

Provide Bicycle Access to Transit

	Provide bicycle access to transit	• Recommend bus stop locations where adequate and secure bicycle parking be provided. • Identify safe and convenient bicycle routes to and from transit stations and stops.

Bikes to Transit

- Bicycling routes linked to transit increases access to transit routes for longer trips. All buses within New Castle County provide space for two bikes on the front of the bus. SEPTA commuter rail only allows full-size bikes to be brought on off-peak trips.
- Bike parking should be provided at high use stops to allow an option for storage when spaces on buses are full. Stops should be selected based on overall ridership, proximity to major bike routes, and deployment of bus racks. DART collected data in 2013 that showed the deployment of bus racks. Racks should be added near stops that are frequently used for loading and unloading bikes.
- Low-stress bike routes to transit should receive greater priority for implementation

Bikes on Transit

Source: https://www.rtd-denver.com/

DART First State is the transit service offered throughout New Castle County. Other services are provided by SEPTA, Amtrak, Cecil County Transit, the City of Newark, and the University of Delaware. Except for SEPTA regional rail, all services provide racks for bikes on their vehicles. In addition, transit station projects currently under construction in Claymont, Wilmington, and Newark will have secure, covered bicycle parking with bicycle fix-it stations.

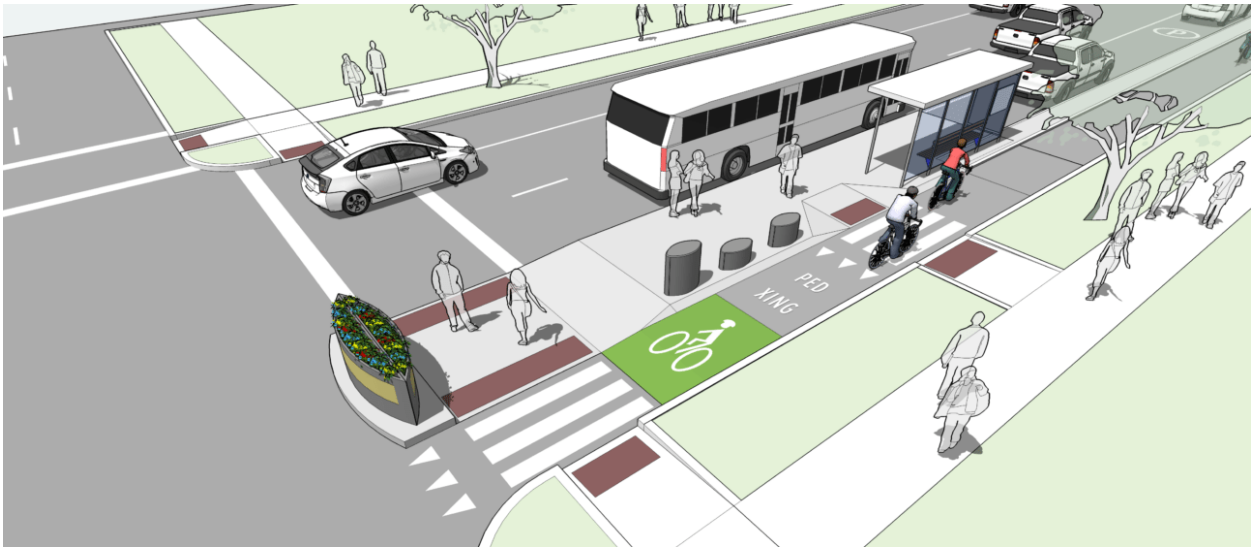
Future rail car purchases, particularly those for which Delaware contributes funding, should contain dedicated space for bicycles on all trips. In addition, DART should work with SEPTA towards allowing all-day bicycle access onboard commuter rail. The Bicycle Coalition of Greater Philadelphia has long advocated for this change. In addition, as MARC rail is extended north into Delaware, bicycle accommodation should be planned for. Amtrak access for bikes varies by train and station, but has recently been expanded; details may be found at https://www.amtrak.com/bring-your-bicycle-onboard.

Coordination of Information

- Enhanced marketing can promote the integration of bicycling with transit.
- DART should consider reintroducing the collection of bus rack deployment data. Data from sensors on the on-bus racks can be shared via the DART app so riders know in advance if spaces for their bikes are available.
- Integrating future bike share with transit. Ideally, a single future bike share system will allow for payment using passes that will allow access to DART (and potentially SEPTA and Cecil Transit as well). Integrating bike share payment with transit payment will allow easier transfers across different modes and systems.
- Rideshare Delaware offers bicycle commuter matching to link bike commuters using similar routes. They also offer incentives, including emergency guaranteed rides home, to encourage bicycling and other clean commutes.

Transit Facilities along Bus Routes

Bus stops along routes shared with right side bike lanes can block the movement of people on bikes or force bike riders out into the street. Floating bus stops offer an alternative, routing the bike lane behind an island with the bus stop.

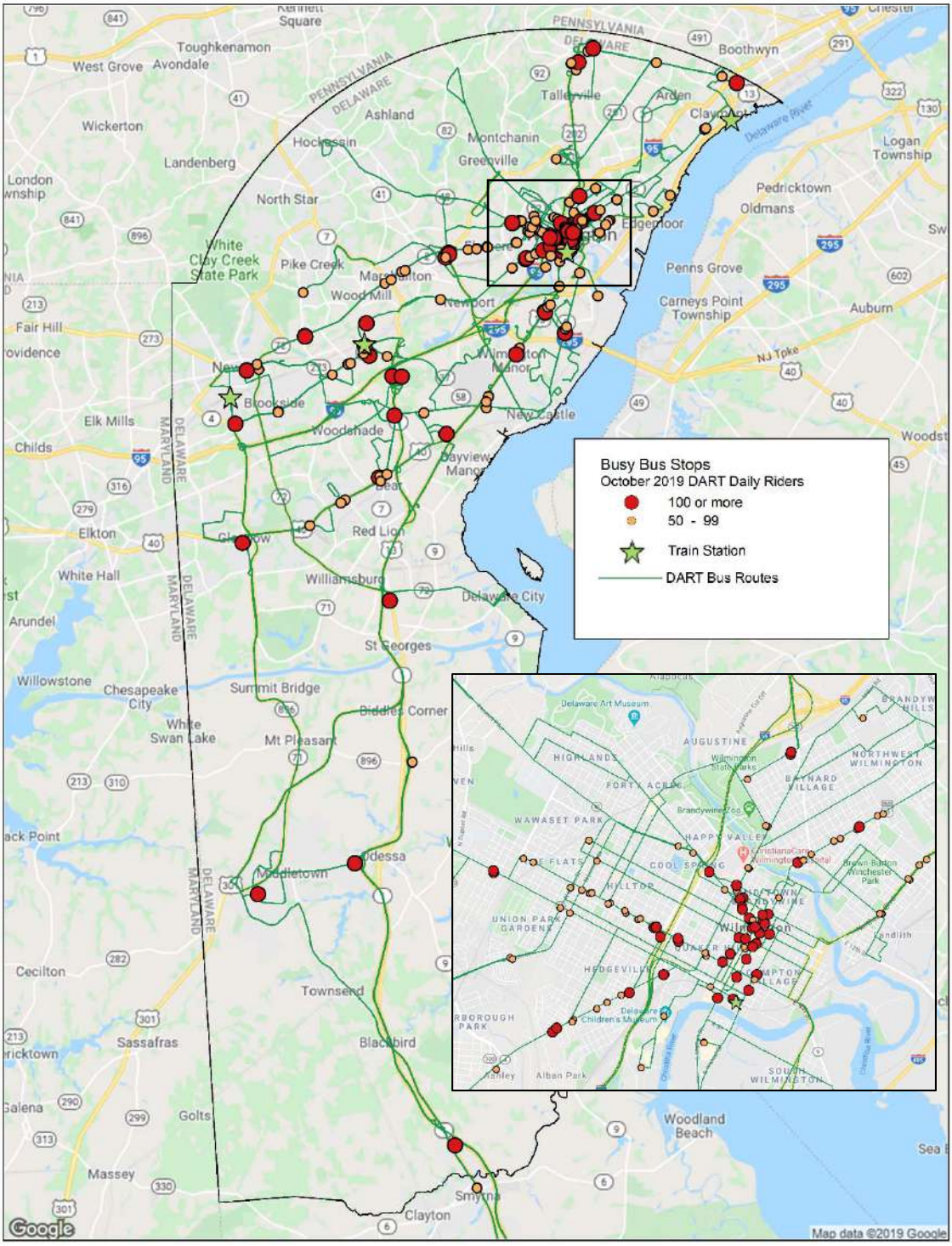


Source: Alta Planning

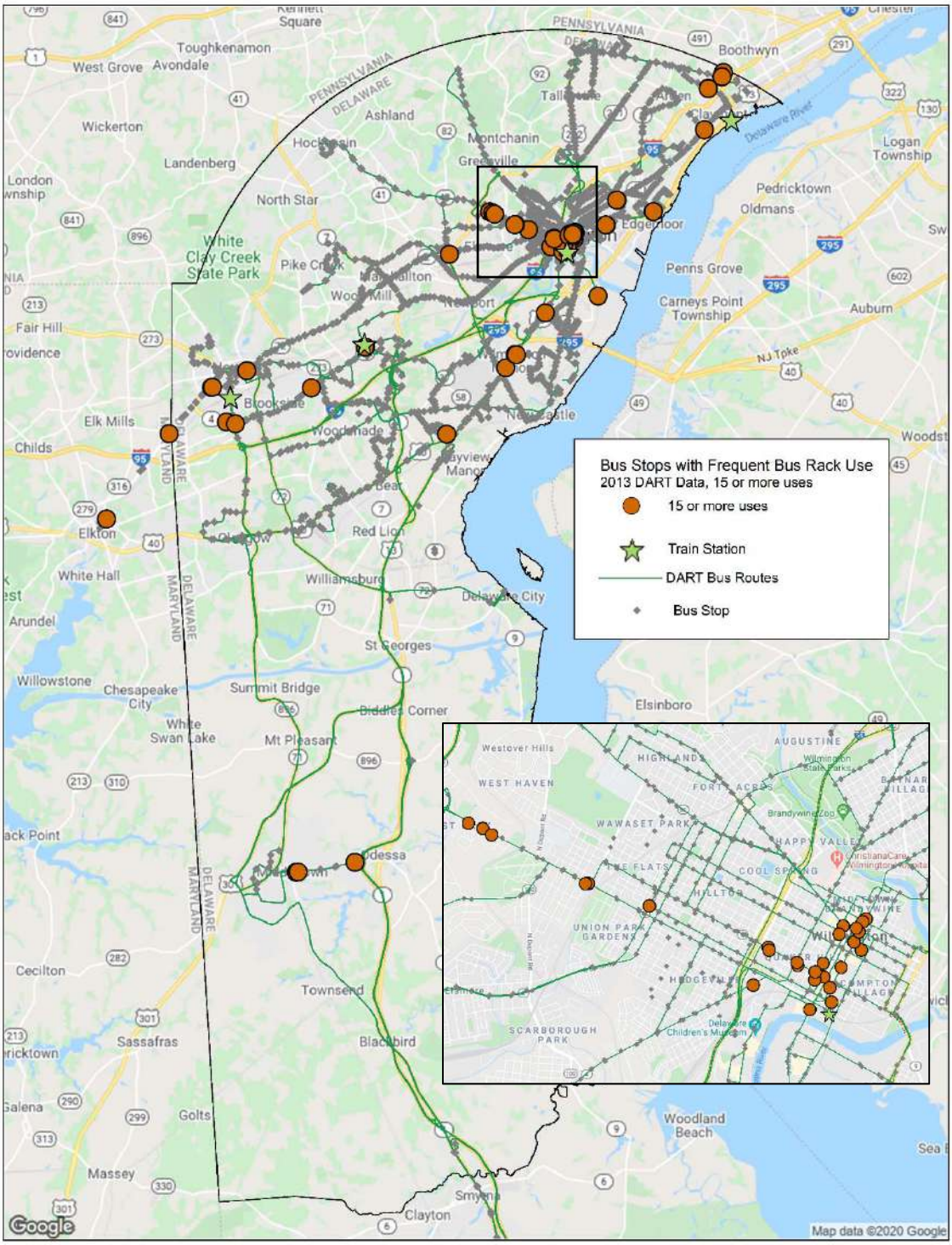
Source: NACTO

Shared bus/bike lanes are not considered to be low-stress routes, but may be an option on corridors with limited space.

DART Bus Stops with Frequent Ridership



DART Bus Stops with Frequent Bus Bike Rack Use



Expand Equitable Access

	Expand equitable access	• Use Transportation Justice data, to recommend improvements by biking to improve connectivity for identified populations. • Expand access to affordable bicycles. • Expand participation by all ages and abilities.

> **"A bikeway is a symbol that shows that a citizen on a $30 bicycle is equally important as a citizen on a $30,000 car."**
>
> ***Enrique Penalosa***

Those who live, work, and play in New Castle County should enjoy equal access to the many benefits of bicycling regardless of age, income, gender, race, or ability. Bicycling offers an affordable transportation and physical fitness option, provided well-maintained, low-cost bikes are available to those who need them.

Transportation Justice

As this Plan has discussed regarding the types of riders and bicycle level of stress, providing for people who bicycle is not one size fits all, or equal services for everyone.

Instead, we should focus on equity, providing for a variety of needs. This approach to Transportation Justice means planning a bicycle system that serves people from "8 to 80" or beyond. This approach entails designing routes and crossings for all ages and abilities. It also entails providing events and services that draw together people from all backgrounds including various genders, ages, families, incomes, and ethnicities to experience the freedoms and joys of riding a bike.

Slow Roll Detroit

WILMAPCO's 2019 Transportation Justice Plan found that some populations benefit more from our transportation system than others do. About 5 in 10 of our region's low-income residents experience at least some difficulty traveling day-to-day. The same is true for only about 1 in 10 of high-income residents.

Biking Connectivity, by Homes within Neighborhood Concentrations

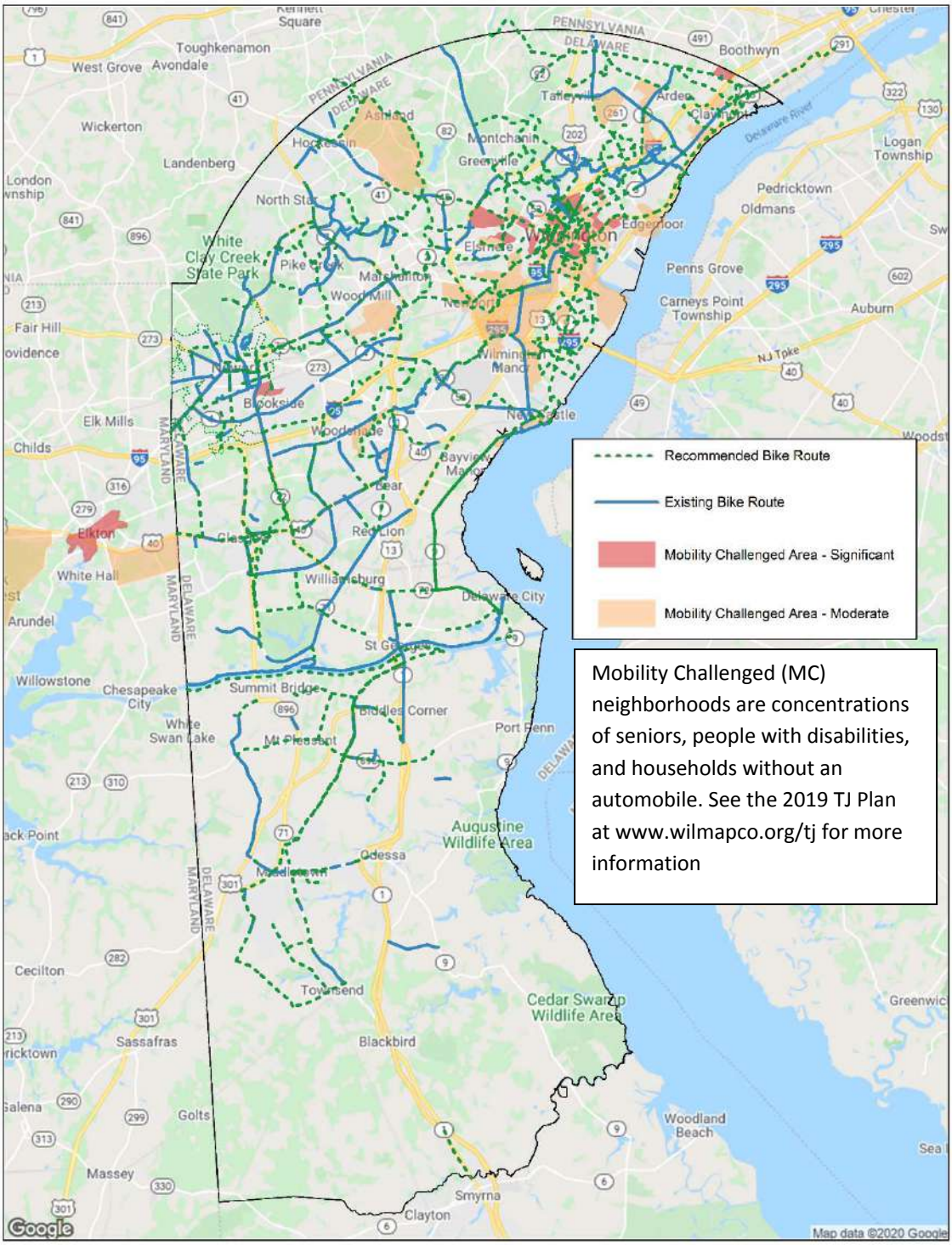
	Super-market	Pharmacy	Hospital	Library	Low-Wage Emp. Center	Medical Center	Community Center	Senior Center	State Service Center
Regional Average	28%	39%	12%	23%	17%	24%	25%	28%	15%
Seniors	31%	47%	14%	22%	20%	30%	21%	30%	14%
Disabled	80%	100%	22%	100%	0%	100%	100%	100%	100%
Zero-car HH	48%	70%	43%	56%	47%	51%	56%	64%	47%
Black	60%	71%	42%	63%	40%	60%	57%	63%	50%
White	9%	14%	3%	8%	6%	12%	10%	9%	3%
Hispanic	34%	60%	22%	35%	31%	27%	33%	41%	22%
Asian	27%	35%	2%	15%	15%	18%	14%	15%	6%
Poverty	61%	64%	53%	57%	50%	50%	60%	65%	54%

Many mobility challenged demographic groups do, however, enjoy better connectivity by bike than whites or the regional average. Access can be further improved through continued growth of programs like Urban Bike Project and Newark Bike Project. Both organizations refurbish donated bicycles to provide affordable transportation. They also offer free bikes upon referral to those in need. These programs can expand their geographic reach with pop-up shops and repair clinics held in areas not served by bike shops and in mobility challenged and environmental justice neighborhoods.

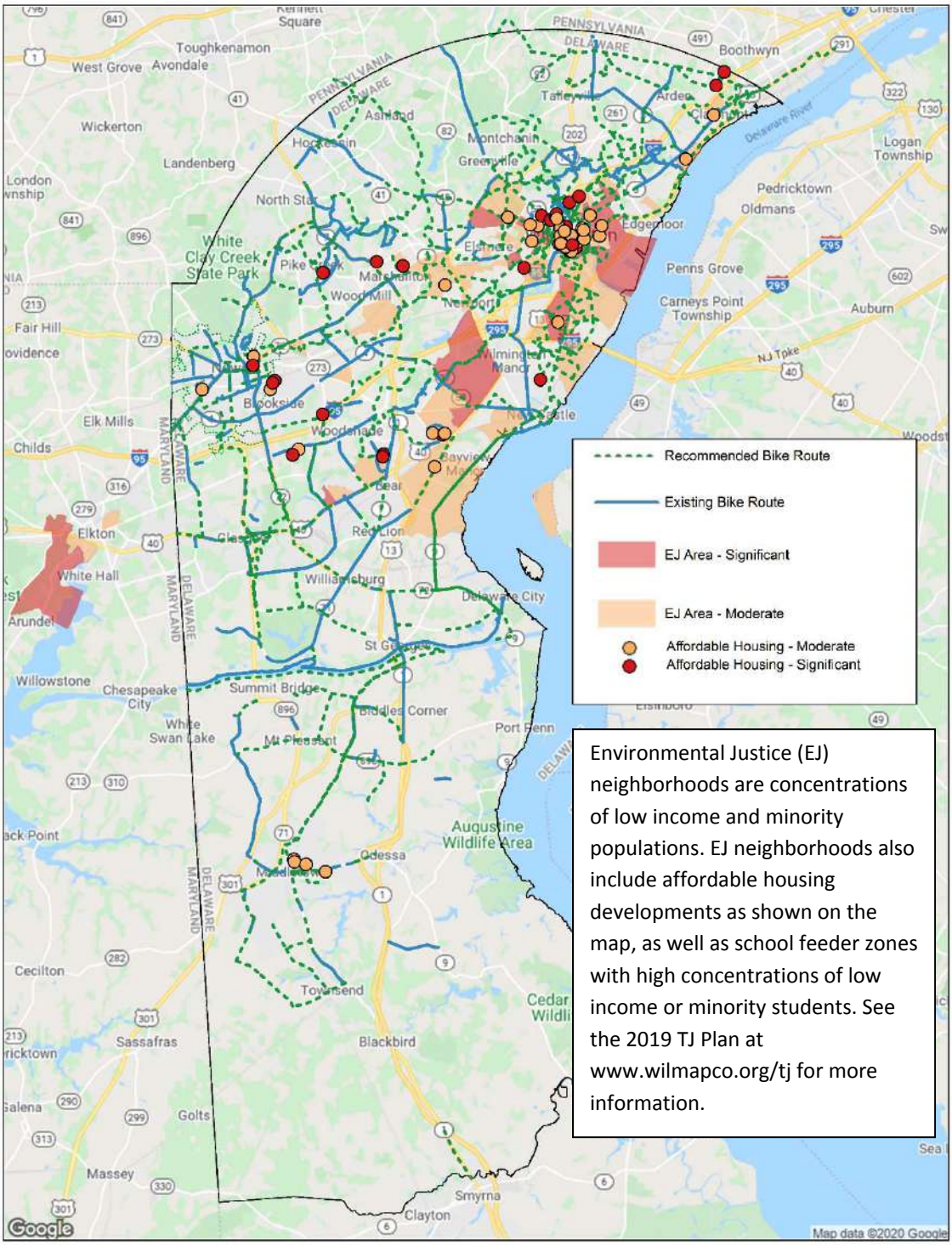
Affordable bike share programs should look for ways to offer equitable access. Integration with DART transit fairs is one way to offer affordable services.

Bicycle libraries also expand access to fleets of bikes. These could be hosted in community centers, at parks, or at employment centers.

Transportation Justice - Mobility Challenged Areas



Transportation Justice - Environmental Justice Areas



Expand Access and Participation

- Complete Streets policies
- Zoning
- Comprehensive and Master Plan
- Safe Routes to…School, Transit, Food, etc

- Low-stress routes to and in parks
- Bike-share and lending libraries
- Bike Coops and Free Bike Programs

- Bicycling as part of physical education
- Activities before, during and after school

- Events, media, promotions

- Biking groups
- Rides for minorities, women, seniors, etc.
- Adaptive bikes for people with disabilities

- Learn to ride programs
- Apps
- Guaranteed Ride Home

- Wayfinding and kiosks

Source: CDC Active People, Healthy Nation

Some key initiatives to promote greater participation include:

Low-stress Wayfinding

Low-stress bicycle routes have been signed in Newark and New Castle. These signs use a unique color combined with local route system directions and branding to let potential riders know the best routes to take to different community destinations. Wayfinding signs can be supplemented by phone apps, paper or digital maps, and kiosks.

Local route names, decorative elements (banners, special lights, benches, trash cans), and interpretive signing can help celebrate each community's special character. Many local routes are stitched together as part of the East Coast Greenway and September 11th National Memorial Trail, two long-distance, multi-state routes.

Bicycle Cooperatives

Urban Bike Project and Newark Bike Project are non-profit organizations that sell refurbished bikes and provide affordable assisted repairs. These programs help overcome the obstacle of bicycle ownership and maintenance to promote broader participation.

Both organizations also offer free bike programs. Applicants are refered by organizations such as welfare and employment offices, Delaware DHSS offices, food banks, shelters, school nurses, and churches. Participants have used bicycles for commuting, healthy living, family bonding, and even substance abuse rehabilitation.

Community Bike Rides and Events

While most bicycle club rides are geared towards experienced riders, community oriented rides and festivals are an important way to expand enthusiasm for bicycling by all ages and abilities. This includes family fun rides, bicycle rodeos, and rides for particular demographics, i.e. women or children.

Safe Routes to Schools

Safe Routes to School programs combine bicycle-friendly infrastructure at or near schools, bike to school events, and learn to ride/safety activities.

Encourage Bicycle Parking and Other End of Trip Facilities

Encourage bicycle parking and other end-of-trip facilities

- Review bicycle parking requirements in zoning codes and recommend revisions as needed.
- Identify locations where bicycle parking should be provided.

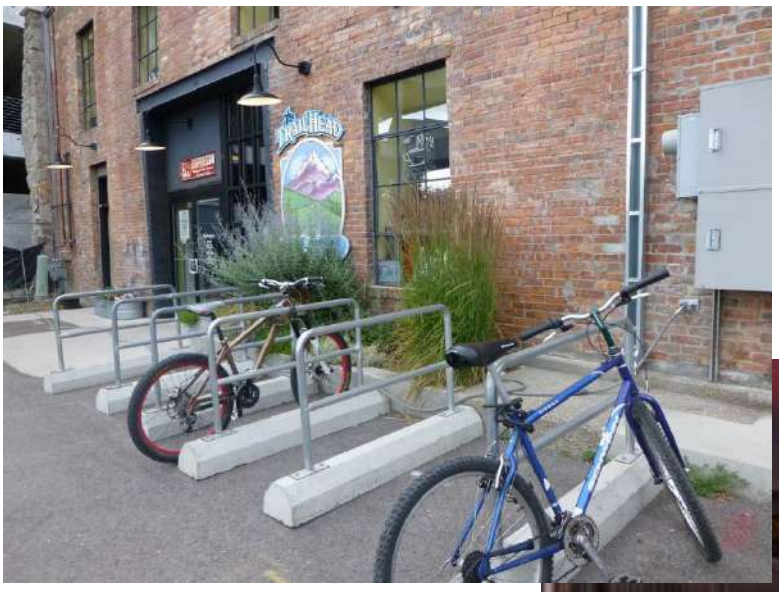
Bicycle Parking and Support Facilities

Bicycle parking and other support facilities send the message, “Bikes are welcome!” Local laws can ensure that bicycle parking is thoughtfully planned through the land development process. A model bicycle parking ordinance is included in Appendix B.

People who use bicycles for transportation require a place to park their bikes and benefit from other support facilities such as repair stations, wayfinding, and commuter services. In fact, the availability of sufficient secure and convenient bicycle parking is a critical form of infrastructure in a bicycle-friendly community, to protect parked bicycles from theft and damage, and prevent them from blocking walkways.

The amount and type of needed bike parking will vary based on the intended use.

Short term parking



Wayfinding to parking

Event parking

Long-term parking

	Short-term parking	Long-term parking
Locations	• Retail • Restaurants • Libraries and community centers • Parks • Entertainment • Community services • Visitor parking at sites listed under long-term parking	• Employment locations • Transit • Schools • Hotels • Multi-family residential
Minimum types/features	• Quick access • Support bike upright by its frame in two places • Allow the frame and one wheel to be locked when both wheels are on and both wheels to be locked when the front is removed • Allow a cable or U-shaped lock • Be securely anchored • Usable by a variety of sizes/types of bicycles	• Clearly marked as a long-term bicycle parking area • Available and accessible 24 hours a day, 7 days a week (or during hours building is open) • Located in a well-lit, visible location near the main entrance • Controlled access to authorized users (i.e. key, smartcard, code)
Desirable features	• Sheltered or indoor location • Close to security camera • Well-lit location • Attractive designs to complement architecture/streetscape	• Monitored by surveillance cameras or security guards • If in a garage, parking gate should allow for cyclists to go around • Doorways/entrances wide enough for someone to pass through with a bike • Automated doors
Locations	• Close to building entrance (or have signs directing to parking near the entrance) • Sidewalks, outside of walkways and door-zones • In-street bike corrals	• Ground floor storage rooms • Rooms or cages in parking garages • Bike racks in a garage • Lockers

Land Use Plan and Zoning for Parking

Land-use zoning code should specify minimum bike parking quantities, required design elements, recommended locations, and suggested desirable features. The section “Incorporate Bicycle Elements into Land Use Planning and Zoning” provides additional details on existing comp plans and zoning for bicycles and suggests code changes.

In addition to code changes specific to bicycle parking, the Plan recommends increased flexibility in vehicular parking requirements and the elimination of vehicular parking minimums where appropriate. Excessive vehicular parking requirements create vast areas that are often unpleasant for walking and bicycling, hinder the best economic use of land, and promote sprawl and excessive impervious surfaces.

Retrofitting Bicycle Parking

Incentives should be provided to priority property owners to replace substandard or non-existent parking. This might include the provision of free or discounted bike racks.

Event Parking

In addition, festivals, parades, and other events should provide valet bike parking or temporary event parking. Providing for parked bicycles at events helps:

- Reduce motor vehicle congestion and parking demand at events
- Reduce the number of bicycles locked to street poles, fences, and trees
- Reduce the number of bicycles being walked through crowded spaces, such as street fairs
- Raise the visibility and acceptance of bicycling for transportation

Local governments can promote event parking by purchasing temporary racks and making them available to event organizers. Both DelDOT and local event permit applications should ask if bicycle parking will be provided and give information on access to local temporary racks.

Support Facilities

Commuter Needs

- Bicycle commuting benefits employee health and fitness, reduces demands for parking, and provides affordable transportation to work. In addition to secure, long-term bike parking, employers and employment centers can take other steps to promote bicycle commuting.
- Survey employees to address commuter needs
- Provide showers on-site or nearby
- Promote Rideshare Delaware. Rideshare Delaware provides bicycle commuters emergency rides home and matches people with others traveling a similar route
- Participate in Bike to Work Week. Special events can reward existing bike commuters and encourage new ones to try it.

Air, Fix-it, and Bike Wash Stations

- Facilities for self-repairs should be provided at convenient locations and marked on bike maps. Facilities might be provided by local governments, employers, schools, developers, or state agencies.

Bicycle Wayfinding

- A bicycle wayfinding system includes signs and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Wayfinding guides bicyclists to the best low-stress routes within the bicycle network and promotes bicycle transportation to visitors, new, and infrequent riders by showing accessible destinations. Including travel time and/or distance information helps travelers accurately estimate travel times since many overestimate the time it takes to bike to destinations.
- Delaware now has special wayfinding signs available to low-stress routes. These have been used in Newark and along the Jack Markell Trail.

Parking resources:

http://bikeparking.com/bikepark101/index.html

https://www.apbp.org/assets/docs/EssentialsofBikeParking_FINA.pdf

https://www.sarisinfrastructure.com/resources/bike-parking-design-guidelines

https://www.townofchapelhill.org/home/showdocument?id=3361

Develop Implementation and Evaluation Plan

Develop implementation and evaluation plan

- Establish collaborative strategies to collect and share data.
  - Work with DelDOT and other partners to identify locations for bicycle counts.
  - Work with DelDOT and other partners to create and maintain a user-friendly experience that includes analog/digital mapping products, the updating of implementation information, and data sharing available for advocates, agencies, and users.
- Prioritize recommended infrastructure projects, programs, and policies for implementation.
- Identify funding programs for implementation.
- Continue to expand community and agency involvement in bicycle activities.

Implementation Strategies

The recommended low-stress bike route in Plan's section, "Identify Bicycle Transportation Network," suggests connections for building a network. Most, at this stage of planning, are simply ideas. The Plan has not analyzed these for what might be achievable based upon real-world constraints. The section "Improve Safety through Design, Maintenance, and Enforcement" suggests a menu of design options for lower-stress travel.

As projects move from this broad look at the entire New Castle County to individual implementation there will be additional planning, public outreach, engineering, and refinement of details. Other ideas not conceived of in this Plan may emerge through other planning, road projects, parks projects, and development activity.

Pop-up Demonstration Projects and Quick Build Pilot Projects

Temporary projects to test potential designs are effective at soliciting community feedback and avoiding costly design mistakes. Projects may last anywhere from less than an hour to many months. Some suggested approached include:

- Local governments should establish a process for collaboration between agency staff and the public, which encourages community pop-up requests and establishes parameters for acceptable designs, permitting, and organizational partners.
- Communities should proactively pursue demonstration projects and direct them to locations with the greatest needs. Equitable distribution of projects should engage a variety of communities and financially support these diverse projects to level the playing field.
- Engaging the community will bring fun, energy, and creativity to the planning process. Residents, local organizations, and businesses are also effective partners at getting the word out about the demonstration.
- Evaluate the tested design, collecting information like speeds and volumes of bicycles, pedestrians, and vehicles. Also, see out community feedback.
- Use information gained to adjust the project's design and pursue more permanent implementation

GETTING THINGS BUILT

Primary ways to get projects built include:

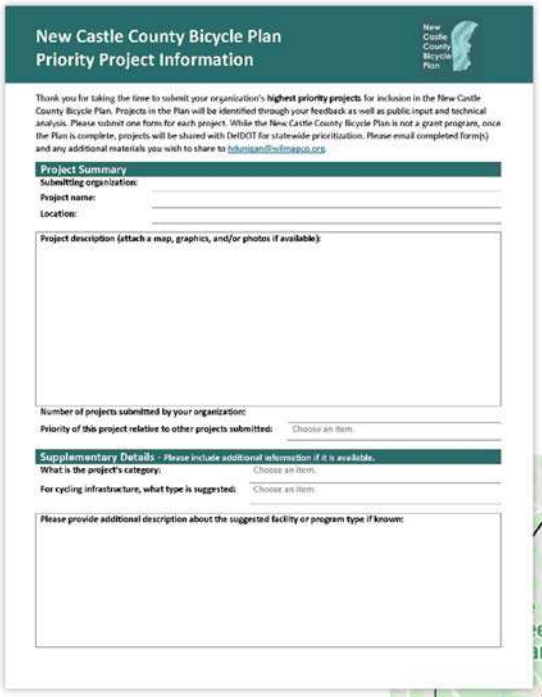
- Low hanging fruit—small, low cost projects that can be quickly done using in-house resources or existing contracts. One example would be retrofitting storm sewer grates to bicycle-safe designs.
- Land use development-new and redevelopment land use applications should be evaluated for opportunities to expand the bicycle network.
- Restriping—routine roadway restriping provides on opportunity to reallocate space for a lower-stress route. This might include narrowing motor vehicle or parking lanes or buffering wide bike lanes. If possible, do not eradicate old markings, as this will significantly increase the cost and may damage the pavement
- Road diets—streets with two or more lanes in each direction should be evaluated to determine if they are candidates for lane reconfiguration with a center left turn lane. Where the traffic volumes are low enough, road diets help traffic flow, reduce rear-end crashes, and provide space for better walking and bicycling facilities.
- Paving and rehabilitation— resurfaced pavement gives a blank slate for placing markings. Routine street maintenance provides an opportunity to upgrade bike facilities at a lower cost than a stand-alone project.
- Capital projects—stand-alone projects may be done through projects in the WILMAPCO Transportation Improvement Program and DelDOT Capital Transportation Program. While large projects, such as the Jack A. Markell Trail, are listed individually, others are funded through several programs:
    - Transportation Alternatives Program
    - Bicycle and Pedestrian Improvements Program
    - Community Transportation Fund
    - Recreational Trails Program

Priority projects should be selected based on local preferences and a technical prioritization process. Tiered project priority categories include:

- Regional – ½ mile or longer
- Subregional – 1000 ft – ½ mile
- Spot improvements
- Bicycle parking
- Program for education, encouragement

Local Priorities

Local jurisdictions were asked to submit a two-page form for each of their highest priority projects. Projects were submitted by New Castle County, City of New Castle, City of Newark, City of Wilmington and the Town of Middletown. These submissions are included in Appendix D.



New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:
Project name:
Location:

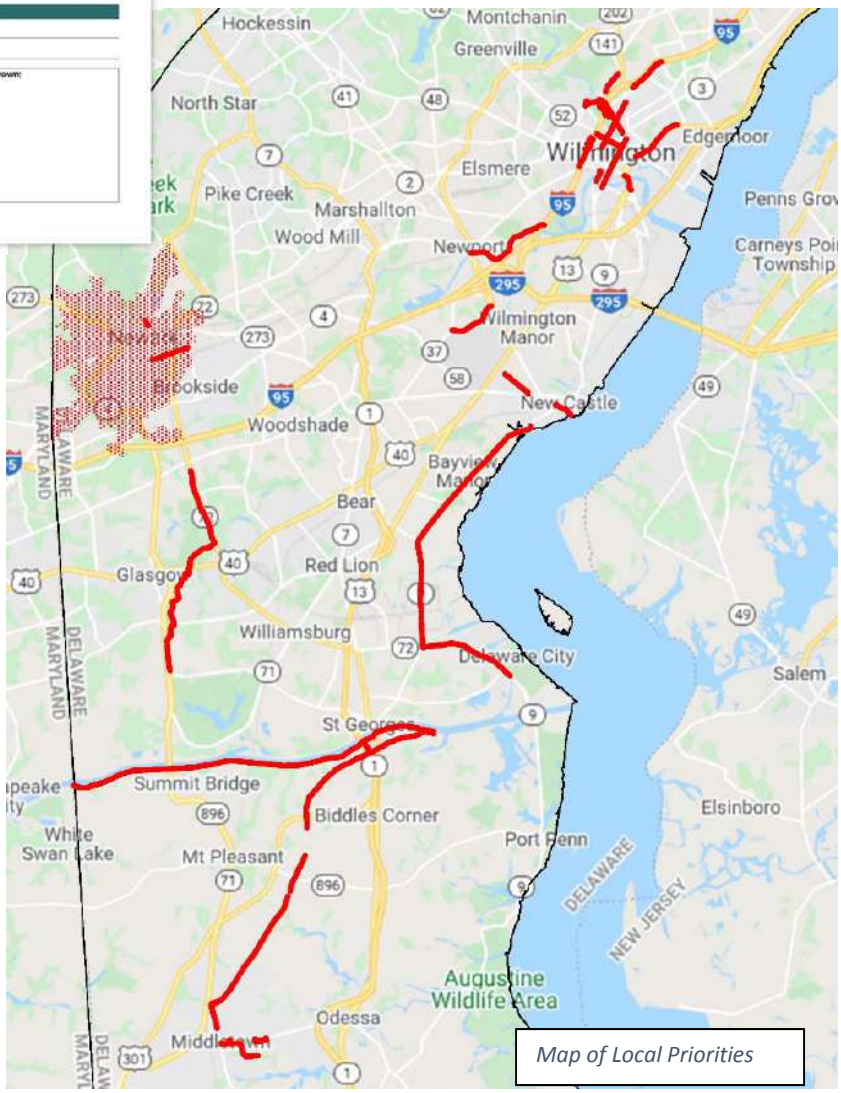
Project description (attach a map, graphics, and/or photos if available):

Number of projects submitted by your organization:
Priority of this project relative to other projects submitted: Choose an item.

Supplementary Details - Please include additional information if it is available.

What is the project's category: Choose an item.
For cycling infrastructure, what type is suggested: Choose an item.

Please provide additional description about the suggested facility or program type if known:



Map of Local Priorities

Locally Submitted Priorities

Scoring	Jurisdiction	Project	Local Priority	Category	Type
Medium-high (4)	City of Newark	Newark Bikeways Low-stress Wayfinding, Phase 2	Top 5	Other	Signage
Medium-high (4)	City of Newark	Wyoming Road Protected Bike Lanes	Top 5	Regional	On-street
Medium-high (4)	City of Newark	Olan Thomas Sidewalk to Path Conversion	Top 5	Spot	Path
Highest (5)	City of New Castle	Markell Trail Extension to Battery Park	Top 5	Local	Path
Medium-high (4)	City of New Castle	School Lane Trail	Top 5	Regional	Path
Medium-high (4)	City of Wilmington	Baynard Bikeway	Top 5	Regional	On-street
Highest (5)	City of Wilmington	Christina River Southbound Crossing	Top 5	Local	On-street/path
Highest (5)	City of Wilmington	Downtown - Riverfront Connector	Top 5	Spot improvement	On-street
Medium-high(4)	City of Wilmington	Northeast Blvd Bike Lanes	Top 5	Regional	On-street
Highest (5)	City of Wilmington	Walnut Street	Top 5	Regional	On-street
Highest (5)	City of Wilmington	Wilmington CBD Westbound Bikeway	Top 5	Local	On-street/path
Highest (5)	City of Wilmington	Adams and Jackson Streets	Top 6-10	Local	Path
Medium-high (4)	City of Wilmington	Augustine Cut-off Trail and Connectors	Top 6-10	Local	On-street/path
Medium-high (4)	City of Wilmington	E. 4th Street Bridge	Top 6-10	Local	On-street
Medium-high (4)	City of Wilmington	Wilmington Brew Works Trail	Top 6-10	Regional	Path
Medium-high (4)	New Castle Co	Augustine Cut-off Segment 1	Top 5	Local	On-street
Medium (3)	New Castle Co	Commons Blvd Connector - Phase 2	Top 5	Regional	Path
Medium-low (2)	New Castle Co	Middletown to South St. George Path	Top 5	Regional	Path
Medium-high (4)	New Castle Co	Newark to Castle Trail Connector	Top 5	Regional	Path
Medium (3)	New Castle Co	Newport Connector	Top 5	Regional	Path
Medium-high (4)	New Castle Co	C&D Canal - South Bank	Top 6-10	Regional	Path
Medium-low (3)	New Castle Co	New Castle to Delaware City Trail	Top 6-10	Regional	Path
Medium-high (4)	Town of Middletown	Middletown Bike Connections	Top 5	Local	On-street

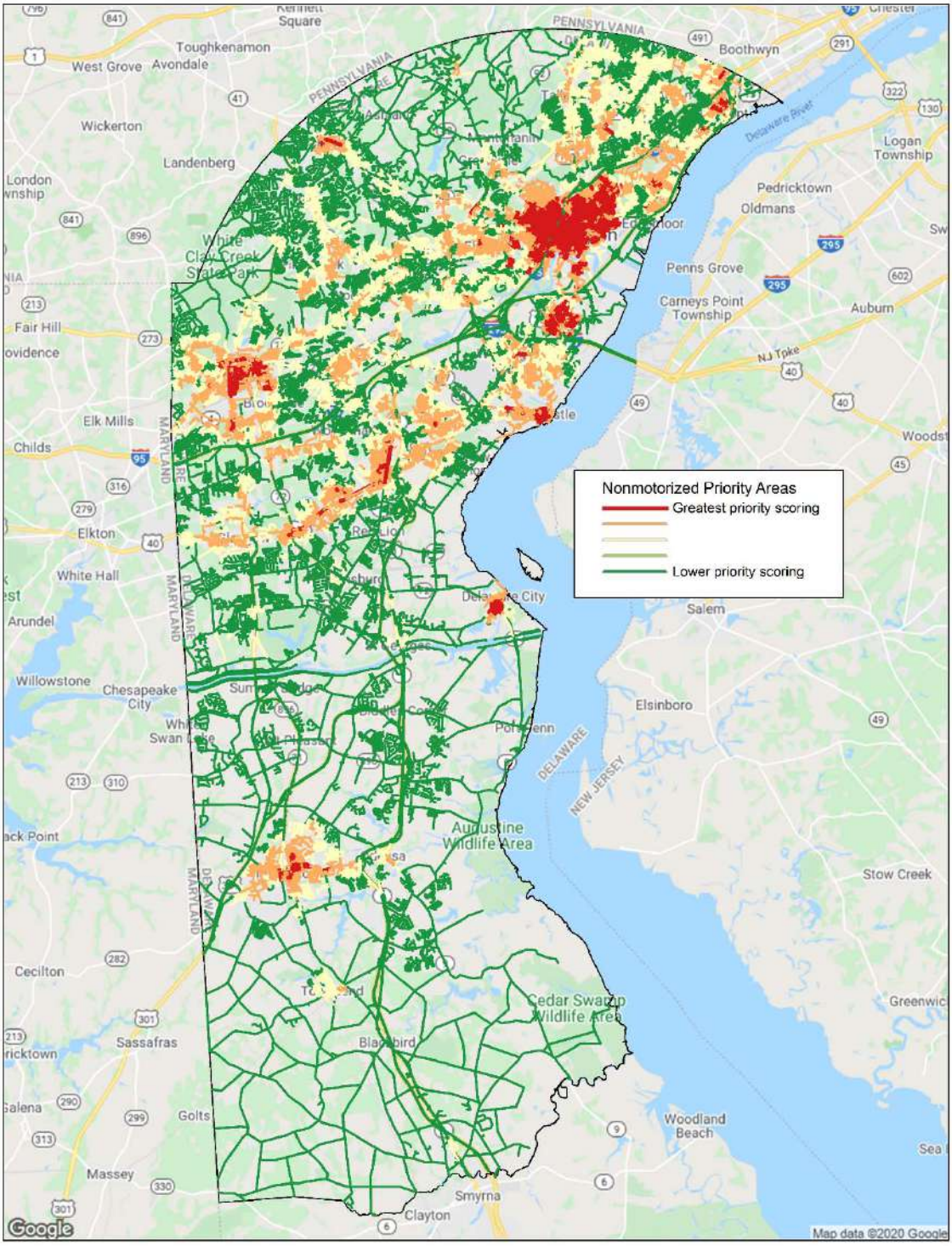
Prioritization Process

Technical evaluation of projects is critical to ensure that the limited transportation funding for nonmotorized projects is spent wisely. Technical scoring of projects uses the following criteria, showed mapped on the next page.

Proximity to major attractions	o	Within ¼ mile of shopping or commercial land use
	o	Within ¼ mile of a park, trail, library, or community center
	o	Within 1 mile of a school
	o	Within ¼ mile of a transit stop
	o	Within municipality
Fills a gap	o	Completes gap in nonmotorized transportation network
	o	Completes portion of regional greenway, e.g., East Coast Greenway
Population affected	o	Composite population and employment density (8+ units/acre)
	o	Environmental justice/mobility challenged (areas with concentrations of minority and low-income/elderly, persons w/disability and zero-car households)
Safety	o	Concentration of pedestrian and bicycle crashes *[Up to 4 points depending on number of crashes and crash rate]*
Other impacts	o	Private development approved for adjacent portion of block(s)
	o	Strong community support
	o	Right-of-way available

Planning and implementation partners are encouraged to do additional GIS and connectivity analysis to guide selection of the best options in the most needed areas.

Nonmotorized Transportation Priority Areas



Performance Measures

	GOAL	PERFORMANCE MEASURE
	Identify bicycle transportation network	• Completed low-stress network miles • Share of households within ¼ mile of the network
	Improve safety through design, maintenance, and enforcement	• Bicycle crashes, total, injury, fatal • Bicycle satisfaction, public opinion survey
	Incorporate bicycle elements into land use planning and zoning	• Incorporation of bicycle elements into comprehensive plans • Incorporation of bicycle elements into zoning codes
	Expand equitable access	• Bicycle connectivity for mobility challenged areas
	Provide bicycle access to transit	• Use of bike racks on buses
	Encourage bicycle parking and other end-of-trip facilities	• Bicycle parking required in zoning codes
	Develop implementation and evaluation plan	• Monitoring of implementation through the Regional Progress Report • Trail counts • Bicycle intersection counts • Commute trips by bicycle

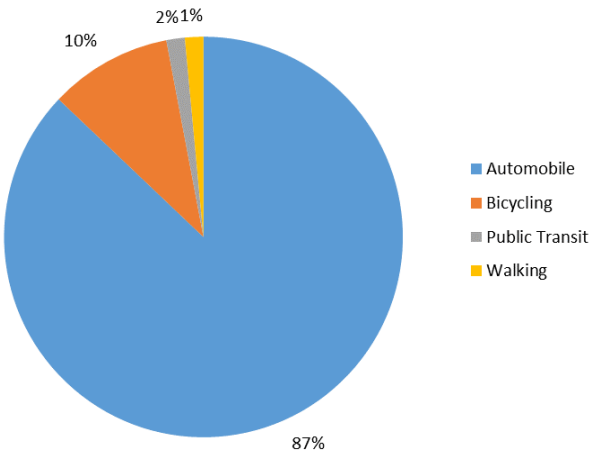
Appendix A – Public Outreach

Public outreach included:

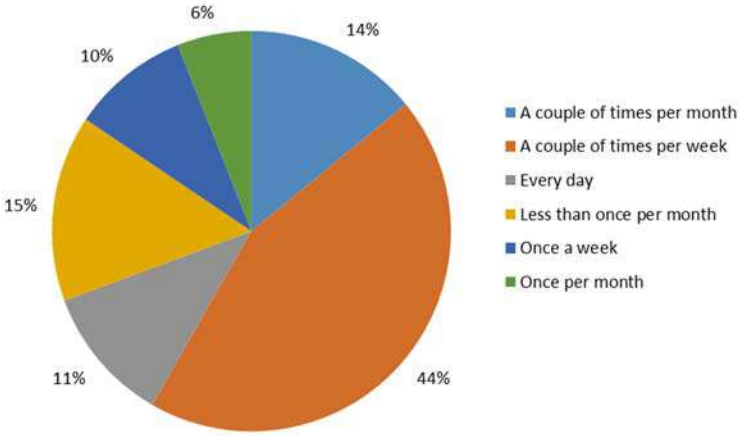
- 9 workshops and events throughout the county
    - Public Workshop: March 13, 2019, WILMAPCO
    - Our Town Public Workshop: February 7, 2019, The Tower at Star
    - Public Workshop: December 13, 2018, Elsmere Town Hall
    - Public Workshop: December 11, 2018, Brandywine Hundred Library
    - BikeNewark Community Night: October 26, 2018, Wooden Wheels
    - Pop-up Workshop at Halloween Event: October 20, 2018, Goodley Park
    - Southern New Castle County Master Plan Information Session: October 17, 2018, Odessa Fire Hall
    - Public Workshop and Briefing to Townsend Town Council: June 6, 2018, Townsend Town Hall
    - Briefing to Elsmere Town Council: March 8, 2018, Elsmere Town Hall
- Advisory committee of local officials and staff, and stakeholder groups
- Metroquest survey with 286 respondents from February 1 – May 1, 2019
- Submission form for local government project priorities

Metroquest Survey Results

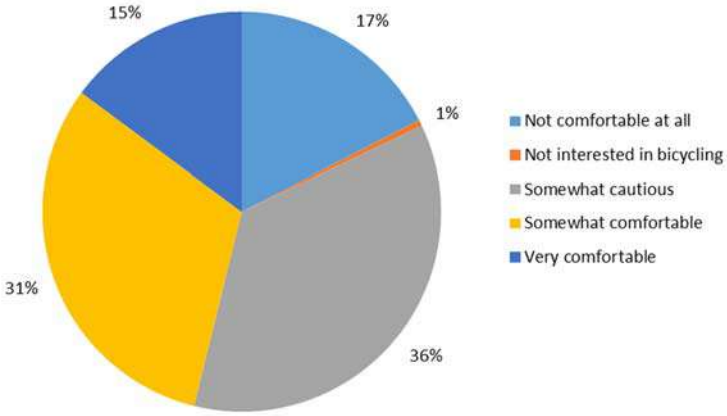
What type of transportation do you use the most?



How often do you bicycle?



How do you feel bicycling in your community?



MetroQuest
Engagement...optimized

WILMAPCO

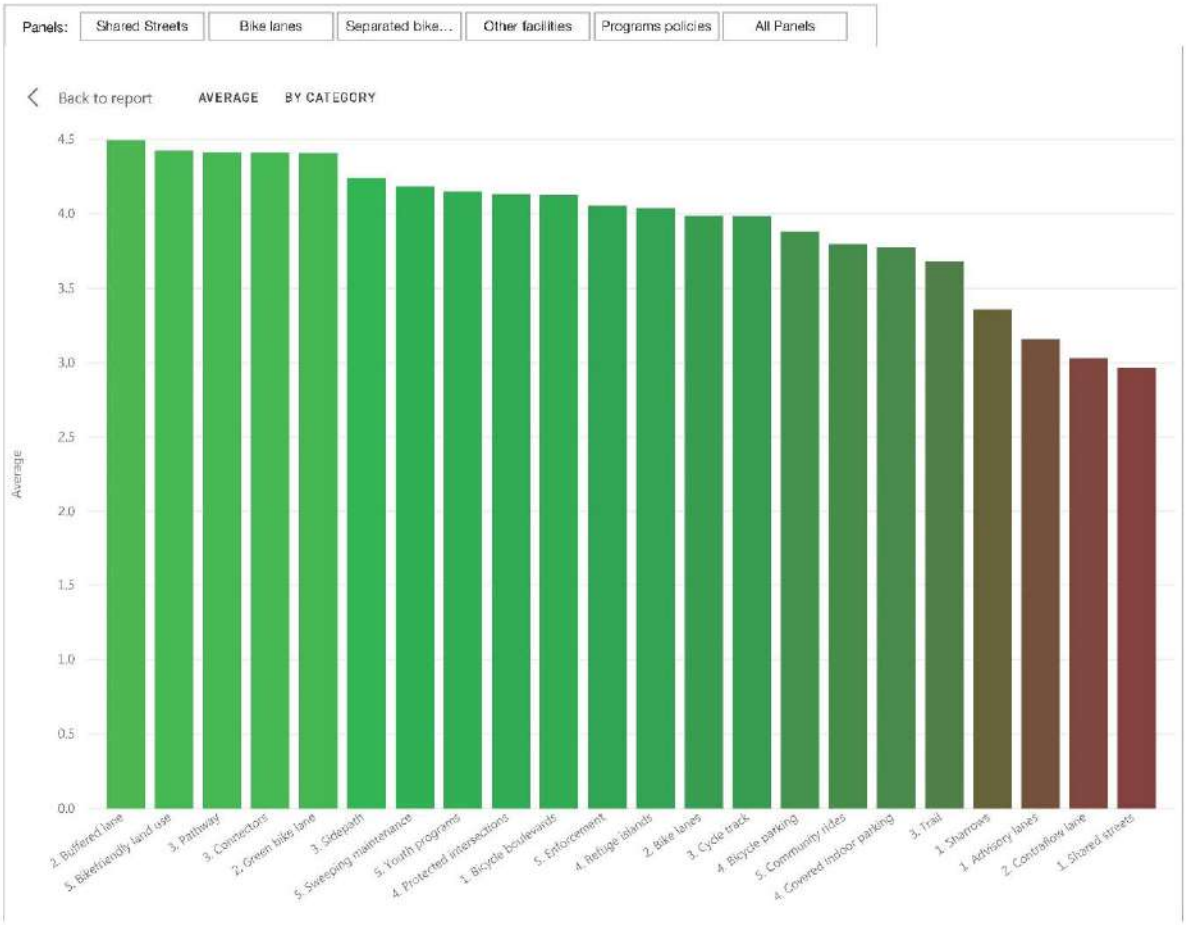
New Castle County Bicycle Plan

Jan 30, 19 - May 01, 19

Screen 2

→ DISTRIBUTIONS → AVERAGE RATINGS → POPULARITY → TABLE

The average rating of each item for all participants.



Data points for this Screen:

Ratings: **5301** Comments: **236**

MetroQuest
Engagement...optimized

WILMAPCO | **New Castle County Bicycle Plan**

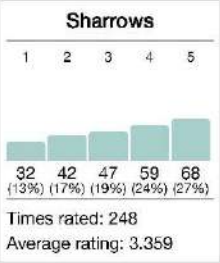
Jan 30, 19 - May 01, 19 | Screen 2

↓ Below: Each rating item, showing how many times each item was given each rating, sorted by average rating.

Shared Streets

Times rated: 242
Average rating: 2.963

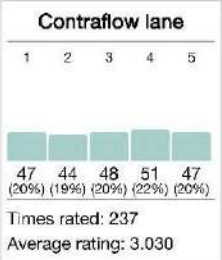
Times rated: 246
Average rating: 3.154



Times rated: 248
Average rating: 3.359

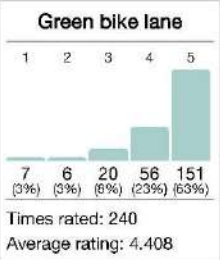
Times rated: 267
Average rating: 4.124

Bike lanes

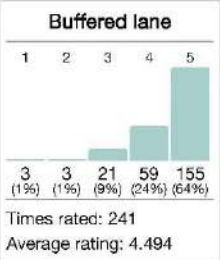


Times rated: 237
Average rating: 3.030

Times rated: 258
Average rating: 3.984

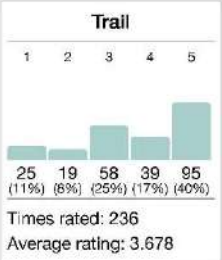


Times rated: 240
Average rating: 4.408

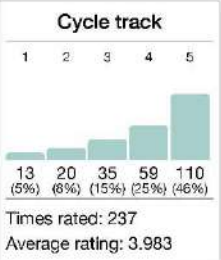


Times rated: 241
Average rating: 4.494

Separated bikeways

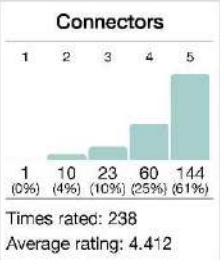


Times rated: 236
Average rating: 3.678



Times rated: 237
Average rating: 3.983

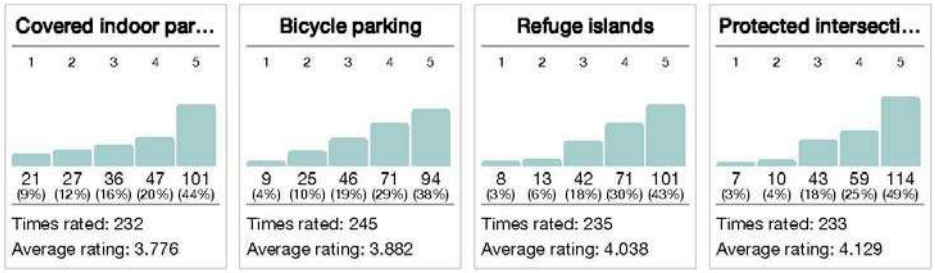
Times rated: 251
Average rating: 4.239



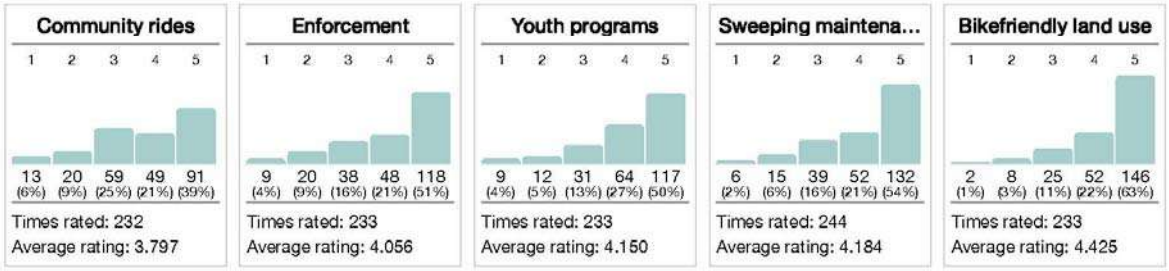
Times rated: 238
Average rating: 4.412

Times rated: 240
Average rating: 4.413

Other facilities



Programs policies



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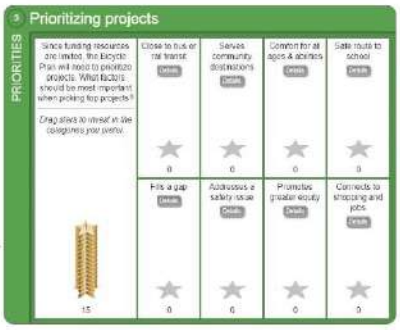
New Castle County Bicycle Plan

Jan 30, 19 - May 01, 19

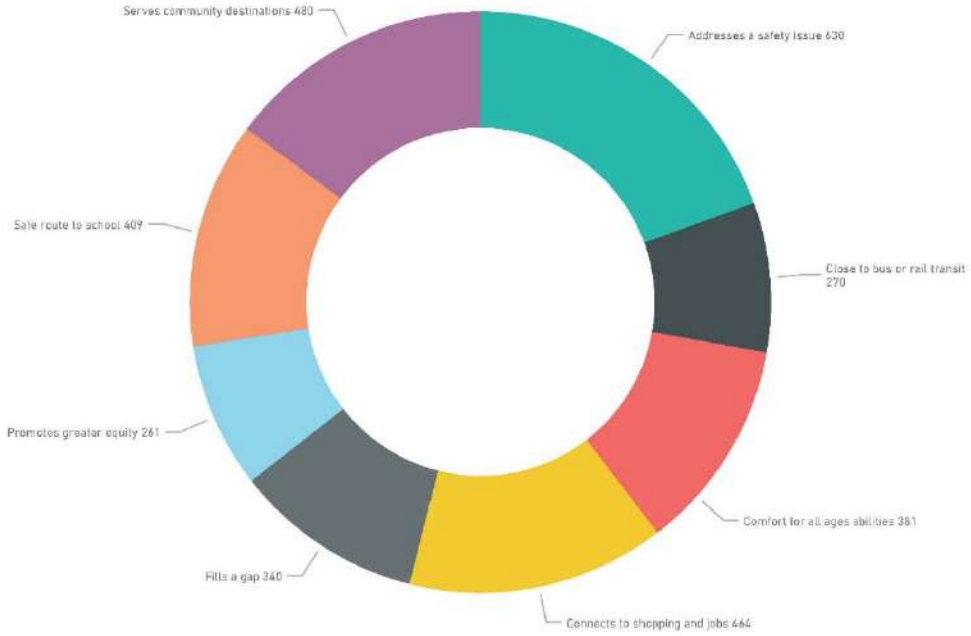
Screen 3



→ **BUDGET ALLOCATED** → AVERAGES → DISTRIBUTIONS → ALL

The total budget allocated to each category for all participants.

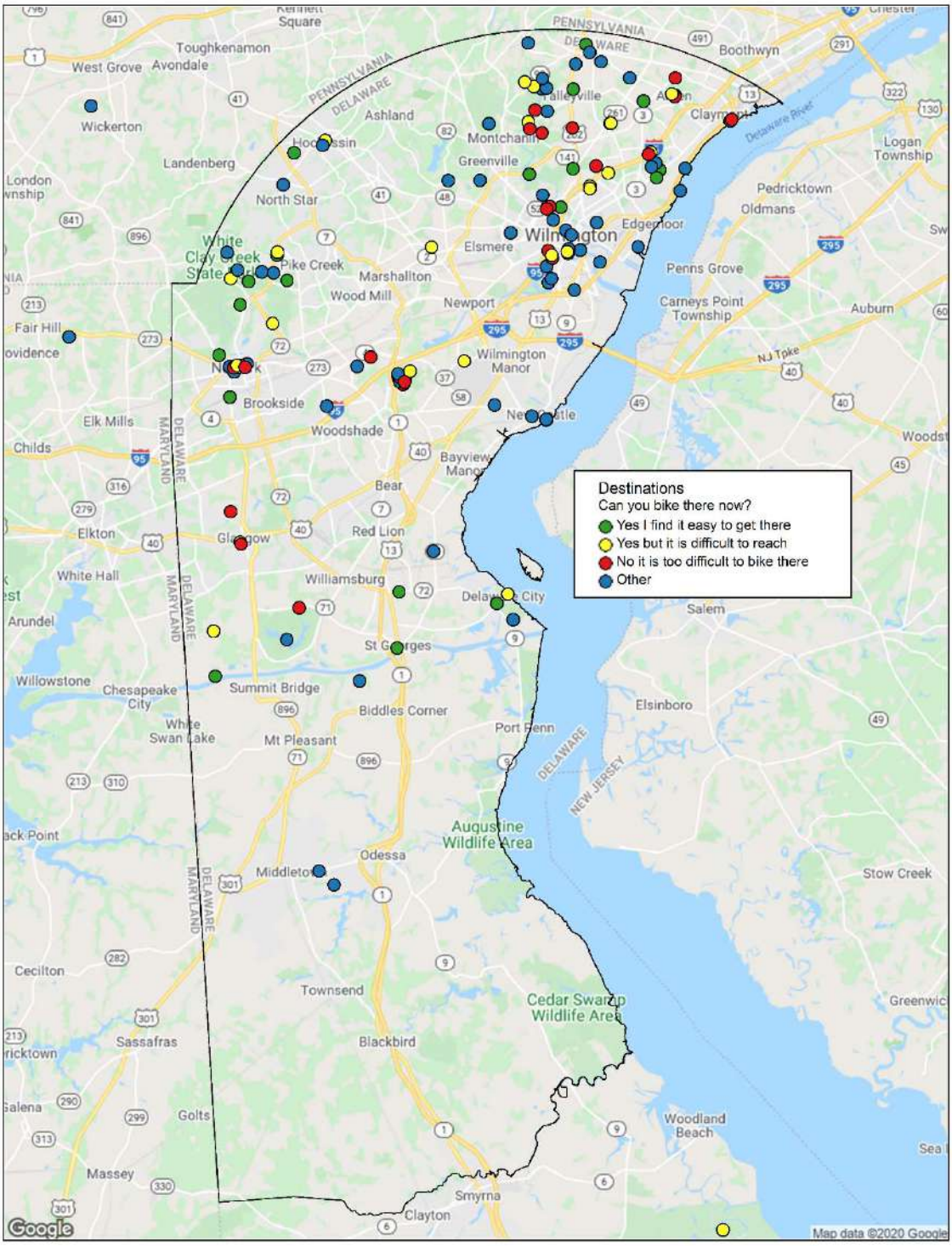
Back to report **SUM FACTORS** **BY BUDGET SPENT**



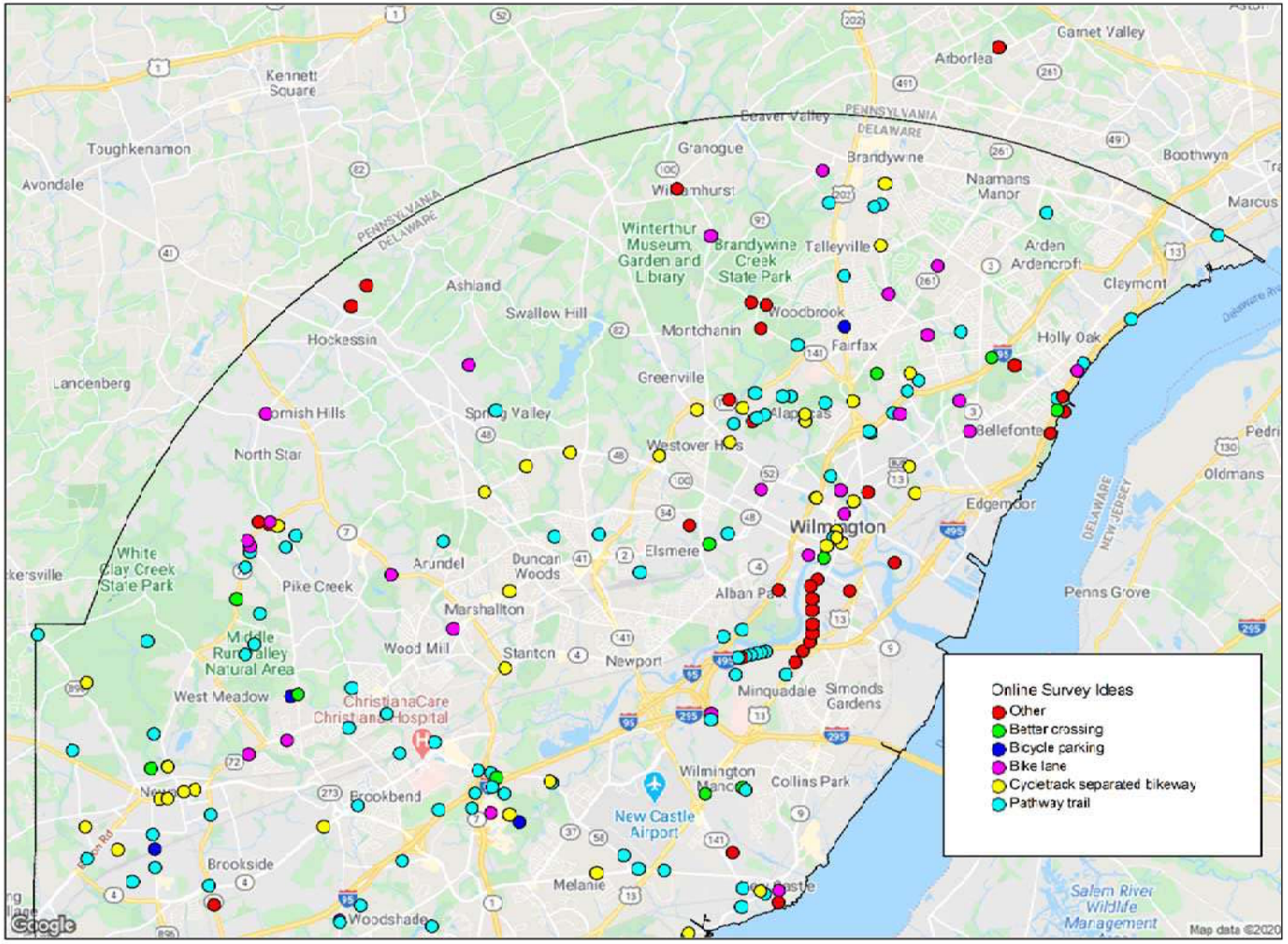
Data points for this Screen:

Data points: **2071**

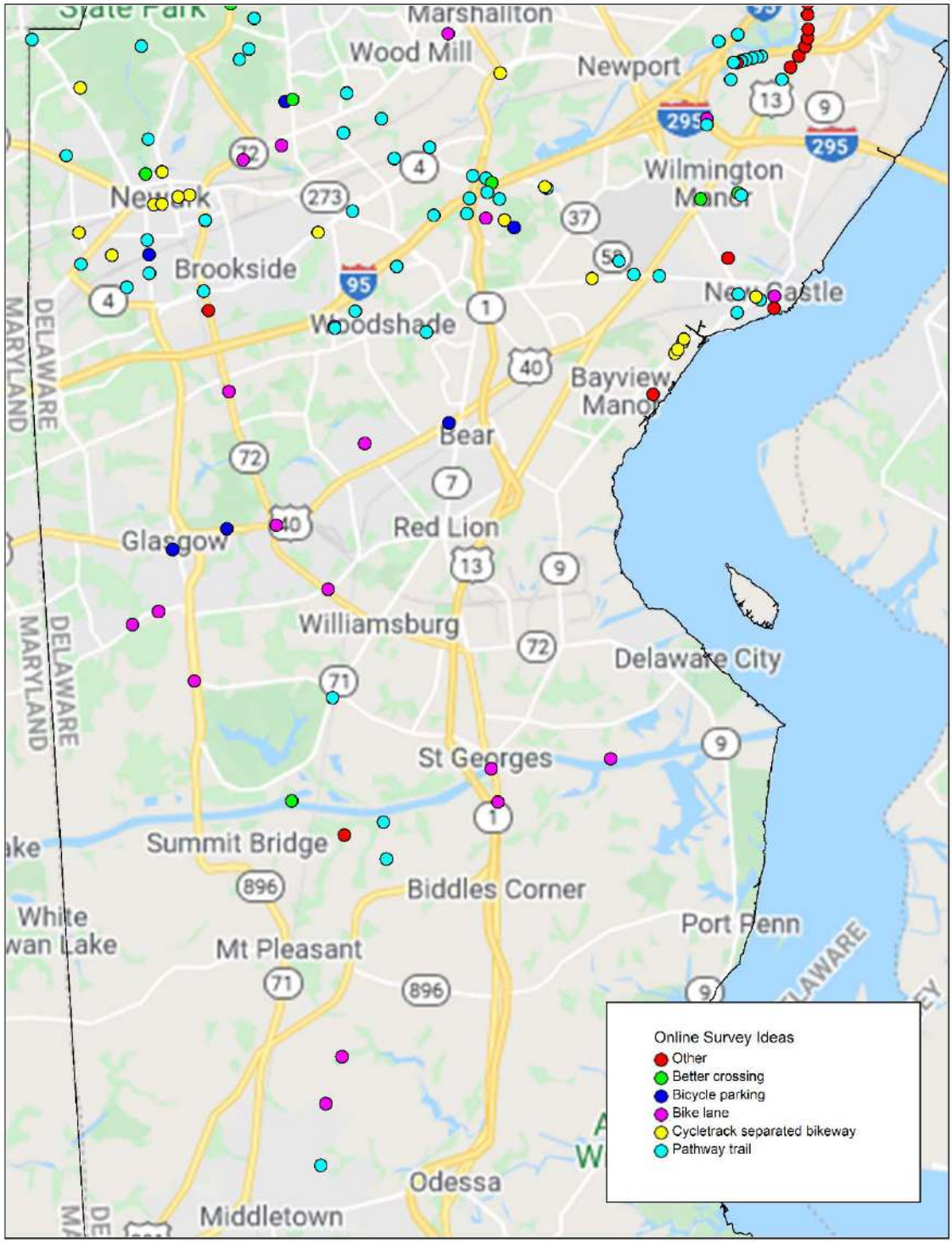
Destinations Submitted through Online Survey



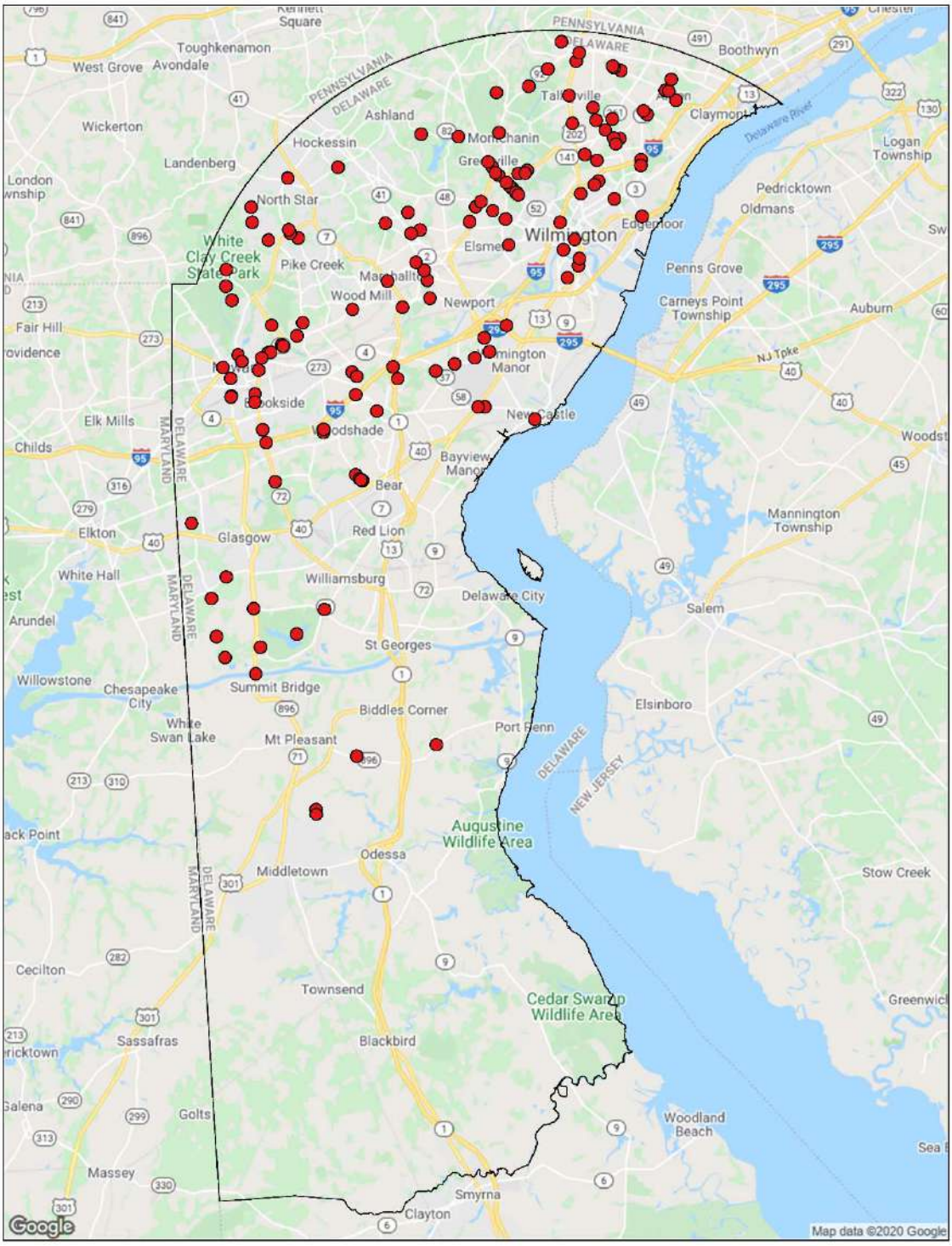
Project Ideas Submitted through Online Survey



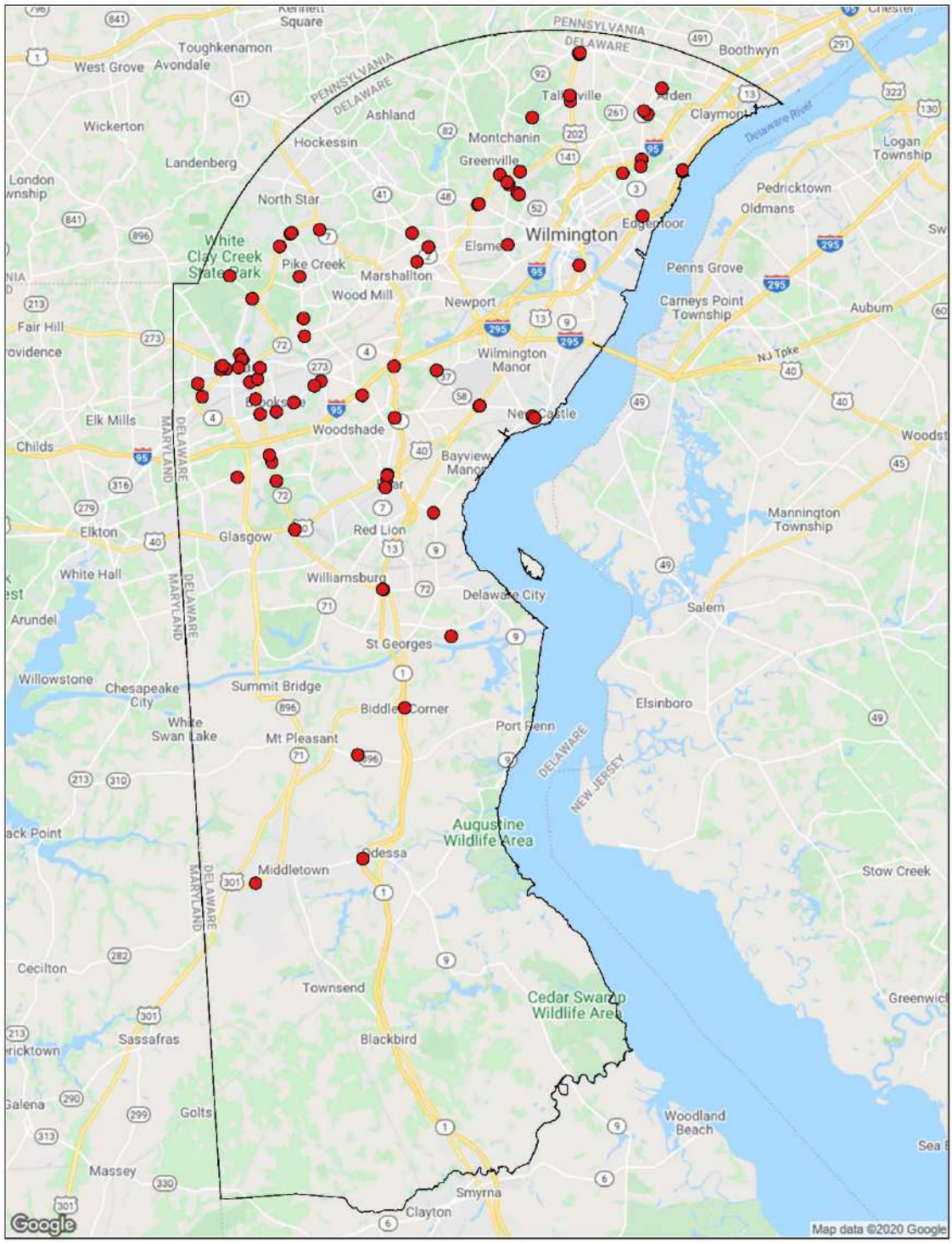
Project Ideas Submitted through Online Survey



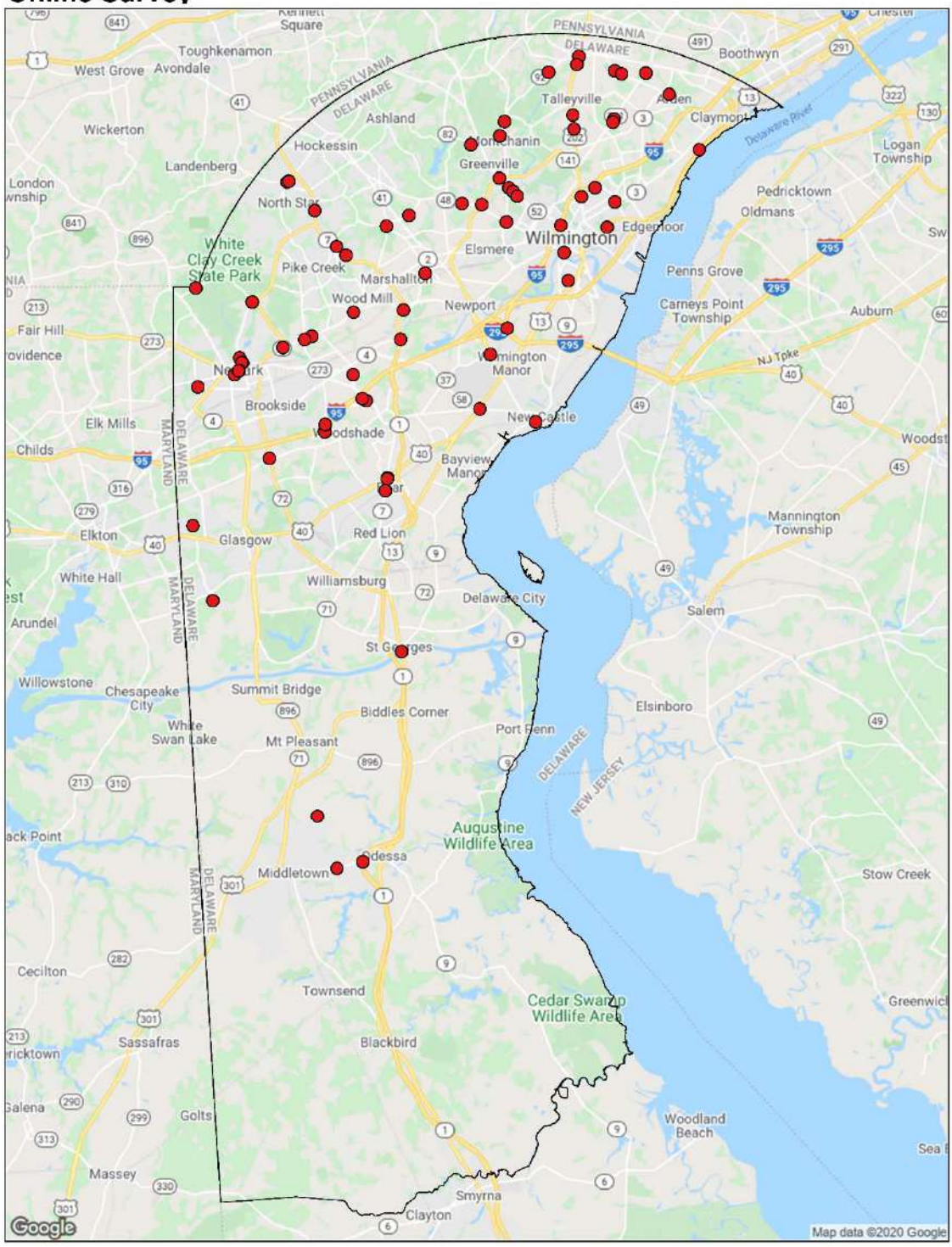
Locations with No Bike Route Submitted through Online Survey



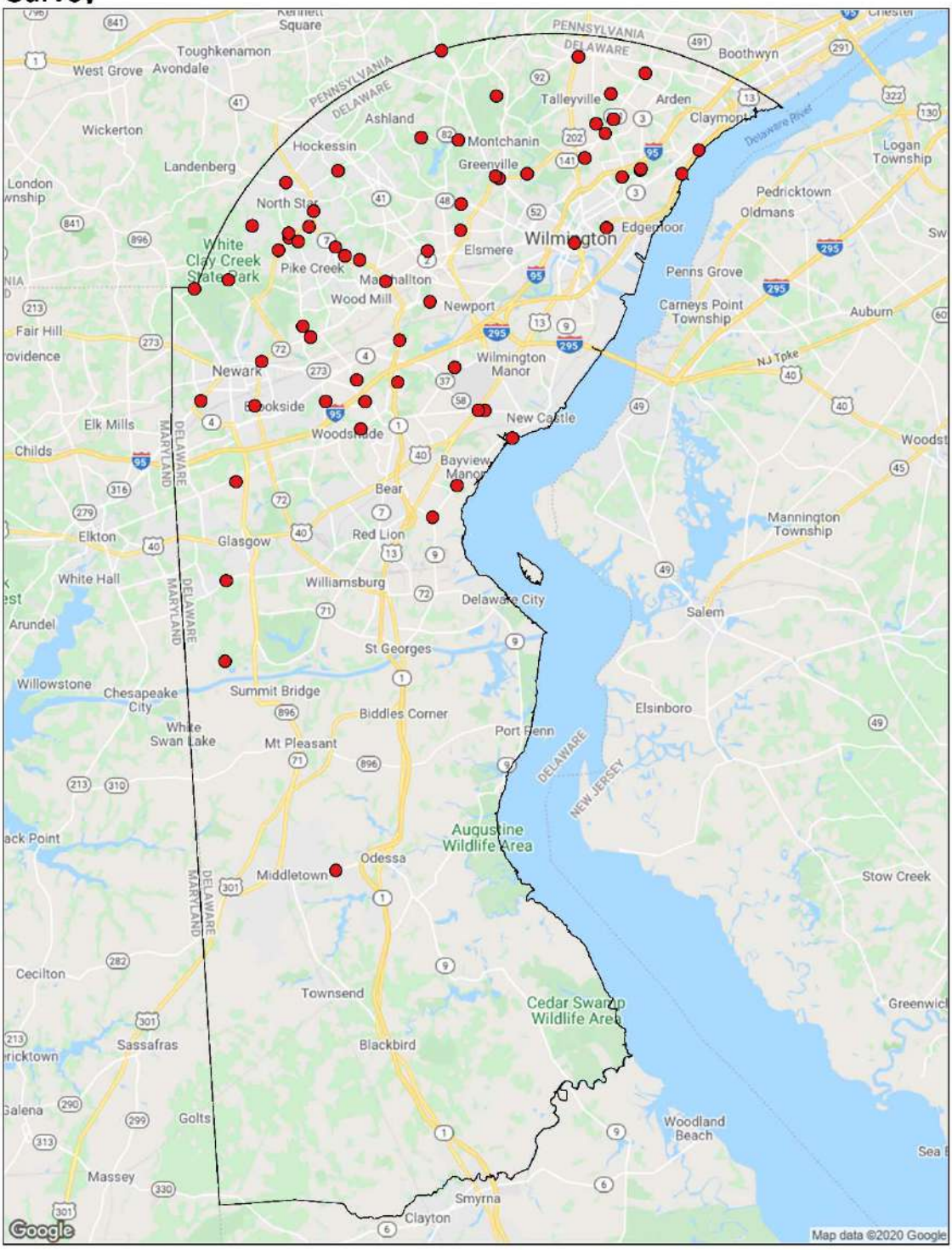
Locations with Difficult Crossing Challenges Submitted through Online Survey



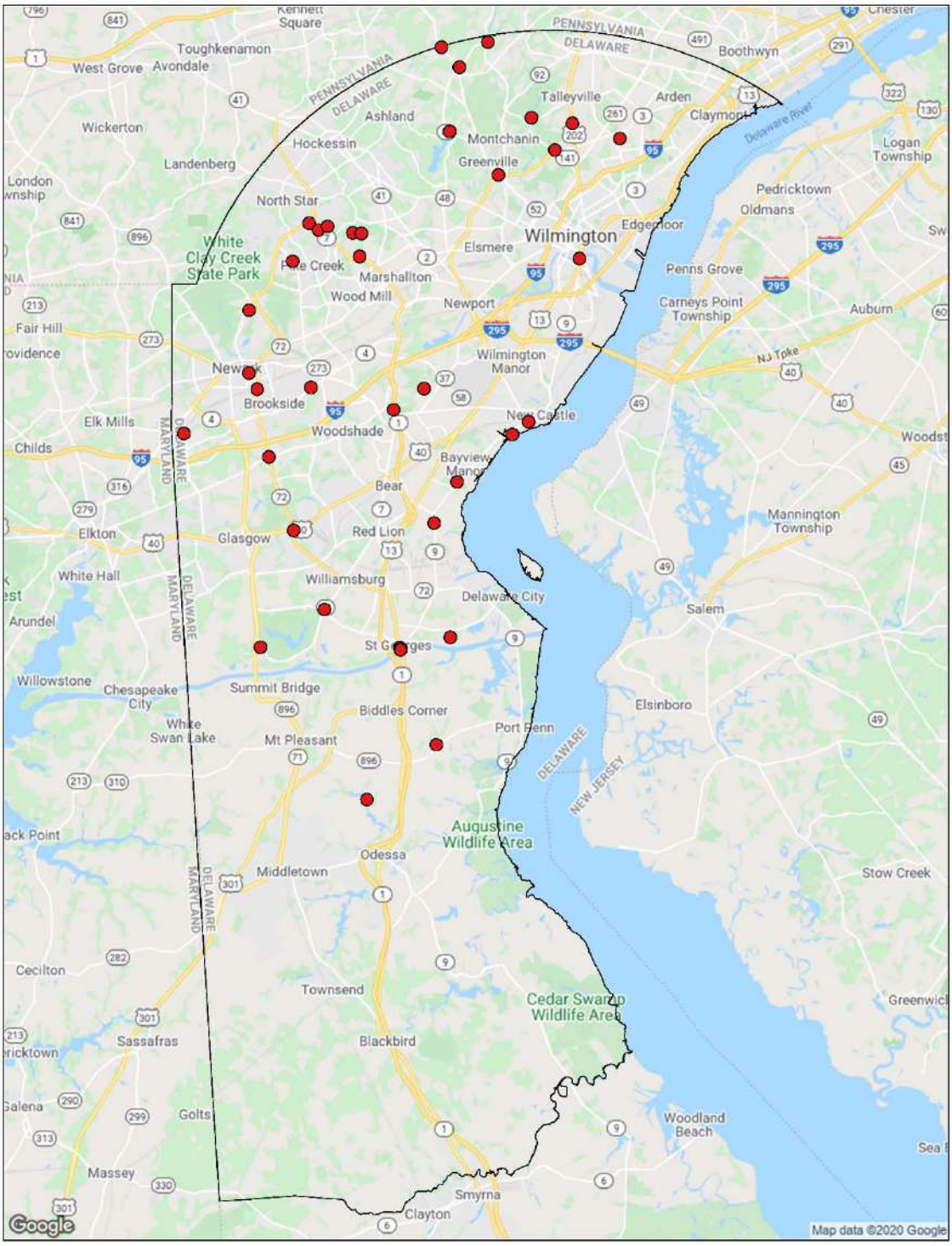
Locations with Too Much Traffic Challenges Submitted through Online Survey



Locations with Traffic Speed Challenges Submitted through Online Survey



Locations with Debris or Maintenance Challenges Submitted through Online Survey



Appendix B – Bicycle Parking Model Ordinance

Model National Bicycle Parking Ordinance

WITHOUT ANNOTATIONS

Developed by the National Policy & Legal Analysis Network
to Prevent Childhood Obesity (NPLAN), a ChangeLab Solution

Support provided by a grant from the Robert Wood Johnson Foundation.

July 2012

An Ordinance of [Jurisdiction (e.g. *the City of* _____)] Providing for Bicycle Parking and Adding to the [Jurisdiction] [Zoning/Planning/Municipal/County] Code.

The [Adopting Body] does ordain as follows:

SECTION I. FINDINGS. The [Adopting Body] hereby finds and declares as follows:

1. WHEREAS, the [Adopting Body] has a goal of improving the health of its residents and the air quality of the community;

2. WHEREAS, both obesity and insufficient physical activity are creating significant health problems for Americans, leading to increased risk of heart disease, diabetes, endometrial, breast, and colon cancers, high blood pressure, high cholesterol, stroke, liver and gallbladder disease, sleep apnea, respiratory problems, and osteoarthritis;[i]

3. WHEREAS, a primary contributor to obesity is lack of sufficient physical activity;[ii]

4. WHEREAS, bicycling is a safe, low-impact aerobic activity, enjoyed by millions of Americans, and provides a convenient opportunity to obtain physical exercise while traveling to work, shops, restaurants, and many other common destinations;[iii]

5. WHEREAS, bicycling frequently provides a practical alternative to driving, since 28 percent of all car trips are to destinations within 1 mile of home,[iv] 40 percent of all trips are two miles or less from home,[v] and around 30 percent of commuters travel 5 miles or less to work;[vi]

6. WHEREAS, bicycling can greatly increase access to important services and provide more range of travel for people who do not own or cannot operate a car, including our increasing aging population, children and youth, people who are low-income, and those with disabilities or medical restrictions on driving due to issues like seizure disorders or vision impairments;[vii]

7. WHEREAS, replacing car trips with bicycle trips improves air quality by reducing the amount of carbon dioxide emissions, in light of the fact that transportation sources account for nearly one third of all such emissions in the United States, an average motor vehicle emits 8.8 kilograms of carbon dioxide per gallon of gasoline that it burns, and biking emits essentially none;[viii]

8. WHEREAS, asthma rates are at their highest levels ever, with nearly one in 10 children and almost one in 12 Americans of all ages suffering from asthma, and replacing motor vehicle trips with bicycle trips reduces the pollutants that directly contribute to asthma in both children and adults;[ix]

9. WHEREAS, replacing car trips with bicycle trips reduces congestion and wear and tear on roads, improving quality of life for residents and providing a financial benefit for [Jurisdiction];

10. WHEREAS, providing safe, convenient, and adequate bicycle parking is necessary to encourage increased use of bicycles as a form of transportation;[x]

11. WHEREAS, cities that have improved bicycle infrastructure, including parking, have seen a measurable increase in bicycle trips;[xi]

12. WHEREAS, in light of the foregoing, [Adopting Body] desires to add new bicycle parking requirements to increase the availability of safe and convenient bicycle parking; and

13. WHEREAS, it is the intent of the [Adopting Body] in enacting this Ordinance to (1) encourage healthy, active living, (2) reduce traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, and (3) improve safety and quality of life for residents of [Jurisdiction] by providing safe and convenient parking for bicycles;

SECTION II. [ARTICLE/CHAPTER] OF THE [JURISDICTION] [ZONING/PLANNING/MUNICIPAL/COUNTY CODE] IS HEREBY ADDED TO READ AS FOLLOWS: "BICYCLE PARKING REQUIREMENTS FOR NEW DEVELOPMENT AND MAJOR RENOVATIONS."

§ 1. PURPOSE: The purpose of this section is to provide sufficient safe and convenient bicycle parking in New Developments and Major Renovations to encourage bicycling as a form of transportation, reducing traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, while fostering healthy physical activity.

§ 2. DEFINITIONS: Unless the context clearly requires otherwise, the following terms shall have the following meanings:

(A) **"Bicycle Parking Space":** A physical space that is a minimum of [2.5] feet in width by [6] feet in length with a vertical clearance of at least [7] feet that allows for the parking of one bicycle, and if located outside, is hard surfaced and well drained.

(B) **"Bike Locker":** A lockable enclosure consistent with industry standards that (i) can hold one bicycle, (ii) is made of durable material, (iii) is designed to fully protect the bicycle against [insert specific local weather concerns, e.g.: rain, snow, ice, high winds], (iv) provides secure protection from theft, (v) opens sufficiently to allow bicyclists easy access, and (vi) is of a character and color that adds aesthetically to the immediate environment**.**

(C) **"Bike Rack"**: A device consistent with industry standards that (i) is capable of supporting a bicycle in a stable position, (ii) is made of durable materials, (iii) is no less than [36] inches tall (from base to top of rack) and no less than [1.5] feet in length, (iv) permits the securing of the bicycle frame and one wheel with a U-shaped lock, and (v) is of a character and color that adds aesthetically to the immediate environment.

(D) **"In-Street Bicycle Parking":** A portion of a vehicle parking lane or other area on a roadway that is set aside for the parking of bicycles.

(E) **"Long-Term Bicycle Parking":** Bicycle parking that is primarily intended for bicyclists who need bicycle parking for more than 3 hours and is fully protected from the weather.

(F) **"Long-Term Bicycle Parking Space"**: A Bicycle Parking Space that provides Long-Term Bicycle Parking.

(G) **"Major Renovation":** Any physical improvement of an existing building or structure, excluding single-family dwellings and multi-family dwellings with 4 or fewer units, that requires a building permit and has an estimated construction cost equal to or exceeding [$250,000], excluding cost of (1) compliance with accessibility requirements for individuals with disabilities under governing federal, state, or local law, and (2) seismic or other structural safety retrofit.

(H) **"New Development":** Any construction of a new building or facility that requires a building permit, excluding single-family dwellings and multi-family dwellings with 4 or less units.

(I) **"Short-Term Bicycle Parking"**: Bicycle parking primarily intended for bicyclists who need bicycle parking for 3 hours or less.

(J) **"Short-Term Bicycle Parking Space"**: A Bicycle Parking Space that provides Short-Term Bicycle Parking.

§ 3. <u>BICYCLE PARKING SPACES REQUIRED:</u> Short-Term and Long-Term Bicycle Parking Spaces shall be required for all New Development and Major Renovations.

(A) **Required Number of Bicycle Parking Spaces**: All New Development and Major Renovations shall provide at least the number of Short-Term and Long-Term Bicycle Parking Spaces identified in the table in this subsection [Section II, § 3(A)]; however, the number shall not fall below a minimum of [2] Short-Term and [2] Long-Term Bicycle Parking Spaces, regardless of other provisions herein, except that multi-family dwellings that have private garages (or equivalent separate storage space for each unit) are not required to provide any Long-Term Bicycle Parking Spaces. Where the calculation of total required spaces results in a fractional number, the next highest whole number shall be used. Up to half of the required Short-Term Bicycle Parking Spaces may be replaced with Long-Term Bicycle Parking Spaces.

General Use Category	Specific Use	Number of Short-Term Bicycle Parking Spaces Required	Number of Long-Term Bicycle Parking Spaces Required
Residential	Multi-Family Dwelling with more than 4 units:		
	(a) *without* private garage or equivalent separate storage space for each unit	[.05] per bedroom *or* [1] per [20] units	[.5] per bedroom *or* [1-4] per [4] units
	(b) *with* private garage or equivalent separate storage space for each unit	[.05] per bedroom *or* [1] per [20] units	None
Commercial	Office Building	[1] per each [20,000] sq.ft. of floor area	[1-1.5] per [10,000] sq.ft. of floor area
	General Retail	[1] per each [5,000] sq.ft. of floor area	[1] per [10,000-12,000] sq.ft. of floor area
	Grocery	[1] per each [2,000] sq.ft. of floor area	[1] per [10,000-12,000] sq.ft. of floor area
	Restaurant	[1] per each [2,000] sq.ft. of floor area	[1] per [10,000-12,000] sq.ft. of floor area
	Parking Garage	[2] spaces	[1] per [20] motor vehicle spaces
	Outdoor Parking Lot	[1] per [20] motor vehicle spaces	[2] spaces
Civic	Non-assembly cultural (e.g., library, government buildings)	[1] per each [8,000 -10,000] sq. ft. of floor area	[1 -1.5] per each [10-20] employees
	Assembly (e.g., church, theater, stadiums, parks)	Spaces for [2-5] per cent of maximum expected daily attendance	[1- 1.5] per each [20] employees
	Schools (K-12)	[1] per each [20] students of planned capacity	[1] per each [10-20] employees and [1] per each [20] students of planned capacity for grades 6-12
	Colleges and Universities	[1] per each [10] students of planned capacity	[1] per each [10-20] employees and [1] per each [10] students of planned capacity *or* [1] per each [20,000] sq. feet of floor area, whichever is greater
Industrial	Manufacturing and Production, Agriculture	[2] spaces (Can be increased at discretion of Planning/Zoning Administrator)	[1] per 20 employees

(B) If the New Development or Major Renovation is for a use not listed in the above table, the number of Bicycle Parking Spaces required shall be calculated on the basis of a similar use, as determined by the [Planning Director/Zoning Administrator].

(C) If the Major Renovation has an estimated construction cost of between [$250,000] and [$1,000,000], excluding the cost of (1) compliance with accessibility requirements for individuals with disabilities under governing federal, state, or local law, and (2) seismic or other structural safety retrofit, the number of Bicycle Parking Spaces required by subsections [Section II, § (3)(A)-(B)], shall be reduced by 50 percent; however, the minimum requirement of [2] short-term and [2] long-term bicycle parking spaces shall still apply.

§ 4. BUILDING PERMITS AND CERTIFICATES OF OCCUPANCY: Prior to issuance of a building permit for New Development or a Major Renovation, the submitted plans must include specific provisions for bicycle parking that are consistent with the requirements of this Ordinance. No certificate of occupancy for said building permit shall issue at the conclusion of the project until [Jurisdiction] finds that the applicable provisions of this Ordinance have been complied with.

§ 5. EXISTING BICYCLE PARKING AFFECTED BY CONSTRUCTION: In the event that the [Jurisdiction] has authorized a permit holder to remove existing bicycle parking in the public right-of-way due to construction, the permit holder shall replace such bicycle parking no later than the date of completion of the construction. At least [7] days prior to removal of such bicycle parking, the permit holder shall post, in the immediate vicinity of the bicycle parking area, a weather-proof notice, with a minimum type size of [1] inch, specifying the date of removal. In the event that any bicycles remain parked on the date of the removal, such bicycles shall be stored for a reasonable period, not less than [45] days, and a conspicuous, weather-proof notice shall be placed as close as feasible to the site of the removed bicycle parking containing information as to how to retrieve a removed bicycle.

If bicycle parking is likely to be removed, pursuant to this section, for more than [120] days, it shall, to the extent possible, be temporarily re-sited, in coordination with [*insert appropriate department, such as Department of Public Works*], to a location as close to the original site as feasible, pending completion of the construction. If the temporary site is not clearly visible from the original site, the permit holder shall post a conspicuous, weather-proof notice in the immediate vicinity of the original site informing bicyclists of the location of the temporary site.

§ 6. BICYCLE PARKING STANDARDS - GENERAL:

(A) All Bicycle Parking Spaces shall be:

(1) well lit if accessible to the public or bicyclists after dark;

(2) located to ensure significant visibility by the public and building users, except in the case of Long-Term Bicycle Parking that is located in secured areas;

(3) accessible without climbing more than one step or going up or down a slope in excess of [12] percent, and via a route on the property that is designed to minimize conflicts with motor vehicles and pedestrians.

(B) All In-Street Bicycle Parking and Bicycle Parking Spaces located in a parking facility shall be:

(1) clearly marked; and

(2) separated from motor vehicles by some form of physical barrier (such as bollards, concrete or rubber curbing or pads, reflective wands, a wall, or a combination thereof) designed to adequately protect the safety of bicyclists and bicycles.

(C) All Bike Racks shall be located at least [36] inches in all directions from any obstruction, including but not limited to other Bike Racks, walls, doors, posts, columns, or exterior or interior landscaping.

(D) Unless Bicycle Parking Spaces are clearly visible from an entrance, a sign indicating their location shall be prominently displayed outside the main entrance to the building or facility, and additional signs shall be provided as necessary to ensure easy way finding. A "Bicycle Parking" sign shall also be displayed on or adjacent to any indoor room or area designated for bicycle parking. All outdoor signs required by this subsection [Section II, § 6(D)] shall be no smaller than [12] x [18] inches and utilize a type size of at least [2] inches. All indoor signs required by this subsection [Section II, § 6(D)] shall be no smaller than [8] x [10] inches and utilize a type size of at least [5/8] inch.

§ 7. <u>ADDITIONAL REQUIREMENTS APPLICABLE TO SHORT-TERM BICYCLE PARKING ONLY:</u> All Short-Term Bicycle Parking Spaces shall contain Bike Racks and shall meet the following requirements, in addition to the requirements in [Section II, § 3] above:

(A) Location:

(1) Short-Term Bicycle Parking must be located either (a) within [50] feet of the main public entrance of the building or facility, or (b) no further than the nearest motor vehicle parking space to the main public entrance (excluding parking for individuals with disabilities), whichever is closer. If the New Development or Major Renovation contains multiple buildings or facilities, the required Short-Term Bicycle Parking shall be distributed to maximize convenience and use.

(2) Short-Term Bicycle Parking Spaces may be located either (a) on-site or (b) in the public right-of-way (e.g., sidewalk or In-Street Bicycle Parking), provided that an encroachment permit is obtained for the installation and the installation meets all other requirements of [indicate the law governing encroachments on public rights-of-way]. If Bike Racks are located on public sidewalks, they must provide at least [5] feet of pedestrian clearance, and up to [6] feet where available, and be at least [2] feet from the curb.

(B) Bike Rack Requirements: Bike Racks used for Short-Term Bicycle Parking must be securely attached to concrete footings, a concrete sidewalk, or another comparably secure concrete surface, and made to withstand severe weather and permanent exposure to the elements.

§ 8. <u>ADDITIONAL REQUIREMENTS APPLICABLE TO LONG-TERM BICYCLE PARKING ONLY:</u> Long-Term Bicycle Parking shall be provided in either (1) Bike Lockers or (2) indoor rooms or areas specifically designated for bicycle parking (including designated areas of an indoor parking facility), and shall satisfy the

following requirements, in addition to those set forth in [Section II, § 3] above:

(A) Location: Long-Term Bicycle Parking may be located either on- or off-site. If located off-site, it shall be no more than [300 feet] from the main public entrance.

(B) Requirements for Indoor Long-Term Bicycle Parking: Long-Term Bicycle Parking located in designated indoor rooms or areas shall contain Bike Racks or comparable devices. Such rooms shall be designed to maximize visibility of all portions of the room or designated area from the entrance. Supplemental security measures (such as limiting access to a designated indoor bike parking room to persons with a key, smart card, or code) are optional.

§ 9. MOTOR VEHICLE PARKING SPACE CREDITS:

(A) For every [6] Bicycle Parking Spaces provided, the number of required off-street motor vehicle parking spaces (excluding parking spaces for individuals with disabilities) on a site shall be reduced by [1] space.

(B) To encourage the installation of showers at non-residential sites, the number of required off-street motor vehicle parking spaces for such sites shall be reduced as follows: A credit of [1] space shall be provided for the first shower installed, with additional off-street motor vehicle parking credits available at a rate of [1] space for each additional shower provided per [25] required Bicycle Parking Spaces. In order to claim these credits, which shall be in addition to the bicycle parking credits provided for in [Section II, § 9(A)], shower facilities must be readily available for use by all employees of the New Development or Major Renovation.

§ 10. (*optional*) MODIFICATION OF REQUIREMENTS: In the event that satisfying all of the requirements of [Section II] would be (a) infeasible due to the unique nature of the site, or (b) cause an unintended consequence that undermines the purpose of this Ordinance, a property owner (or designee) may submit a written request to the [Planning Director/Zoning Administrator/other Local Administrator or designee] for a modification of the requirements of [Section II]. The request shall state the specific reason(s) for the request, provide supporting documentation, and propose an alternative action that will allow the purposes of this Ordinance to be fulfilled as much as possible.

SECTION III. [ARTICLE/CHAPTER] OF THE [JURISDICTION] [ZONING/PLANNING/MUNICIPAL/COUNTY CODE] IS HEREBY ADDED TO READ "BICYCLE PARKING REQUIREMENTS FOR PARKING FACILITIES."

§ 1. PURPOSE: The purpose of [Section III] is to provide sufficient safe and convenient bicycle parking in parking facilities so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, while fostering healthy physical activity.

§ 2. DEFINITIONS: The definitions set forth in [Section II, § 2] shall apply to [Section III], unless the context

clearly requires otherwise.

§ 3. LICENSING CONDITIONS: As a condition of the issuance or renewal of a license required by the [Jurisdiction] for a parking facility, parking facilities shall provide [1] Bicycle Parking Space per each [20] vehicle parking spaces provided, with a minimum of [6] Bicycle Parking Spaces. Where the calculation of total required spaces results in a fractional number, the next highest whole number shall be used.

§ 4. LOCATION: All Bicycle Parking Spaces required by [Section III] shall be located in an area, preferably on the ground floor, that (i) can be conveniently and safely accessed by bicycle and by foot in a way that minimizes conflicts with motor vehicles, (ii) is not isolated, and (iii) maximizes visibility by parking facility patrons and attendants. If the licensed parking facility has multiple entrances, the required Bicycle Parking Spaces may be spread out among the multiple entrances. Bicycle Parking Spaces shall be accessible without climbing more than one step or going up or down a slope in excess of [12] percent.

§ 5. BIKE RACKS: All Bicycle Parking Spaces required by [Section III] shall contain Bike Racks and shall be well lit if accessible to the public or bicyclists after dark or if in an interior or darkened location. All Bike Racks shall also provide a clearance of at least [36] inches in all directions from any obstruction (including but not limited to other bike racks, walls, doors, posts, columns or landscaping), and shall be separated from vehicles by some form of physical barrier (such as bollards, concrete or rubber curbing or pads, reflective wands, a wall, or a combination thereof) designed to adequately protect the safety of bicyclists and bicycles. All Bike Racks located outdoors shall also be securely attached to concrete footings and made to withstand severe weather and permanent exposure to the elements.

§ 6. SIGNAGE: Parking facilities shall also install prominent signs, no smaller than [12] x [18] inches and utilizing a type size of at least [2] inches, in or near each entrance that advertise the availability of bicycle parking, and the location, if it is not visible from the entrance.

§ 7. CONTRACTUAL LIMITS ON LIABILITY: [Section III] shall not interfere with the rights of a parking facility owner (or designee) to enter into agreements with facility users or take other lawful measures to limit the parking facility's liability to users, including bicycle users, with respect to parking in the parking facility, provided that such agreements or measures are otherwise in accordance with the requirements of [this Ordinance] and the law.

SECTION IV. [ARTICLE/CHAPTER] OF THE [JURISDICTION] [ZONING/PLANNING/MUNICIPAL/COUNTY CODE] IS HEREBY ADDED TO READ "BICYCLE PARKING REQUIREMENTS FOR SPECIAL EVENTS INVOLVING STREET CLOSURES."

§ 1. PURPOSE: The purpose of [Section IV] is to provide sufficient safe and convenient bicycle parking at special events involving street closures to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, while fostering healthy physical activity.

§ 2. CONDITIONS ON STREET CLOSURE PERMITS: As a condition of a permit for the closure of a street for a special event in which the daily number of participants is projected to be [1,000] or more, monitored bicycle parking shall be provided by the event sponsor (or a designee) for at least [1] % of expected daily participants beginning [½ hour] before and ending [½ hour] after the time of the event each day of the event.

§ 3. REQUIREMENTS FOR MONITORED PARKING: Monitored bicycle parking shall include the presence, at all times, of one attendant, or more as needed, to receive bicycles, dispense claim checks, return bicycles, and provide security for all bicycles.

§ 4. LOCATION: All monitored bicycle parking shall be located within [500] feet of at least one regular entrance or access point to the event.

§ 5. PUBLICITY AND SIGNAGE: All publicity, including signs, for the event shall state the availability of monitored bicycle parking, its location, and cost, if any. All event maps shall include the location of monitored bicycle parking. If monitored bicycle parking is not within eyeshot of each entrance, signs shall be provided to ensure easy way finding.

§ 6. INSURANCE COVERAGE AND FEES: The event sponsor or designee must provide insurance coverage for the monitored bicycle parking in case of damaged or stolen bicycles, and may charge users a fee to cover the cost of providing the monitored parking.

SECTION V. [ARTICLE/CHAPTER] OF THE [ZONING/PLANNING/MUNICIPAL/COUNTY CODE] IS HEREBY ADDED TO READ "REMOVAL OF ABANDONED BICYCLES."

§ 1. PURPOSE: The purpose of [Section V] is to ensure the reasonably prompt removal of bicycles abandoned in Bicycle Parking Spaces so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, while fostering healthy physical activity.

§ 2. DEFINITIONS: The definitions set forth in [Section II, § 2] of this Ordinance shall apply to [Section V], unless the context clearly requires otherwise.

§ 3. REMOVAL REQUIREMENTS: On [a quarterly basis], owners of property (or a designee) subject to [Sections II or III of this Ordinance] shall remove, from all Bicycle Parking Spaces associated with their property, including those located on the public right-of-way, bicycles that have been abandoned. A bicycle shall be deemed to be abandoned if it has not been removed after having been tagged with a notice of removal for [2] weeks for Short-Term Bicycle Parking Spaces or [4] weeks for Long-Term Bicycle Parking Spaces. However, a bicycle shall not be deemed to be abandoned if the bicyclist and property owner (or designee) have a written agreement regarding provision of long term storage covering the time period in question. Abandoned bicycles may be donated to non-profits that reuse bicycles or may be disposed of in any lawful manner.

SECTION VI. [ARTICLE/CHAPTER] OF THE [JURISDICTION] [ZONING/PLANNING/MUNICIPAL/COUNTY CODE] IS HEREBY ADDED TO READ "IMPLEMENTATION OF ORDINANCE."

§ 1. REGULATIONS AND PROCEDURES: The [Planning Director/Zoning Administrator and/or other relevant local administrator(s)] [is/are] authorized to promulgate new and amend existing rules, regulations, procedures or forms as necessary or appropriate to implement the provisions of [this Ordinance].

§ 2. TRAINING: [Jurisdiction] shall periodically make trainings or training materials available to planners and other employees involved in the implementation and enforcement of [this Ordinance].

§ 3. REPORTING: The [Planning Director/Zoning Administrator] shall provide an annual report to the [Adopting Body] regarding the implementation of this Ordinance that shall, at a minimum, include the following information relevant to the preceding year: (1) the number of Short and Long-Term Bicycle Parking Spaces created pursuant to [Sections II and III], and the number of events for which special event bicycle parking was provided under [Section IV] ; (2) *(if applicable*) a brief summary of each request for modification received and action taken in response thereto; and (3) any other information learned that would improve future implementation of [this Ordinance] and its goals.

SECTION VII. STATUTORY CONSTRUCTION:

(A) All ordinances or parts thereof that conflict or are inconsistent with this Ordinance are repealed to the extent necessary to give this Ordinance full force and effect.

(B) If any section or portion of this Ordinance is judicially invalidated for any reason, that portion shall be deemed a separate and independent provision, and such ruling shall not affect the validity of the remaining portions of this Ordinance.

SECTION VIII. EFFECTIVE DATE: This Ordinance shall be effective [upon passage (*insert other date if desired*)] ("Effective Date"), except that:

(A) [Section II, § 3] ("Bicycle Parking Spaces Required"), and [Section II, § 4] ("Building Permits and Certificates of Occupancy") shall only apply to New Development and Major Renovations for which a building permit is issued on or after [120] days from the Effective Date.

(B) [Section III] ("Bicycle Parking Requirements for Parking Facilities") shall apply to Parking Facilities that were licensed prior to the Effective Date, and have less than [180] days remaining on their license, as follows: [1/2] of the required number of Bicycle Parking Spaces shall be provided no later than [120] days from the expiration of the parking facility's license, with full implementation required no later than [180] days from the expiration of the parking facility's license.

(C) [Section IV] ("Bicycle Parking Requirements for Special Events Involving Street Closures") shall not apply to events for which the temporary street closure was authorized pursuant to an application submitted prior to the Effective Date.

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[i] Centers for Disease Control and Prevention. *Overweight and Obesity: Health Consequences.* Atlanta: CDC, 2012. Available at: www.cdc.gov/obesity/causes/health.html.

[ii] Centers for Disease Control and Prevention. *Overweight and Obesity: Causes and Consequences.* Atlanta: CDC, 2012. Available at: www.cdc.gov/obesity/causes/index.html.

[iii] *See* Active Living Research. *Active Transportation: Making the Link from Transportation to Physical Activity and Obesity, Research Brief.* 2009. Available at: www.activelivingresearch.org/files/ALR_Brief_ActiveTransportation.pdf.

[iv] *See* America Bikes, League of American Bicyclists. *Factsheet: National Household Travel Survey.* Available at:

www.bikeleague.org/resources/reports/pdfs/nhts09.pdf; *see also* T. Litman. *"Short and Sweet Analysis of Shorter Trips Using National Personal Travel Survey Data."* Victoria Transport Policy Institute (February 22, 2012) at 3**.** (41% of all trips are 3 miles or less (and 67% of those are by car), and 19% of all trips are 1 mile or less (and 42% of those are by car)). Available at: www.vtpi.org/short_sweet.pdf.

[v] *See* America Bikes, League of American Bicyclists. *Factsheet: National Household Travel Survey***.** Available at: www.bikeleague.org/resources/reports/pdfs/nhts09.pdf; *see also* Rails-to-Trails Conservancy. *Turning Potential into Practice: Walking and Biking as Mainstream Transportation Choices*. 2007. Available at: www.railstotrails.org/resources/documents/whatwedo/TrailLink%2007%20Program_Mobility.pdf (citing FHWA 2006).

[vi] Research and Innovative Technology Administration, Bureau of Transportation Statistics. "Figure 2 On a typical day, how many miles one-way do you travel from home to work?" *Omnistats*, 3(4): 2003. Available at: www.bts.gov/publications/omnistats/volume_03_issue_04/html/figure_02.html.

[vii] US Department of Transportation, Federal Highway Administration. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation, Lesson 8: Pedestrian Characteristics.* July 2006, p. 1-10. Available at: www.fhwa.dot.gov/publications/research/safety/pedbike/05085/pdf/lesson8lo.pdf; Office of the Prime Minister, Social Exclusion Unit. *Making the Connections: Final Report on Transport and Social Exclusion*. Feb. 2003, p. 1-7. Available at: http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/media/cabinetoffice/social_exclusion_task_force/assets/publications_1997_to_2006/making_transport_2003.pdf.

[viii] U.S. Department of Transportation, Federal Highway Administration. *The 'Carbon Footprint' of Daily Travel: NHTS Brief.* 2009. Available at: http://nhts.ornl.gov/briefs/Carbon%20Footprint%20of%20Travel.pdf.

[ix] *See*, *e.g.*, C. Paige. "Pediatric Asthma Linked to Car Emissions." *Boston Globe*, March 2, 2008. Available at: www.boston.com/news/local/articles/2008/03/02/pediatric_asthma_linked_to_car_emissions/; Environmental Working Group's Auto Asthma Index (and sources cited therein). Available at: www.ewg.org/sites/asthmaindex/about/; R. Rabin. "Asthma Rate Rises Sharply in U.S., Government Says." *New York Times*, May 3, 2011. Available at: www.nytimes.com/2011/05/04/health/research/04asthma.html?_r=1

[x] *See, e.g.*, Vanderbilt T. "What Would Get Americans Biking to Work? Decent Parking." *Slate*, Aug. 17, 2009. Available at: www.slate.com/id/2225511/; *see also, e.g.,* City of New York Department of City Planning, Transportation Division. *The New York City Bicycle Survey: A Report Based on the Online Public Opinion Questionnaire Conducted for Bike Month 2006*. 2007. Available at: www.nyc.gov/html/dcp/pdf/transportation/bike_survey.pdf at p.15 (NYC commuters report a lack of safe storage for bicycles as a leading reason for not commuting by bike).

[xi] *See*, *e.g.*, Marin County Bicycle Coalition. *Economic Benefits of Bicycling in Urban Environments*. Available at: www.marinbike.org/Resources/EconomicBenefitsOfBicycling.pdf (citing a 118%-125% increase in bicycle use in Marin County over the last ten years due to improvements in infrastructure, including pathways, shared use lanes, intersection improvements and bicycle parking; and pointing to increased revenue due to retail purchases by bicyclists with adequate access to infrastructure and parking; *see also* J. Dill and T. Carr. "If You Build Them, Commuters Will Use Them - Another Look." Transportation Research Board 2003 Annual Meeting (cities with higher levels of bicycle infrastructure (bike lanes and paths) witnessed higher levels of bicycle commuting). Available at: www.palgrave-journals.com/jphp/journal/v30/nS1/full/jphp200856a.html.

Appendix C – Bicycle Land Use

	Bicycle-related Comp Plan recommendations
Bellefonte (2007)	• Implement traffic calming techniques • Regularly inspect streets and identify improvement projects • Explore streetscape improvements along Brandywine Blvd. • Improve non-motorized modes and safety by adding sidewalks and crosswalk signs • Explore the installation of bicycle paths and greenway paths
Delaware City (2014)	• Implement traffic-calming, pedestrian and bicycle elements to SR 9 • Improvements to Washington St. based on comprehensive corridor proposal • Retain and upgrade existing roads to maintain Fort DuPont's sense of place • Reconstruct Canal Street along the Branch Canal • Implement series of proposals to increase bicycle and pedestrian facilities • Encourage bike/ped connections to adjacent developments • Construct a bridge to connect Delaware City and Fort DuPont at Officers' Row • Provide a minimum 10' wide pedestrian and bicycle zone on all bridge crossings of the Branch Canal • Enhance the interpretive trail system and connect to the park beyond Route 9 • Connect the C&D Canal Trail • Expand access to the water through boat launches, piers and pedestrian promenades
Elsmere (2010)	• Update sidewalks to ADA standards and add striped crosswalks at necessary intersections • Address safety and noise issues associated with North Dupont Road • Work to reduce speed on Kirkwood Hwy by decreasing posted speed limits • Rearrange traffic patterns on Kirkwood Hwy to accommodate new Main St.
Middletown (2012)	• Construct new connector road from Bunker Hill Rd to St. Anne's Church Rd. and Industrial Dr. to Level's Rd. • Reconstruct portions of US 301, Bunker Hill Rd., Level's Rd., St. Anne's Church Rd., and Wiggins Mill Rd. • Project Development for SR 299 from Silver Lake Rd. to SR 1 • Reconstruct Cedar Lane Rd from Marl Pit rd to Boyds Corner Rd. • Creation of a connection to the planned scenic byway along the Chesapeake and Delaware Canal • Develop a Multi-Modal plan that identifies ped/bike routes • Maximize pedestrian and bicycle interconnectivity and new and existing development • Discuss with Odessa and Townsend regarding bikeways and trails connecting the three towns
New Castle (2009)	• Addition of bike lanes and appropriate signage to roadways • Plan for routing, construction, maintenance of East Coast Greenway through the City • Pursue grant funding to improve ped. safety at intersections
Newark (2016)	• Implement complete streets and traffic calming • Develop and distribute a guide titled Car-Free Newark • Newark Bicycle Plan adopted as appendix to Comp Plan

Newport (2014)	• Evaluate traffic calming to enhance nonmotorized safety and mobility • Develop pathfinder signage throughout Newport • Provide for the safe, efficient and convenient movement of people and goods within the Town by integrating land uses, circulation routes and transportation facilities • Explore opportunities for developing pedestrian and bicycle pathways to link residential and commercial sections of Town as well as to link the boat ramp and nature center to the Town's residential and commercial areas. Consider extending the recommended pedestrian/bike path along the Christiana River.
Odessa (2012)	• Improve SR 299 and U.S. 13 through Town • Improved crosswalk signals across US 13 • Reduce impact of the car • Add additional pathways through the Town, especially to Memorial Park • Creation of a pedestrian path along river
Townsend (2010)	• Traffic-calming improvements to Brook Ramble Lane and conduct a traffic survey of the new Townsend Early Childhood Center • Annexation of park at intersection of South and Commerce Streets and replacing it with a safe intersection with a new traffic pattern • Crossing at Route 71 and Main Street Intersection • Investigate a pedestrian cut-through or trailhead from the end of Gray Street west toward the proposed park • Petition DelDOT to install a well-marked and signalized crosswalk at the intersection of Main Street and Summit Bridge • Re-stripe and nominally realign the town's crosswalks to ensure they are readily visible to pedestrians and drivers • Consult with DelDOT and hire an engineering firm to scope out the feasibility of large-scale streetscaping to bury utilities, widen sidewalks, etc • Mark bicycle lanes on Main Street and Wiggins Mill

Wilmington (2019)	• Updated comp plan and bicycle plan developed jointly
	• Vision includes: it is a safe, healthy and attractive city of beautiful parks and historic neighborhoods that are walkable and bikeable, where residents have easy access to community amenities.
	• Promote walkable neighborhoods with access to jobs, services and amenities
	• Connect across Wilmington and throughout the region via a multimodal network that gives residents affordable, high-quality transportation choices
	  • Design streets that are safe and accessible for everyone, no matter their age or mode of transportation.
	  • Adopt a Complete Streets policy.
	  • Improve safety, connectivity, and the environment for people walking and biking throughout the city.
	  • Consider establishing a Vision Zero policy.
	  • Provide improved connections for people walking and biking across major barriers like the interstates and railroads.
	  • Expand Wilmington’s network of low-stress bicycle facilities.

New Castle County (2012)	• Improve designated roadways as shown in the WILMAPCO 2040 Regional Transportation Plan • Revise the UDC to improve walkability and interconnectivity and support mobility friendly development and design • Promote walking and bicycling by enhancing pedestrian and bicycle connections in the county

Model Comprehensive Plan Language on Complete Streets

Support for this document was provided by a grant from the Robert Wood Johnson Foundation.

February 2010

Introduction

Good planning practice requires that communities establish long-range *comprehensive plans* for future physical development. A comprehensive plan provides a vision of how residents and stakeholders wish to see their community evolve, and acts as a policy guide for decision-making regarding future development. In different states, comprehensive plans are known by a variety of names, including community plans, master plans, and general plans. In some states, these plans are required; in others, they are optional. The plan's effect from a legal perspective also varies widely, and some states require that comprehensive plans address specific topics and undergo regular updates.

By including "complete streets" language in a comprehensive plan, a community can promote street design and land use policies that allow people to get around safely on foot, bicycle, or public transportation. Integrating complete streets practices into planning and policy decisions can help encourage safe and active transportation, decrease pollution, and reduce the incidence of childhood obesity, social isolation, diabetes, and heart disease.

This document is divided into three sections:

Section I suggests language for a transportation vision statement that sets out a vision of streets that are

safe for travel by pedestrians, bicyclists, and public transportation riders of all ages and abilities.

Section II sets out a complete streets policy package, designed to be included in the comprehensive plan's transportation or streets chapter.

Section III provides additional language on complete streets tailored for other chapters of a comprehensive plan, in order to integrate the idea of complete streets into different arenas and encourage interagency planning.

Comprehensive plans generally are organized into an overarching *vision* with related *goals, objectives,* and *policy* or *action* steps. This model uses these terms, which are easily translated into the language of a given plan.

Section I. Vision Statement

The vision statement of a comprehensive plan describes the community's general vision of how the community should function. This vision statement may be included in a chapter focusing entirely on the community's vision, or may appear at the beginning of the transportation chapter. Vision statements are generally developed as a consensus-driven, collaborative community engagement process. This model language is provided not to prescribe what a community's vision should be, but to offer an example of a detailed vision and demonstrate the range of goals that can be considered in setting out a vision statement.

Transportation Vision Statement: The community of [Jurisdiction] envisions a transportation system that encourages healthy, active living, promotes transportation options and independent mobility, increases community safety and access to healthy food, reduces environmental impact, mitigates climate change, and supports greater social interaction and community identity by providing safe and convenient travel along and across streets through a comprehensive, integrated transportation network for pedestrians, bicyclists, public transportation riders and drivers, [*insert other significant local users if desired, e.g. drivers of agricultural vehicles, emergency vehicles, freight, etc.*] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

COMMENT: Communities may add new language to capture another vision, and may delete any of the concepts that do not represent the community's vision.

Section II. Complete Streets Policy Package: Transportation Chapter

Communities may include this entire complete streets policy in the comprehensive plan as a complete policy package, or may selectively adopt specific objectives or policies. Communities are encouraged to tailor the policy and action items to local needs, concerns, and conditions, and to identify the agency or department responsible for implementation. This section fits naturally in the comprehensive plan's transportation chapter or element (which may also be known as the circulation, roadways, or streets chapter). If such a chapter does not exist, the section might be included in the land use chapter.

COMPLETE STREETS POLICY

Goal T1: **Provide safe and comfortable routes for walking, bicycling, and public transportation to increase use of these modes of transportation, enable convenient and active travel as part of daily activities, reduce pollution, and meet the needs of all users of the streets, including children, families, older adults, and people with disabilities.**

Objective T1.1: **Integrate Complete Streets infrastructure and design features into street design and construction to create safe and inviting environments for all users to walk, bicycle, and use public transportation.**

- **T1.1.1.** In planning, designing, and constructing Complete Streets:
    - Include infrastructure that promotes a safe means of travel for all users along the right of way, such as sidewalks, shared use paths, bicycle lanes, and paved shoulders.
    - Include infrastructure that facilitates safe crossing of the right of way, such as accessible curb ramps, crosswalks, refuge islands, and pedestrian signals; such infrastructure must meet the needs of people with different types of disabilities and people of different ages.
    - Ensure that sidewalks, crosswalks, public transportation stops and facilities, and other aspects of the transportation right of way are compliant with the Americans with Disabilities Act and meet the needs of people with different types of disabilities, including mobility impairments, vision impairments, hearing impairments, and others.[xii] Ensure that the ADA Transition Plan includes a prioritization method for enhancements and revise if necessary.
    - Prioritize incorporation of street design features and techniques that promote safe and comfortable travel by pedestrians, bicyclists, and public transportation riders, such as traffic calming circles, additional traffic calming mechanisms, narrow vehicle lanes, raised medians, dedicated transit lanes, transit priority signalization, transit bulb outs, road diets,[xiii] high street connectivity,[xiv] and physical buffers and separations between vehicular traffic and other users.
    - Ensure use of additional features that improve the comfort and safety of users:
        - Provide pedestrian-oriented signs, pedestrian-scale lighting, benches and other street furniture, bicycle parking facilities, and comfortable and attractive public transportation stops and facilities.
        - Encourage street trees, landscaping, and planting strips, including native plants where possible, in order to buffer traffic noise and protect and shade pedestrians and bicyclists.
        - Reduce surface water runoff by reducing the amount of impervious surfaces on the streets.
- **T1.1.2.** In all street projects, include infrastructure that improves transportation options for pedestrians, bicyclists, and public transportation riders of all ages and abilities.

> **COMMENT:** This provision, which requires that all street projects on new or existing streets create Complete Streets, is a fundamental component of a commitment to Complete Streets.

    - Ensure that this infrastructure is included in planning, design, approval, construction, operations, and maintenance phases of street projects.

- Incorporate this infrastructure into all construction, reconstruction, retrofit, maintenance, alteration, and repair of streets, bridges, and other portions of the transportation network.
- Incorporate multimodal improvements into pavement resurfacing, restriping, and signalization operations where the safety and convenience of users can be improved within the scope of the work.
- Develop systems to implement and monitor incorporation of such infrastructure into construction and reconstruction of private streets.
- Allow exclusion of such infrastructure from street projects only upon approval by [*the City Manager or a senior manager of an appropriate agency, such as the Department of Transportation*], and only where documentation and supporting data indicate one of the following bases for the exemption: (a) use by non-motorized users is prohibited by law; (b) the cost would be excessively disproportionate to the need or probable future use over the long term; (c) there is an absence of current and future need; or (d) inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENTS: This provision provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

By including this fourth exception, exception (d), a jurisdiction gains considerable flexibility, but at the cost of potentially implementing Complete Streets practices less thoroughly. Jurisdictions should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: "Significant adverse environmental impacts outweigh the positive effects of the infrastructure."

In evaluating whether the conditions of (b) and (c) are met, a jurisdiction may need to conduct latent demand studies, which measure the potential level of use by bicyclists, pedestrians, and others should appropriate infrastructure be provided.

- T1.1.3. Develop policies and tools to improve [Jurisdiction]'s Complete Streets practices:
  - Develop a pedestrian crossings policy to create a transparent decision-making policy, including matters such as where to place crosswalks and when to use enhanced crossing treatments.
  - Develop policies to improve the safety of crossings and travel in the vicinity of schools and parks.
  - Consider developing a transportation demand management/commuter benefits ordinance to encourage residents and employees to walk, bicycle, use public transportation, or carpool.
  - Develop a checklist for [Jurisdiction]'s development and redevelopment projects, to ensure the inclusion of infrastructure providing for safe travel for all users and enhance project outcomes and community impact.

- T1.1.4. Encourage transit-oriented development that provides public transportation in close proximity to employment, housing, schools, retailers, and other services and amenities.
- T1.1.5. Change transportation investment criteria to ensure that existing transportation funds are available for Complete Streets infrastructure.
- T1.1.6. Identify additional funding streams and implementation strategies to retrofit existing streets to include Complete Streets infrastructure.

Objective T1.2: Make Complete Streets practices a routine part of [Jurisdiction]'s everyday operations.

- T1.2.1. As necessary, restructure and revise the zoning and subdivision codes, and other plans, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including [*insert all other key documents by name*], in order to integrate, accommodate, and balance the needs of all users in all street projects on public [and private] streets.

> COMMENT: By opting to apply the requirement to private streets in addition to public streets, a jurisdiction will generally expand the effectiveness of the complete streets policy. However, such a requirement may be more practical in certain jurisdictions than in others. For example, the requirement might be very important in a jurisdiction where there are many private streets in central locations.

- T1.2.2. Develop or revise street standards and design manuals, including cross-section templates and design treatment details, to ensure that standards support and do not impede Complete Streets; coordinate with related policy documents [such as Pedestrian/Bicycle Plans, *insert other relevant documents*].
- Assess current requirements with regard to road width and turning radii in order to determine the narrowest vehicle lane width and tightest corner radii that safely balance other needs; adjust design guidelines and templates to reflect ideal widths and radii.
- T1.2.3. Make training available to planning and public works personnel and consulting firms on the importance of Complete Streets and on implementation and integration of multimodal infrastructure and techniques.
- T1.2.4. Encourage coordination among agencies and departments to develop joint prioritization, capital planning and programming, and implementation of street improvement projects and programs.
- T1.2.5. Encourage targeted outreach and public participation in community decisions concerning street design and use.
- T1.2.6. Establish performance standards with measurable outcomes to assess safety, functionality, and actual use by each category of users; include goals such as:
    - By [2020], facilitate a transportation mode shift so that [20] % of trips occur by bicycling or walking.

- By [2015], reduce the number of injuries and fatalities to bicyclists and pedestrians by [__]%.
- Reduce per capita vehicle miles traveled by [__]% by [*insert year*].
- Provide a high proportion of streets ([__]%) with sidewalks, low design speeds, tree canopy, and street furnishings.
- Increase the miles of bicycle lanes and other bikeways by [__]% by [*insert year*].
- Increase the miles of sidewalks by [__]% by [*insert year*]

> COMMENT: Other standards could include user satisfaction, percentage reductions in greenhouse gas emissions, and reduction in gaps in the sidewalk network.

- T1.2.7. Replace automobile level of service as a dominant determinant with multimodal level of service assessment criteria.
- T1.2.8. Collect baseline data and regularly gather follow-up data in order to assess impact of policies.
  - Collect data regarding the safety, functionality, and actual use by each category of users of the neighborhoods and areas within [Jurisdiction].
  - Track public transportation ridership numbers.
  - Track performance standards and goals.
  - Track other performance measures such as number of new curb ramps and new street trees or plantings.
  - Require major employers to monitor how employees commute to work.

Objective T1.3: Plan and develop a comprehensive and convenient bicycle and pedestrian transportation network.

> COMMENT: Jurisdictions with existing bicycle or pedestrian plans may have already addressed the policy/action items under this objective. In such jurisdictions, it is not necessary to restate these policy and action items verbatim. Such plans should be reviewed, and, if necessary, revised to complement the Complete Streets approach. If existing plans address this objective sufficiently, a jurisdiction may incorporate its bicycle and pedestrian plans with language such as: "The provisions set forth in the [Pedestrian/Bicycle Plan] are incorporated into this plan."
>
> For jurisdictions that have not developed a detailed bicycle or pedestrian plan, the policies and actions in this section provide a good way to begin addressing those needs in an integrated fashion.

- T1.3.1. Develop a long-term plan for a bicycle and pedestrian network that meets the needs of users, including pedestrians, bicyclists, public transportation riders, [*insert other appropriate users if desired*] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

- Conduct a demand analysis for each category of user, mapping locations that are already oriented to each mode of travel and type of user and those for which there is latent demand.
- For each category of user, map out a preferred transportation network with routes that will enable safe, interconnected, direct, continuous, and efficient travel from each major origination area to each major destination area.
- Encourage public participation in community decisions concerning the demand analysis, preferred route network, and street design and use to ensure that such decisions: (a) result in streets that meet the needs of all users, and (b) are responsive to needs of individuals and groups that traditionally have not participated in public infrastructure design. Include pedestrians, bicyclists, individuals with disabilities, children and youth, families, older adults, public transportation riders, low-income communities, communities of color, and other distinct social groups, and their advocates. Establish ongoing advisory committees and public feedback mechanisms.
- Identify and prioritize necessary changes in order to implement the preferred network; prioritize neighborhoods with the greatest need and projects that significantly alleviate economic, social, racial, or ethnic inequities.
- Ensure that the networks provide ready access to healthy sources of nutrition.
- Explore the use of non-standard locations and connections for bicycle, pedestrian, and public transportation facilities, such as easements, restored stream corridors, and railroad rights-of way.

- **T1.3.2.** Evaluate timeline and funding of the plan.
  - Assess the degree to which implementation of the plan can be coordinated with planned reconstruction of streets, development projects, utility projects, and other existing funding streams.
  - Develop funding strategies for addressing additional needs; actively pursue funding from state, federal, and other sources.
  - Explore imposing development impact fees and dedication requirements on new development to create paths and other Complete Streets infrastructure.
- **T1.3.3.** In collaboration with [*appropriate local and regional agencies*], integrate bicycle, pedestrian, and public transportation facility planning into regional and local transportation planning programs and agencies to encourage connectivity between jurisdictions.
- **T1.3.4.** Develop programs to encourage bicycle use, such as enacting indoor bicycle parking policies to encourage bicycle commuting, or testing innovative bicycle facility design.

Objective T1.4: Promote bicycle, pedestrian, and public transportation rider safety.

COMMENT: As noted for the previous objective, jurisdictions with existing bicycle or pedestrian plans may also choose to omit these items if already addressed in those plans and instead reference those plans.

- T1.4.1. Identify physical improvements that would make bicycle and pedestrian travel safer along current major bicycling and walking routes and the proposed future network, prioritizing routes to and from schools.
- T1.4.2. Identify safety improvements to pedestrian and bicycle routes used to access public transportation stops; collaborate with [*local transit agency*] to relocate stops where advisable.
- T1.4.3. Identify intersections and other locations where collisions have occurred or that present safety challenges for pedestrians, bicyclists, or other users; consider gathering additional data through methods such as walkability/bikeability audits; analyze data; and develop solutions to safety issues.
- T1.4.4. Prioritize modifications to the identified locations and identify funding streams and implementation strategies, including which features can be constructed as part of routine street projects.
- T1.4.5. Collaborate with schools, senior centers, advocacy groups, and public safety departments [*insert additional specific departments as appropriate*] to provide community education about safe travel for pedestrians, bicyclists, public transportation riders, and others.
- T1.4.6. Use crime prevention through environmental design strategies[xv] to increase safety for pedestrians, bicyclists, and other users.
- T1.4.7. As necessary, public safety departments should engage in additional enforcement actions in strategic locations.

Objective T1.5: Make public transportation an interconnected part of the transportation network.

- T1.5.1. Partner with [*local transit agency*] to enhance and expand public transportation services and infrastructure throughout [Jurisdiction] and the surrounding region; encourage the development of a public transportation system that increases personal mobility and travel choices, conserves energy resources, preserves air quality, and fosters economic growth.
- T1.5.2. Work jointly with [*local transit agency*] to provide destinations and activities that can be reached by public transportation and are of interest to public transportation-dependent populations, including youth, older adults, and people with disabilities.
- T1.5.3. Collaborate with [*local transit agency*] to incorporate infrastructure to assist users in employing multiple means of transportation in a single trip in order to increase transportation access and flexibility; examples include, but are not limited to, provisions for bicycle access on public transportation, secure bicycle racks at transit stops, access via public transportation to trails and recreational locations, and so on.
- T1.5.4. Ensure safe and accessible pedestrian routes to public transportation stops; relocate stops if safe routes are not feasible at current location.
- T1.5.5. Work with [*local transit agency*] to ensure that public transportation facilities and vehicles are fully accessible to people with disabilities.
- T1.5.6. Explore working with [*local transit agency*] to provide travel training programs for older adults and people with disabilities, and awareness training for vehicle operators.

- T1.5.7. Explore creation of public transportation priority lanes to improve travel time.
- T1.5.8. Partner with [*local transit agency*] to collect data and establish performance standards related to these steps.

Section III. Complete Streets Concepts for Inclusion within Other Chapters/Elements/Sections of the Plan

Communities may also find it beneficial to include complete streets concepts in other chapters of their plans to increase the integration of the plan as a whole.

LAND USE CHAPTER

Goal LU1: **Ensure that land use patterns and decisions encourage walking, bicycling, and public transportation use, and make these transportation options a safe and convenient choice.**

Objective LU1.1: **Plan, design, and create complete and well-structured neighborhoods whose physical layout and land use mix promote walking, bicycling, and public transportation use as a means of accessing services, food, retail, employment, education, childcare, recreation, and other destinations.**

- LU1.1.1. Encourage mixed-use development to allow siting of residential, retail, office, recreational, and educational facilities within close proximity to each other to encourage walking and bicycling as a routine part of everyday life.
    - Maximize the proportion of residences within [¼] mile of uses like parks, schools, grocers, retailers, service providers, employment, public transportation, and other desirable community features.
- LU1.1.2. Encourage transit-oriented development by developing public transportation in downtown areas and encouraging dense infill development near public transportation facilities.
- LU1.1.3. Promote infill development and redevelopment; new construction should occur in a compact form in developed locations whenever feasible.
- LU1.1.4. Encourage the creation of high-quality community plazas, squares, greens, commons, community and neighborhood parks, and rooftop gardens; explore creation of shared streets.
- LU1.1.5. Require safe and convenient walking, bicycling, and public transportation features in new or renovated development.
- LU1.1.6. Require transportation demand management strategies in development plans.
- LU1.1.7. Explore imposing development impact fee, use fee, and dedication requirements on new development to fund multimodal transportation.

- **LU1.1.8.** Consider conducting health impact assessments when designing streets or undertaking policymaking with regard to public infrastructure and development, in order to understand and address public health implications of actions in this realm.

Objective LU1.2: Require street design that creates public space that is safe and welcoming for pedestrians.

- **LU1.2.1.** Encourage street-oriented buildings; locate parking lots, if provided, in rear of retail and business centers.
- **LU1.2.2.** Provide pedestrian-scale lighting.
- **LU1.2.3.** Encourage a high proportion of streets where building façades have abundant windows and entrances facing the street and create a human-scaled wall near the lot line.
- **LU1.2.4.** Encourage ground-level business uses that support pedestrian activity, such as retail, restaurants, and services.
- **LU1.2.5.** Reduce the proportion of street frontages and rights of way lined by parking lots, blank walls, or empty lots.
- **LU1.2.6.** Where parking lots are located between commercial buildings and streets, require or encourage creation of a pedestrian path from the street to the entrance.
- **LU1.2.7.** Increase street connectivity.

SCHOOLS/PUBLIC FACILITIES CHAPTER

Goal S1: Increase children's physical activity to benefit their short- and long-term health and improve their ability to learn.

Objective S1.1: Provide children with safe and appealing opportunities for walking and bicycling to school in order to decrease rush hour traffic and fossil fuel consumption, encourage exercise and healthy living habits in children, and reduce the risk of injury to children through traffic collisions near schools.

- **S1.1.1.** Support Safe Routes to Schools programs.
    - Work with [*School District(s)*] to pursue encouragement programs such as Walk and Bike to School Days, as well as "Walking School Bus"/"Bike Train" programs at elementary schools, where parents take turns accompanying a group of children to school on foot or via bicycle.
    - Gather baseline data on attitudes about and levels of walking and bicycling to school, through student tallies and parent surveys; gather additional data each spring and fall to measure progress.

- Work with [*School District(s)*] and advocates to obtain Safe Routes to School funding to implement educational programs.
- Work with [*School District(s)*] to encourage educational programs that teach students safe walking and bicycling behaviors, and educate parents and drivers in the community about the importance of safe driving.
- Work with law enforcement to enforce speed limits and traffic laws, assist in ensuring safe crossings, and promote safe travel behavior within the schools.
- Encourage parents to get children to school through active travel such as walking or bicycling.

- S1.1.2 Prioritize safety and roadway improvements around schools.
  - Conduct walkability and bikability audits along routes to schools to identify opportunities and needs for infrastructure improvements.
  - Ensure that speed limits in areas within [*1,000 feet*] of schools are no greater than 15 to 25 miles per hour.
  - Assess traffic speeds, volumes, and vehicle types around schools; implement traffic calming in areas immediately around schools where indicated by speed and volume; consider closing streets to through traffic during school hours if other methods cannot reduce threat to safety.
  - Pursue Safe Routes to School funding to implement infrastructure improvements.
- S1.1.3. Work with [*School District(s)*] to improve transportation safety around schools, including drop-off and pickup zones, as well as locations where interactions occur between pedestrians, bicyclists, automobiles, and buses.
- S1.1.4. Work with [*School District(s)*] to locate and design new and remodeled schools to be easily accessible by foot or bicycle for the largest number of students possible by taking steps such as locating new schools in or near neighborhoods where students live, providing safe and secure bicycle parking within school facilities, and allowing convenient access to schools from public streets.
- S1.1.5. Locate sports fields near schools, or pursue joint use agreements with [*School District(s)*] to allow school fields to be available for public use outside of school hours.

PARKS/RECREATION CHAPTER

Goal P1: Increase use of parks and open space for physical activity and encourage residents to access parks by walking, bicycling, or public transportation.

Objective P1.1: Create safe routes to parks and open space.

- P1.1.1. Encourage the development of parks and open space with a network of safe and convenient walking and bicycle routes, including routes that access other popular destinations, such as schools.
- P1.1.2. Implement traffic-calming measures near parks where advisable due to vehicle speeds and volumes.

- **P1.1.3.** Improve intersections at access points to parks to create greater visibility for all users, and provide accessible curb ramps and additional time to cross the street.
- **P1.1.4.** Improve public transportation connections to trails, parks, and other recreational locations.
- **P1.1.5.** Ensure that all parks and open space can be reached through safe routes for bicycling, walking, and public transportation.
- **P1.1.6.** Ensure that trails, parks, and open spaces have secure bicycle parking facilities.

COMMUNITY HEALTH CHAPTER

Goal H1: Improve health, safety, and mental well-being of residents by creating convenient and safe opportunities for physical activity.

Objective H1.1: Ensure that residents of all ages and income levels can walk and bicycle to meet their daily needs.

- **H1.1.1.** Improve bicycle, pedestrian, and public transportation access to residential areas, educational and childcare facilities, employment centers, grocery stores, retail centers, recreational areas, historic sites, hospitals and clinics, and other destination points.

Objective H1.2: Reduce asthma levels, social isolation, violent street crime incidents, and the severity and number of pedestrian and bicycling collisions by decreasing vehicular traffic and increasing pedestrian activity.

H1.2.1. Provide comfortable environments and destinations for walking and bicycling to int

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[xii] Note that many types of accommodations for people with disabilities are mandated by federal law under the Americans with Disabilities Act.

[xiii] A road diet is a transportation technique in which the number or width of lanes dedicated to motor vehicle traffic is decreased, often by combining the two central lanes into a single two-way turn lane, in order to create additional space within the right of way for features such as bicycle lanes, sidewalks, or buffer zones.

[xiv] Connectivity describes the directness of routes and density of connections in a street network. A street network with high connectivity has many short links, numerous intersections, and few dead-end streets. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations.

[xv] Crime prevention through environmental design (CPTED) involves designing the built environment to deter criminal behavior. CPTED aims to create environments that discourage the commission of crimes by influencing offenders to not commit a contemplated crime, usually due to increased fear of detection.

Appendix D – Local Priority Projects

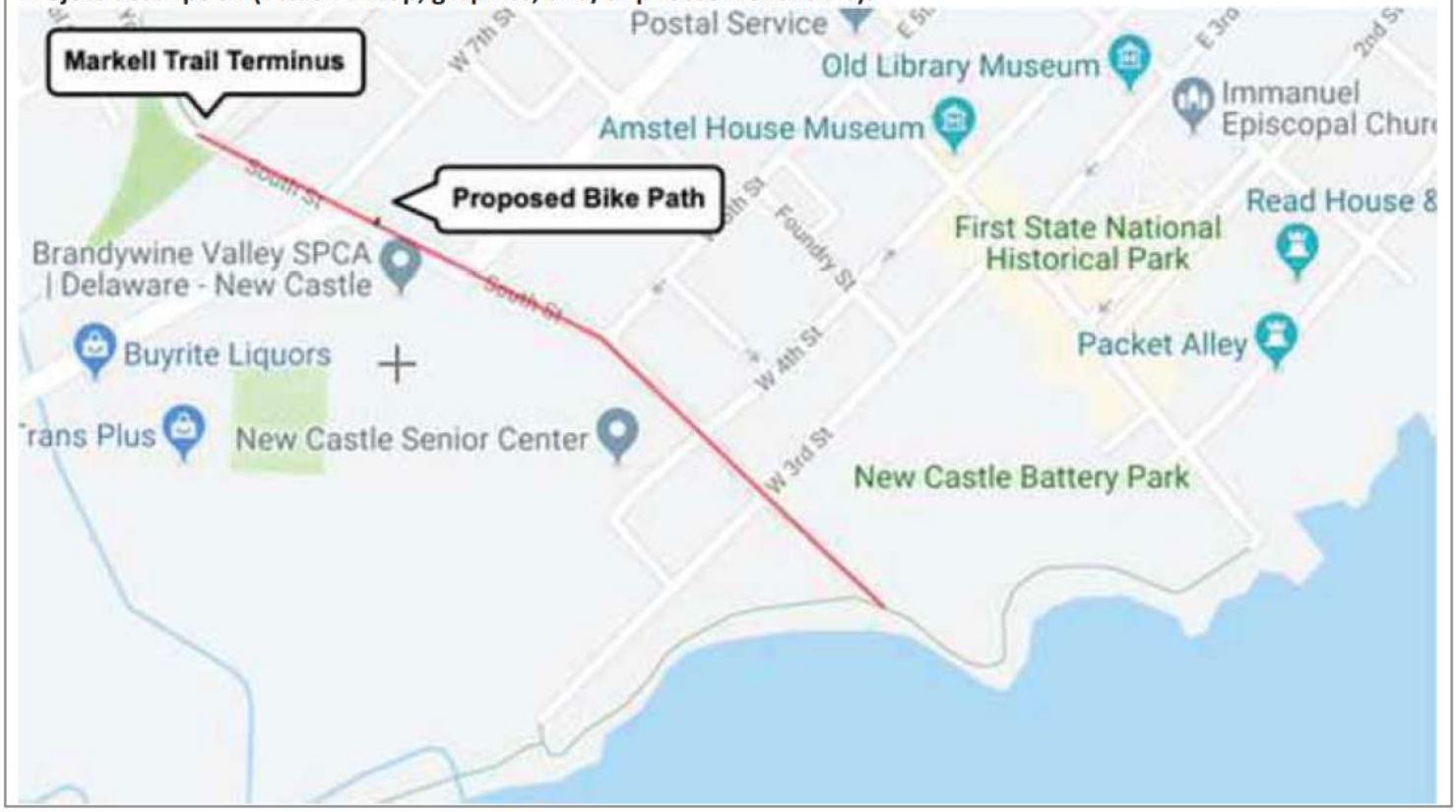
New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	City of New Castle
Project name:	Markell Trail Extension to Downtown New Castle and Battery Park
Location:	South Street, New Castle, Delaware

Project description (attach a map, graphics, and/or photos if available):



Number of projects submitted by your organization:	2
Priority of this project relative to other projects submitted:	Top 5

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local Facility
For cycling infrastructure, what type is suggested:	Off-Road Path

Please provide additional description about the suggested facility or program type if known:

The proposed bicycle network improvement is a two-way pathway from the current terminus of the Markell Trail at 8th Street along the north side of South Street to 3rd Street to connect cyclists into downtown New Castle.

What are the primary expected benefits of the project:

Although South Street currently lacks any cycling infrastructure, it has experienced an enormous increase in cycling traffic since the opening of the Markell Trail in September of 2018. There is an urgent need for this project in order to connect New Castle's downtown area and Battery Park via a "low stress" bikeway to the Markell Trail for people (of all ages and abilities) on bicycles. From a safety point-of-view, the intersection of Route 9 and W. 7th Street will only grow as a potential hazard as cyclist volumes increase. (This project would allow cyclists to bypass that intersection and eliminate the hazard.)

What other plans, if any, include this project (attach or include links if available):

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

The biggest challenge of this project will be South Street between 6th and 7th Streets. On-street parking is in demand by the residents of the homes on the north side of this block and cannot be eliminated to make room for a bike path. On this block (only) the travel and parking lanes will therefore need to be shifted south. We anticipate that utilities on the south side of the street will also have to be relocated.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

Downtown New Castle, Battery Park and the (2 mile) Battery Park Trail.

Describe how this project will fill a gap or create a bicycling transportation connection:

This project will connect the incredibly popular Markell Trail to downtown New Castle.

Describe any community support for this project that you are aware of:

The City of New Castle is currently collaborating with students from the University of Delaware to hold a "pop-up project" to introduce this concept to the community.

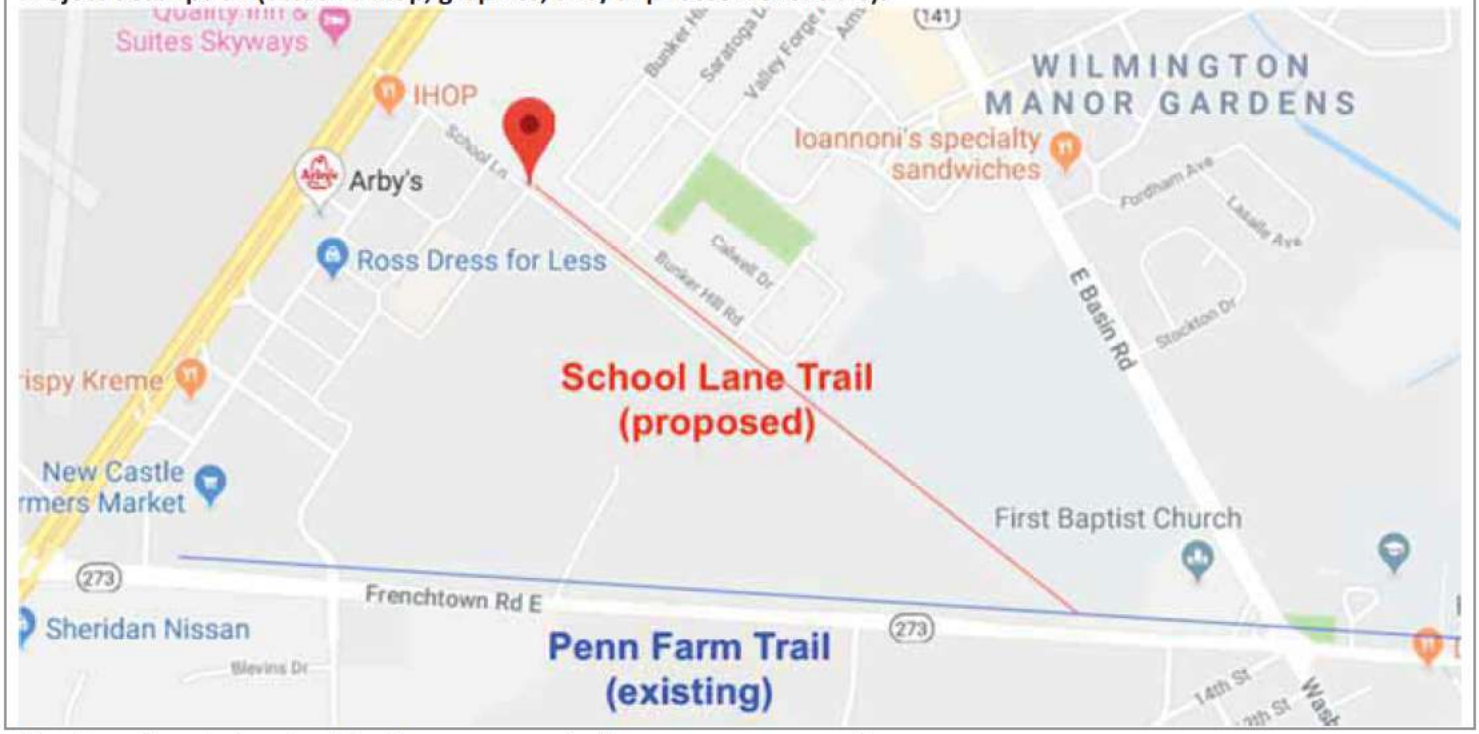
New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	City of New Castle
Project name:	School Lane Trail
Location:	School Lane (a vacated street), New Castle, Delaware

Project description (attach a map, graphics, and/or photos if available):



Number of projects submitted by your organization:	2
Priority of this project relative to other projects submitted:	Top 5

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional Facility
For cycling infrastructure, what type is suggested:	Off-Road Path

Please provide additional description about the suggested facility or program type if known:

The proposed bicycle network improvement is an extension of the City of New Castle's growing "low stress" bicycle network (which includes the Markell Trail and the Penn Farm Trail) to the William Penn High School, the Penn Acres South subdivision and commercial destinations on Dupont Highway.

What are the primary expected benefits of the project:

Bicycle connectivity for people of all ages and abilities who live in Penn Acres South to downtown New Castle and the growing number of destinations served by New Castle's growing "low stress" bicycle network (including the Wilmington Riverfront); and connecting New Castle's high school (WPHS) into the network.

What other plans, if any, include this project (attach or include links if available):

What is the project's current phase: **Design and Engineering**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Whitman, Requardt & Associates completed a planning study of this project in 2018 and determined that it is feasible. They estimated its cost (both design and construction) at $750,000.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

1) William Penn High School
2) Penn Acres South subdivision
3) Multiple commercial employers/destinations on Dupont Highway

Describe how this project will fill a gap or create a bicycling transportation connection:

This project will connect the currently isolated Penn Acres South subdivision and the William Penn High School into New Castle's growing "low stress" bicycle network.

Describe any community support for this project that you are aware of:

State Representative Melissa Minor-Brown

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	Town of Middletown
Project name:	Bike Lane Connections to Middletown's Central Community Core
Location:	Downtown Middletown

Project description (attach a map, graphics, and/or photos if available):
Please see attached maps

Number of projects submitted by your organization:	(1) - One
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

The Town of Middletown recently was awarded a grant from the Delaware Bicycle Council to conduct a feasibility study to determine the safest routes for providing separated bicycle facilities or striped lanes that connect nearby neighborhoods to the Central Community Core (CCC).

What are the primary expected benefits of the project:

This project relates to the Town of Middletown's Comprehensive Plan goals and objectives for providing cycling and pedestrian facilities to reduce the overreliance on automobiles and to work with other agencies to provide multi-modal transportation solutions. The Town of Middletown is committed to finding partnerships for resolving issues and bringing solutions to problems in our community. As specified in the Town of Middletown Comprehensive Plan (dated November 2012), the town must work to reduce vehicle miles traveled by automobiles, decrease carbon emissions released into the atmosphere and help sustain the overall health of our community. Middletown's bicycle infrastructure is a major component of the Comprehensive Plan and serves as an integral piece for helping the town continue its viability.

What other plans, if any, include this project (attach or include links if available):

Currently, an East Green Street road extension is proposed to connect from South Catherine Street and tie into Dickenson Boulevard at Middletown Crossing. Depending on the results of the feasibility study and intergovernmental coordination, this road extension may include future cycling infrastructure

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

There are no challenges expected with this project. The separated bicycle lanes or striped lanes will be on state and municipal streets. The town may need an agreement with DelDOT where road crossings occur, or ease of access requiring the use of state maintained roads or segments. The town may also need additional funding for future planning or construction to keep this project moving forward.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

In this area, there is an elementary school, an active recreation park with Little League, softball and soccer, a proposed library, MOT Football and Cheer, and a proposed YMCA.

Describe how this project will fill a gap or create a bicycling transportation connection:

The CCC is surrounded by an existing core of established homes and is less than a mile away from more than 2,000 dwelling units planned for construction. The feasibility study will take these areas and the new construction into consideration for determining where separated bicycle facilities or bike lanes are possible.

Furthermore, the CCC is surrounded by an existing network of multi-use trails that have the potential for future extension and expansion to nearby schools, parks, Town Hall and other amenities. DelDOT is also proposing a multi-use path along SR 299 that will extend from S. Catherine Street and connect to the existing Park & Ride near SR 1. The feasibility study will determine ways to connect the existing and future bicycle facilities to local points of interest.

Describe any community support for this project that you are aware of:

The Mayor and Council of Middletown support this feasibility study, as well as the expansion of Middletown's bicycle infrastructure. During the SNCC Master Plan workshops, the public responses considered multi-modal transportation to be a top priority for future planning. They hope to reduce traffic congestion by way of bikeways, lanes and other pedestrian mechanisms.

SILVER LAKE ELEMENTARY SCHOOL

YMCA SILVER LAKE POOL

LEGEND/DETAILS

LEGEND/DETAILS

DESIGN ASSUMPTIONS:

REQUIRED SN = 4.0 (3.52)

FUNCTIONAL CLASSIFICATION: LOCAL
POSTED SPEED LIMIT: 25 MPH
DESIGN VEHICLE: WB-50

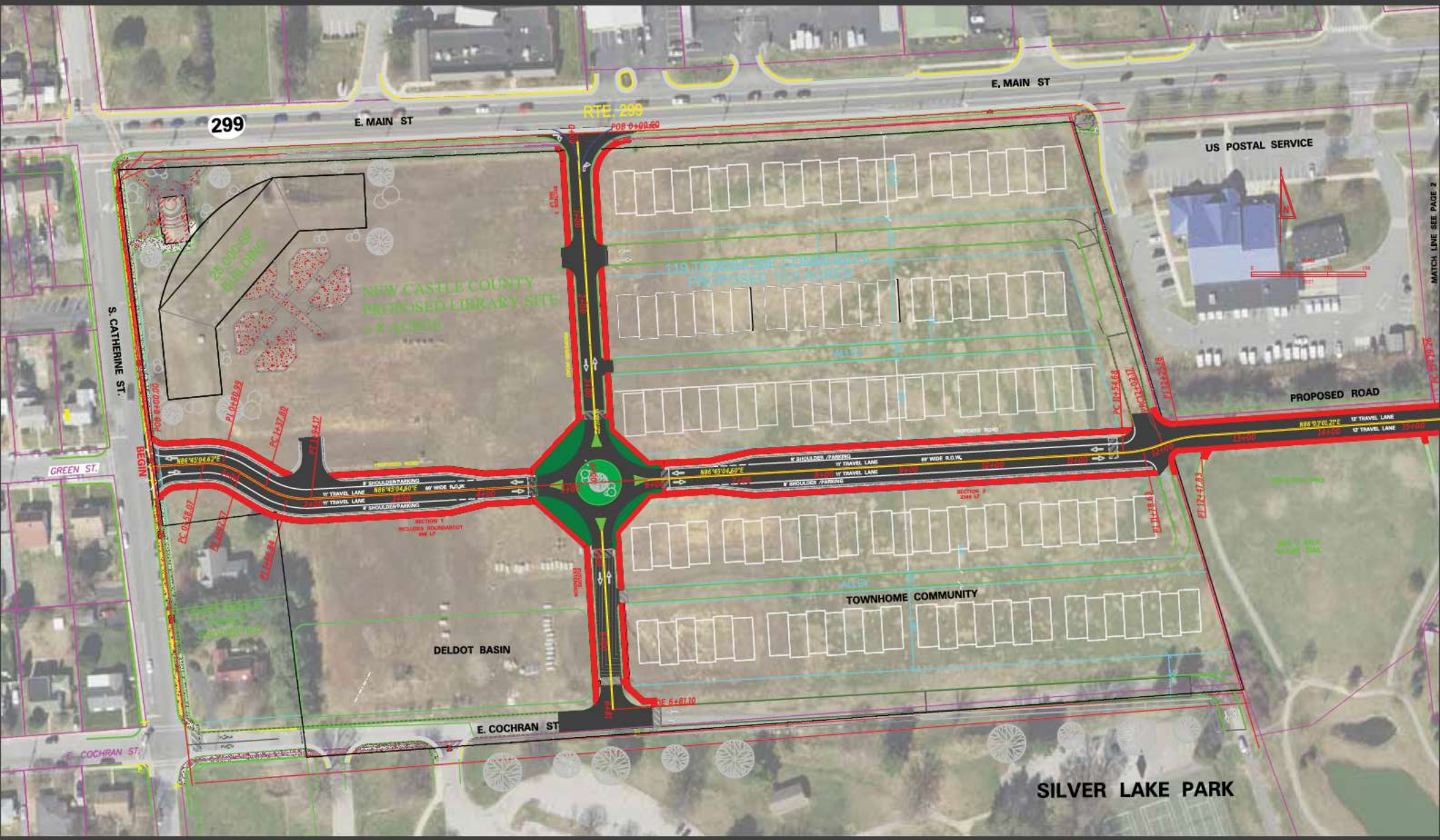
BITUMINIOUS ASPHALT PAVEMENT SECTION:

1 1/4" TYPE C COURSE
2" TYPE C COURSE WITH TYPE B AND GABC
4" TYPE B
8" GABC

DELAWARE
DEPARTMENT OF TRANSPORTATION

E. GREEN STREET EXTENSION
MIDDLETOWN, DE

CONCEPT PLAN – MAY 2019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E. MAIN ST
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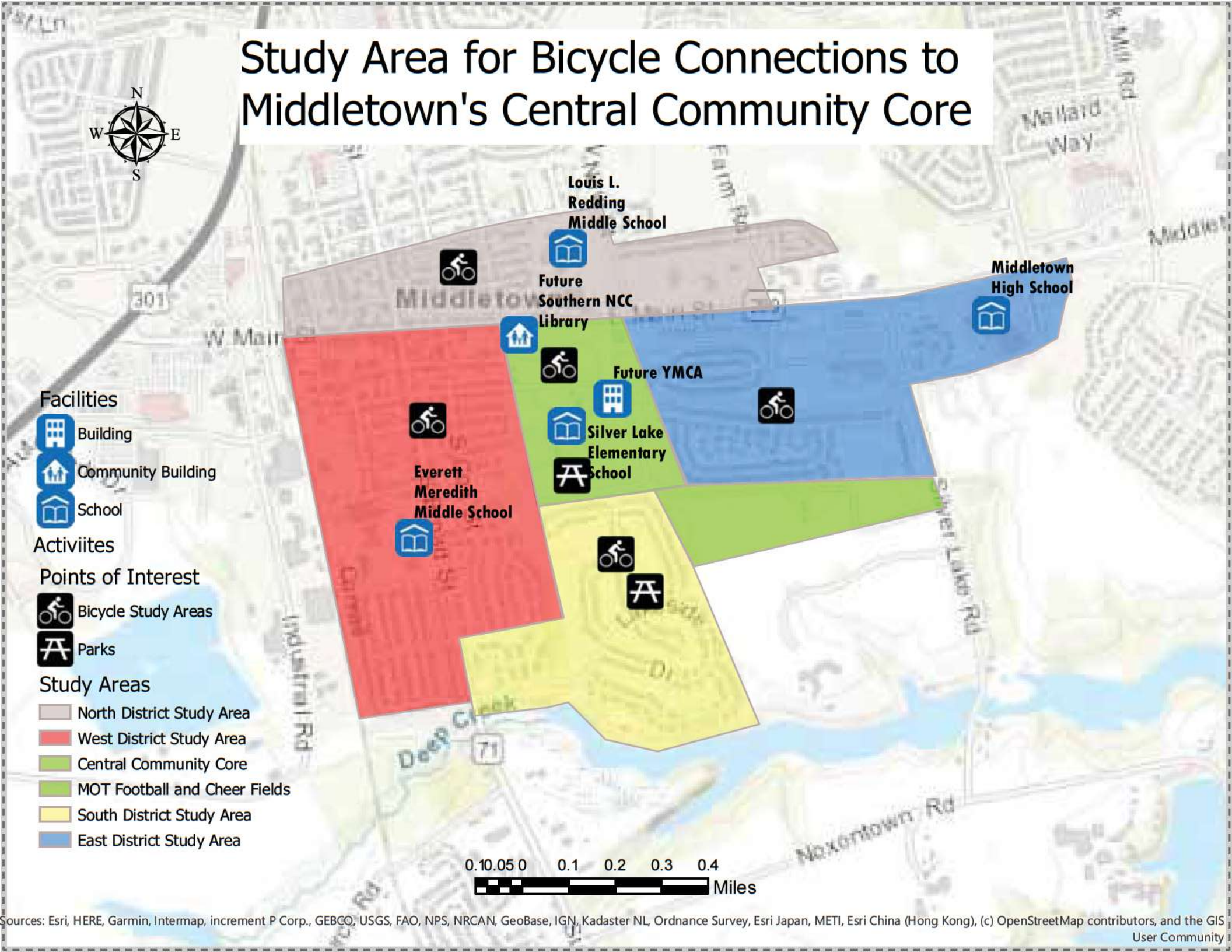
E. MAIN ST
US POSTAL SERVICE
S. CATHERINE ST.
NEW CASTLE COUNTY
PROPOSED LIBRARY SITE
± 4 ACRES
PROPOSED ROAD
GREEN ST.
BEGIN
DELDOT BASIN
TOWNHOME COMMUNITY
E. COCHRAN ST
E. COCHRAN ST
SILVER LAKE PARK
MATCH LINE SEE PAGE 2

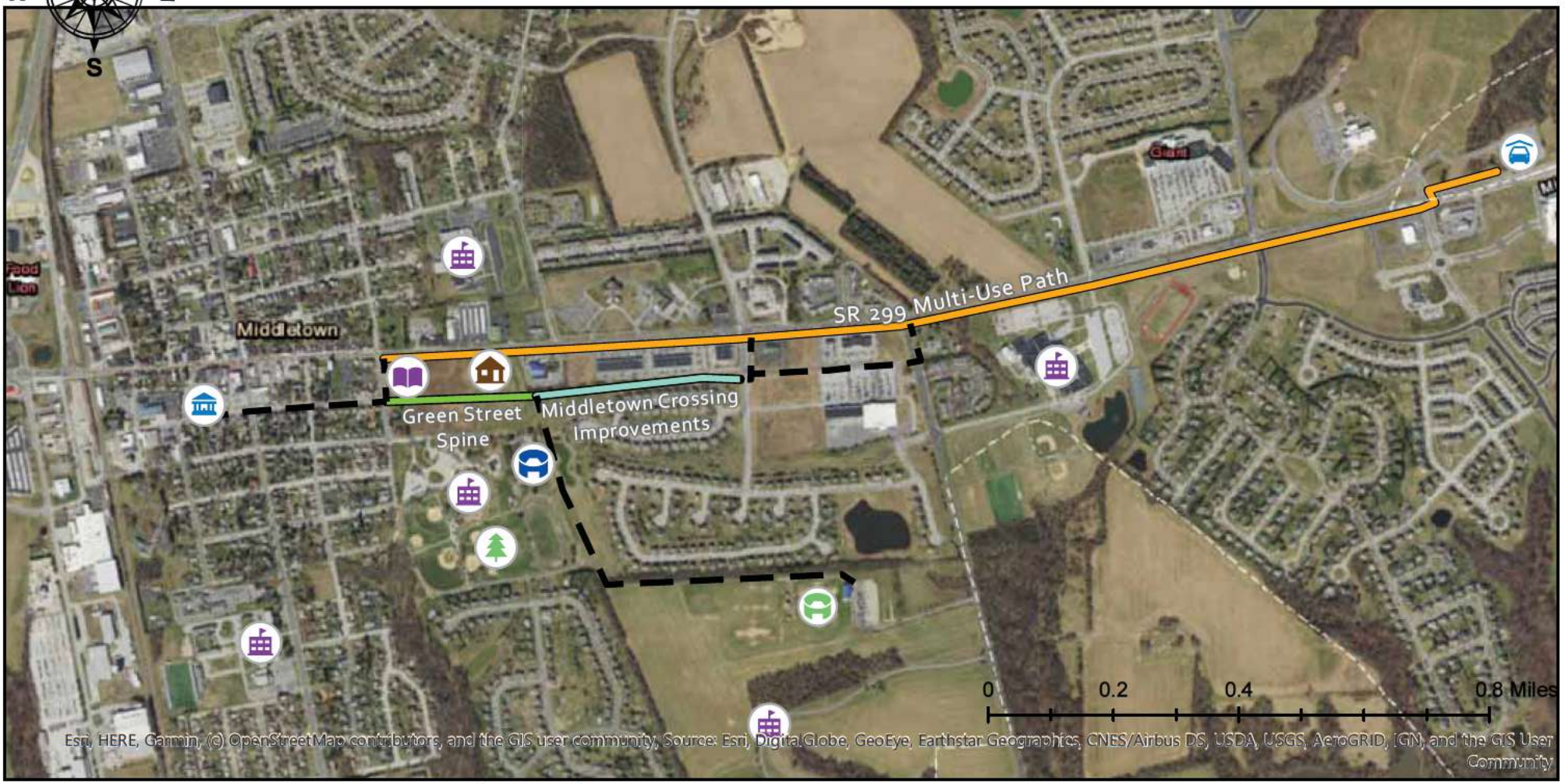

E. MAIN ST
E. MAIN ST
SHOPPING CENTER
PROPOSED ROAD IMPROVEMENT
PROPOSED ROAD IMPROVEMENT
N. CUMMINGS DR
DICKERSON BLVD
N85°50'02.73"E
N84°41'25.77"E
N86°13'12.42"E
N49°09'48.07"E
PI 26+78.87
PI 28+24.62
PI 17+39.23
PT 17+85.39
PC 16+89.89
PT 16+25.83
PI 15+73.78
MATCH LINE SEE PAGE 1
N
SCALE
FEET

Study Area for Bicycle Connections to Middletown's Central Community Core



GREEN STREET BIKE CONNECTOR CONCEPT MAP

September 2019



Prepared for:

Legend

- MOT Cheer and Football
- Park and Ride
- 300 Future Townhouses
- Silver Lake Park
- Future YMCA
- School
- Future Library
- Town Hall
- Potential Connections
- DelDOT SR 299 Path
- Middletown Crossing Path
- Green Street Spine

Prepared by:

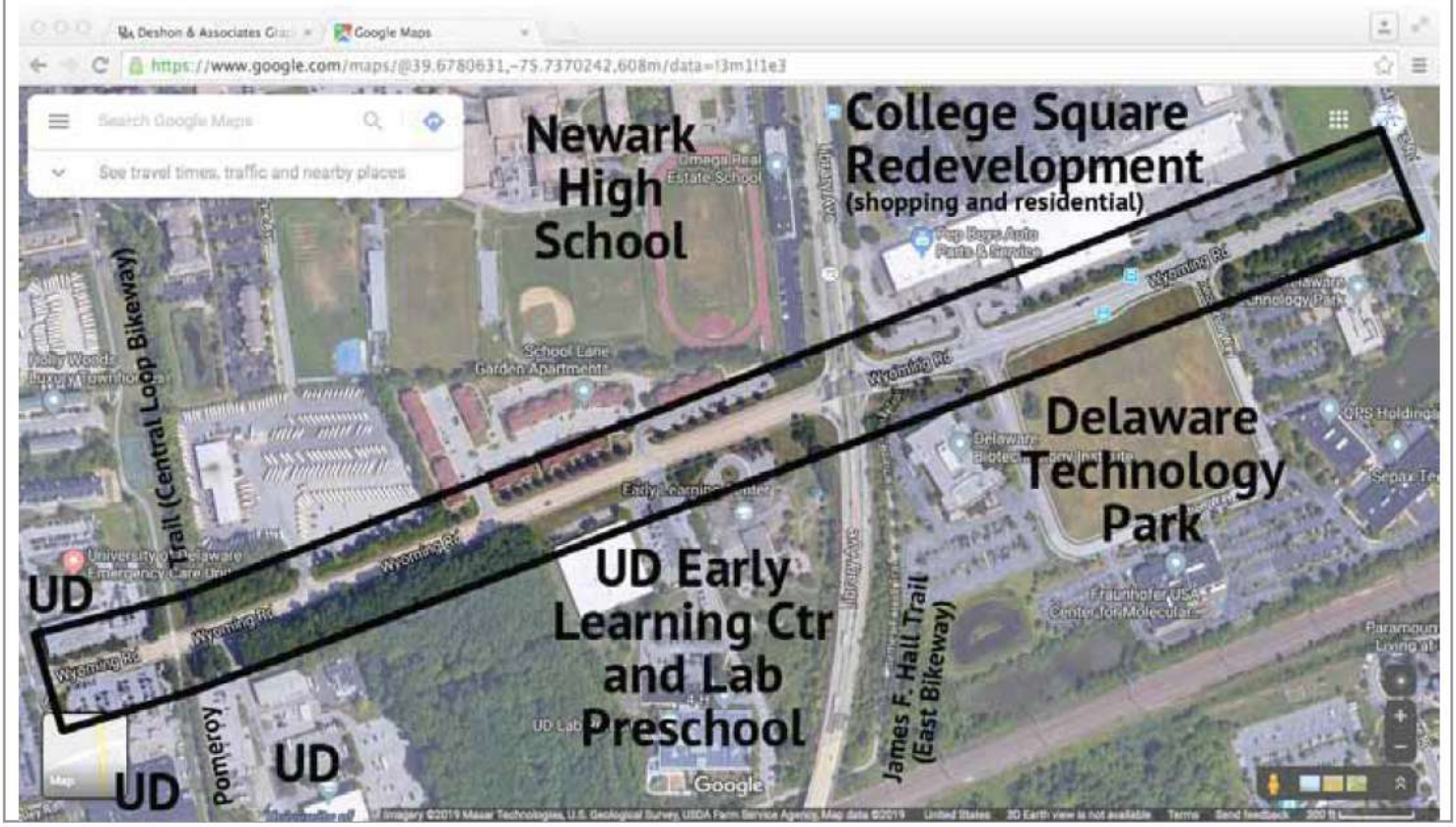
New Castle County Bicycle Plan
Priority Project Information

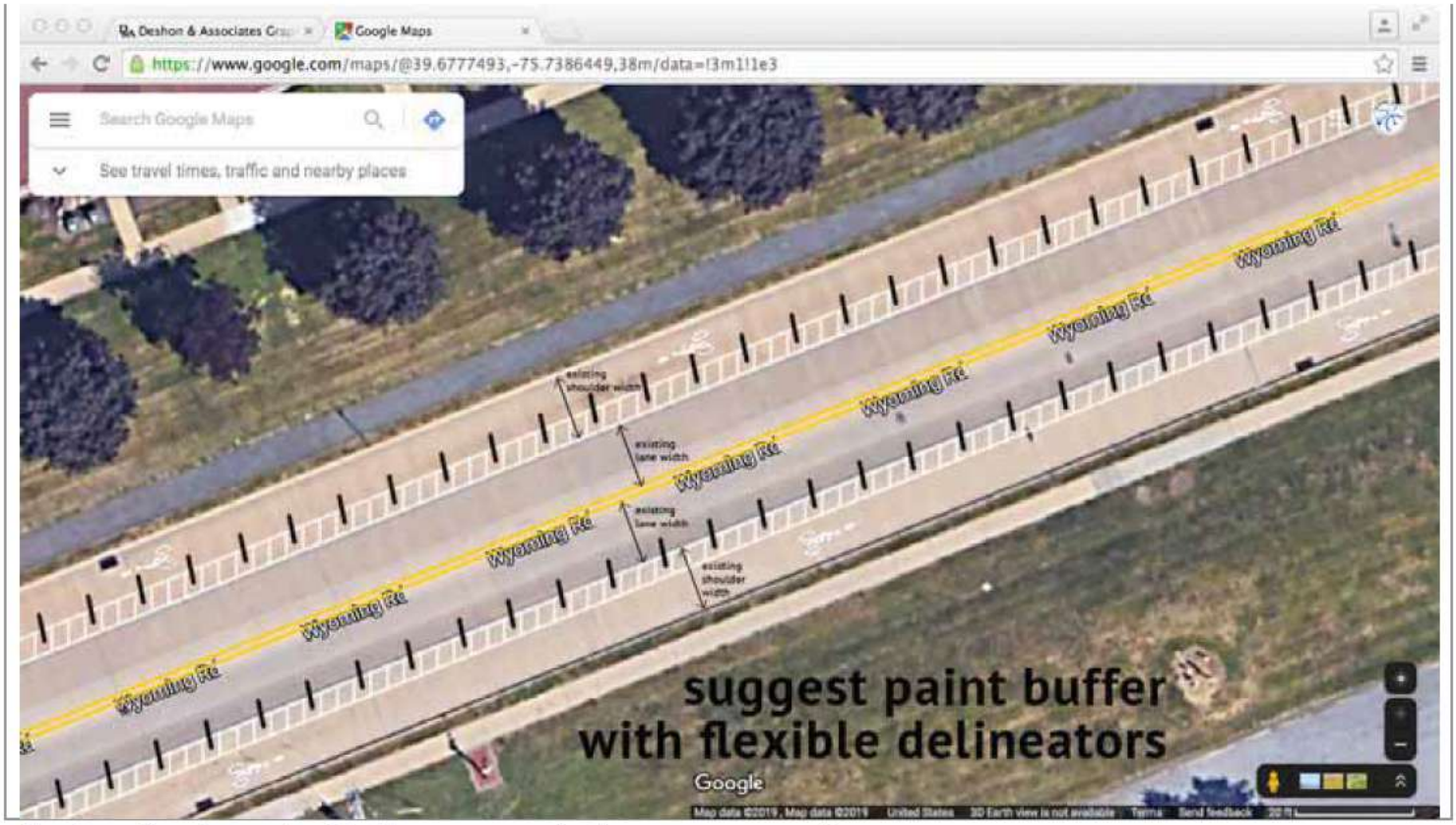
Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	BikeNewark, Inc.
Project name:	Wyoming Road protected bike lanes
Location:	Wyoming Road between Chapel Street and Marrows Road

Project description (attach a map, graphics, and/or photos if available):





Number of projects submitted by your organization: 2

Priority of this project relative to other projects submitted: Choose an item.

Supplementary Details - Please include additional information if it is available.

What is the project's category: Infrastructure: Regional facility (greater than 1/2 mile)

For cycling infrastructure, what type is suggested: On street

Please provide additional description about the suggested facility or program type if known:

Combination of surface paint and flexible delineators

What are the primary expected benefits of the project:

Increased safety for cyclists on a higher-stress and unnecessarily wide road

What other plans, if any, include this project (attach or include links if available):

A portion of Wyoming Rd. (between Library Ave. and Marrows Rd.) will be designated as part of the East Bikeway and will bear wayfinding signage for bicyclists. Signage proposal draft attached

What is the project's current phase: new

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Protection for cyclists at and through the busy intersection of Wyoming Rd. and Library Ave.
- Interaction with bumpouts at the Pomeroy Trail crossing
- Poor geometry at Wyoming Rd. and South Chapel St.
- Ease of ingress/egress with terminus of James F. Hall Trail as well as College Square Shopping Center planned entrance off Wyoming Rd.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

Newark Senior Center
College Square Shopping Center
Delaware Technology Park
University of Delaware (including its preschool programs)
James F. Hall Trail
Pomeroy Trail (and, by extension, low-stress access to downtown Newark, White Clay Creek State Park, Newark transit hub, Newark Center for Creative Learning)

Describe how this project will fill a gap or create a bicycling transportation connection:

This project will provide a safe and direct connection for bicyclists between the popular Pomeroy Trail (a piece of the Newark Bikeways "Central Loop") and the future-developing commercial/residential College Square Shopping Center property. It will also help to create a preferred link to Marrows Road at its eastern terminus and the University of Delaware's East Campus at its western terminus.

Describe any community support for this project that you are aware of:

This described project is one of BikeNewark's list of projects to advance bicycling. BikeNewark is a partnership of governmental and nongovernmental organizations. It has been supported in concept by our partners Newark Bike Project, City of Newark Planning and Parks and Recreation Departments, and Bike Delaware as well as members of BikeNewark.

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	Newark Parks and Recreation
Project name:	Olan Thomas Sidewalk Expansion
Location:	Olan Thomas Park, 89 Paper Mill Road, Newark 19711

Project description (attach a map, graphics, and/or photos if available):
Expand the existing sidewalk along Olan Thomas Park and Old Paper Mill Road from 5' to 8' to accommodate bicycle and pedestrian traffic. With the addition of the White Clay Creek/Emerson Bicycle and Pedestrian Bridge across the White Clay Creek on Paper Mill Road between Curtis Paper Mill Park and Kershaw Park in Newark, we anticipate the bicycle and pedestrian traffic along that corridor to drastically increase. On the South side of the creek the new 12' bridge will lead to a 5'sidewalk and a bicycle path along Paper Mill Road. This will lead to bicyclist being forced onto the narrow bicycle path along Paper Mill Road too and from the Pomeroy Trail or choosing to stay on the 5'sidewalk along with pedestrians. Both options could lead to hazardous situations. This sidewalk improvement was included in a 2011 master plan of the area, phase two of the master plan is the construction of the Bridge that will be completed in the fall of 2020. Phase one, Curtis Mill Park Development, has already been completed.

Number of projects submitted by your organization:	2
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Spot improvement (i.e. crosswalk or facility less than 1000 ft)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

What are the primary expected benefits of the project:

Create a safe pathway for bicyclist from the White Clay Creek Bridge to the Pomeroy Trail

What other plans, if any, include this project (attach or include links if available):

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Right of way constraints and moving utility

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

Olan Thomas Park Pomeroy, Newark Rail Trail, Downtown Newark, Newark Reservoir

Describe how this project will fill a gap or create a bicycling transportation connection:

Fill the gap from the White Clay Creek Bicycle and Pedestrian Bridge to the Pomeroy Trail

Describe any community support for this project that you are aware of:

Bike Newark and Bike Delaware

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	New Castle County
Project name:	Newark to Castle Trail connector
Location:	Starting south of the City of Newark along Route 72, connecting through Glasgow Park and the Bear-Glasgow YMCA to a separated pathway paralleling Route 896 to Lums Pond State Park.

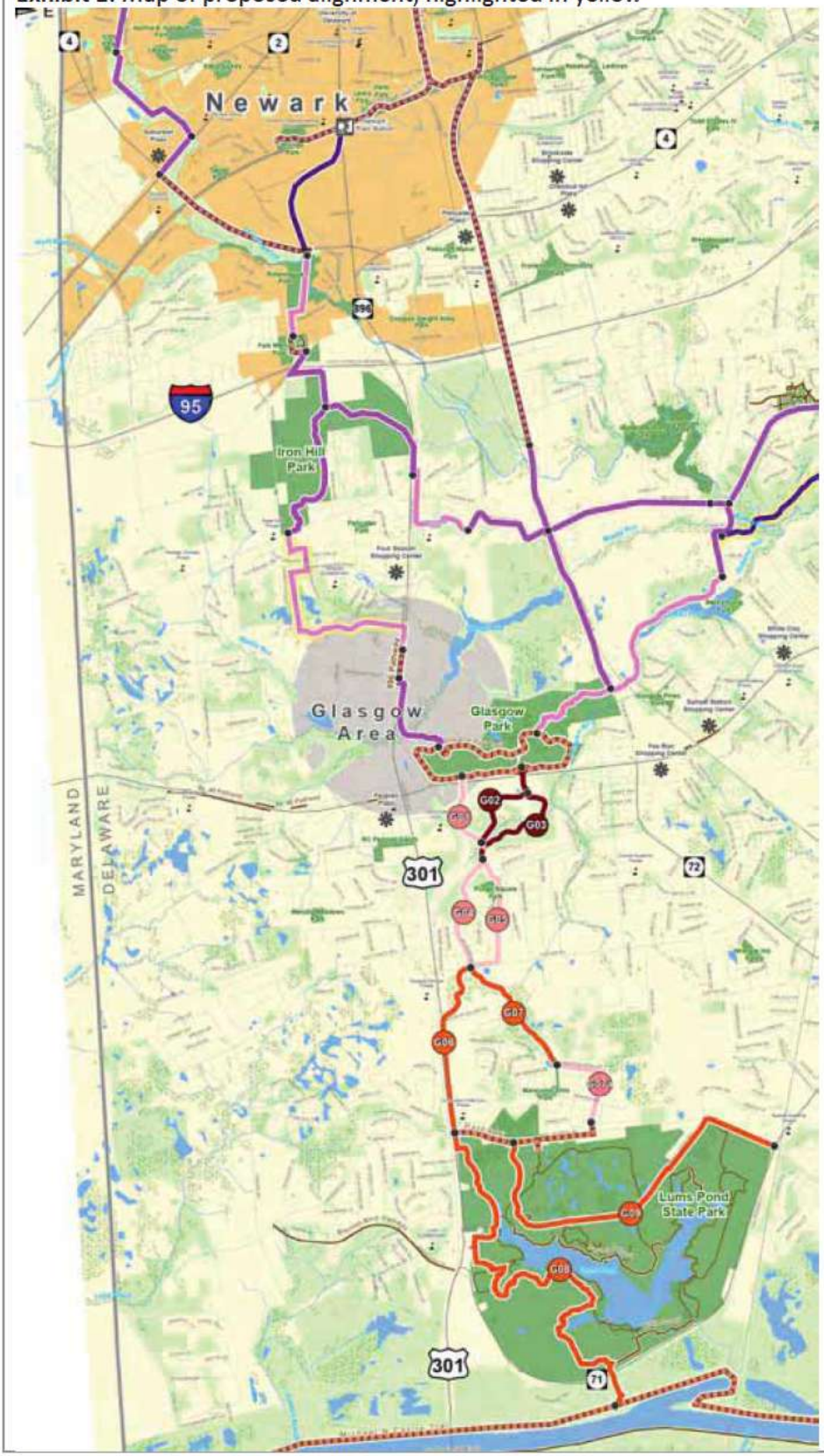
Project description (attach a map, graphics, and/or photos if available):

This pathway would provide a valuable connection between the already cyclist-friendly City of Newark and the Michael N. Castle Trail, allowing cyclists and pedestrians to connect among various employment, education, and recreation locations along the route. Specifically, the proposed trail would create a connection from White Clay Creek State Park to Glasgow Park to Lums Pond and the Castle Trail. Connecting to the Castle Trail also provides long distance connections between Newark, Glasgow, Lums Pond State Park, Delaware City, DE and Chesapeake City, MD.

Cyclists would be able to connect from the White Clay Creek State Park through the existing Pomeroy and Hall Trails through Newark, which connects to an existing sidepath along Rt 72/Library Avenue. This location also includes the College Square Shopping Center, recently approved by Newark City Council to have revitalized commercial and residential areas with bicycle and pedestrian connectivity.

The proposed pathway would extend the existing multi-use side pathway that begins in Newark at Wyoming Road and terminates just south of Old Baltimore Pike (near the Cooch's Bridge historic area), by connecting through Glasgow Park and the Bear-Glasgow YMCA, traversing some State and County parcels and a neighborhood south of the YMCA, and then paralleling Route 896 down to Lums Pond State Park. From there, it would connect to the Castle Trail. The full alignment/area of study is shown in Exhibit 1 below.

Exhibit 1: Map of proposed alignment, highlighted in yellow



Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)

For cycling infrastructure, what type is suggested: Off road path/trail

Please provide additional description about the suggested facility or program type if known:

See response below regarding earlier plans for maps and alignment description. We have submitted this project for the 2019 DBC Cycling Infrastructure Innovation grant, in order to conduct a feasibility study to investigate the alignment options more fully and get cost estimates for designing and constructing this project.

What are the primary expected benefits of the project:

This project would complete a link between the low-stress cycling network in the City of Newark and the Castle Trail along the C&D Canal. Residents living south of Newark in the Bear/Glasgow area would be able to commute by bicycle to jobs and classes in Newark. Recreational riders could connect safely among three significant recreational areas: White Clay Creek State Park, Lums Pond State Park and Glasgow Park.

What other plans, if any, include this project (attach or include links if available):
This pathway is identified in both the City of Newark's Bicycle Plan and DelDOT's 2014 Newark to Wilmington Pathway Study.

The City of Newark's Bicycle Plan (2014) includes recommendations for the Newark connection, including upgrading the existing sidepath that runs along Library Avenue from Wyoming Road to SR 4 and improvements to the intersection at Library Ave/SR 4 (pages 36-38).

The proposed project also aligns with the goals of **Newark's Comprehensive Development Plan V** (Plan V), adopted in January 2017, towards the implication of Parks and Recreation Departments "Action Item 2" to improving the connectivity of Newark's City parks with surrounding New Castle County and State of Delaware parks (page 104).

> *"Action Item 2:*
>
> ***Improve connectivity of City parks to other City parks and to the surrounding county and state parks.*** *Enhanced connectivity improves access to the City's parks and expands their potential user base. For example, the James F. Hall Trail and Pomeroy Trail connect several small parks, which creates more exposure to the variety of park facilities. Similar benefits could be achieved by improved wayfinding signage and mapping."*
>
> ***-- Newark's Comprehensive Development Plan V***

DelDOT's 2014 Newark to Wilmington Pathway Study investigated and evaluated potential pathway alignments north of the C & D Canal between the two principal cities. It emphasized the importance of completing "missing links," or filling in the gaps of Delaware's trail network in this area. As noted in this study, the Glasgow alignment coupled with the Newark to Glasgow portion of the Southern Alignment will provide a trail system connecting the Michael Castle Trail along the C&D Canal (with access to Delaware City and access to Chesapeake City Maryland via the Ben Cardin Trail since Fall of 2015) through Lums Pond State Park to Glasgow Park, the Glasgow area, and Newark via the proposed southern Newark to Wilmington alignment alternatives.
This project includes alignments considered in the Newark to Wilmington Pathway Study for the Southern Alignment and the Glasgow Alignment (see Figures 3 & 4 below). The alignments are as follows (from north to south): connecting the

existing Southern Chapel Street Sidepath (SR 72) to a SR 72 Sidepath Extension (S27, 0.6 miles) to Sunset Lake Trail (S16, 1.1 miles), connecting to the eastern side of Glasgow Park connecting to Sunset Lake Preserve Trail (S15, 0.7 miles), connecting to the Glasgow Park existing Trail, connecting to the Glasgow Alignment through three potential segments US 40 896 Interchange (S01, 0.6 miles) - George Williams Way Trail (G02, 0.6 miles)- and the YMCA trail (1.0 mile), then to College Avenue Pathway (G06, 1.2 miles) and/or Mansion Farm Trail (G07, 0.9 miles) and Mansion Farm Road Pathway (G07a, 0.9 miles) connecting to existing pathway along Howell School Road to Lums Pond Trail South (G08, 2 miles) to the Michael Castle Trail.

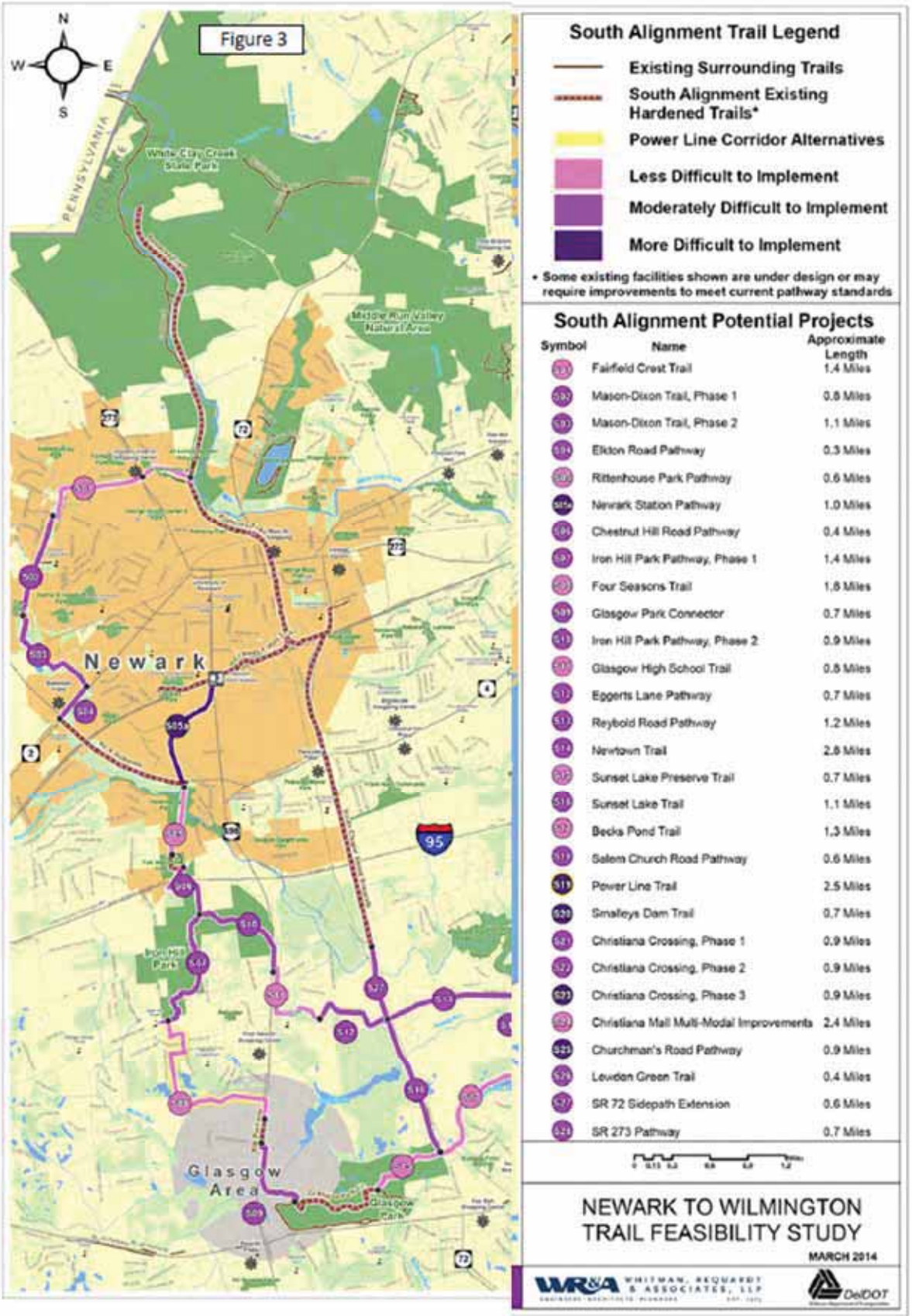
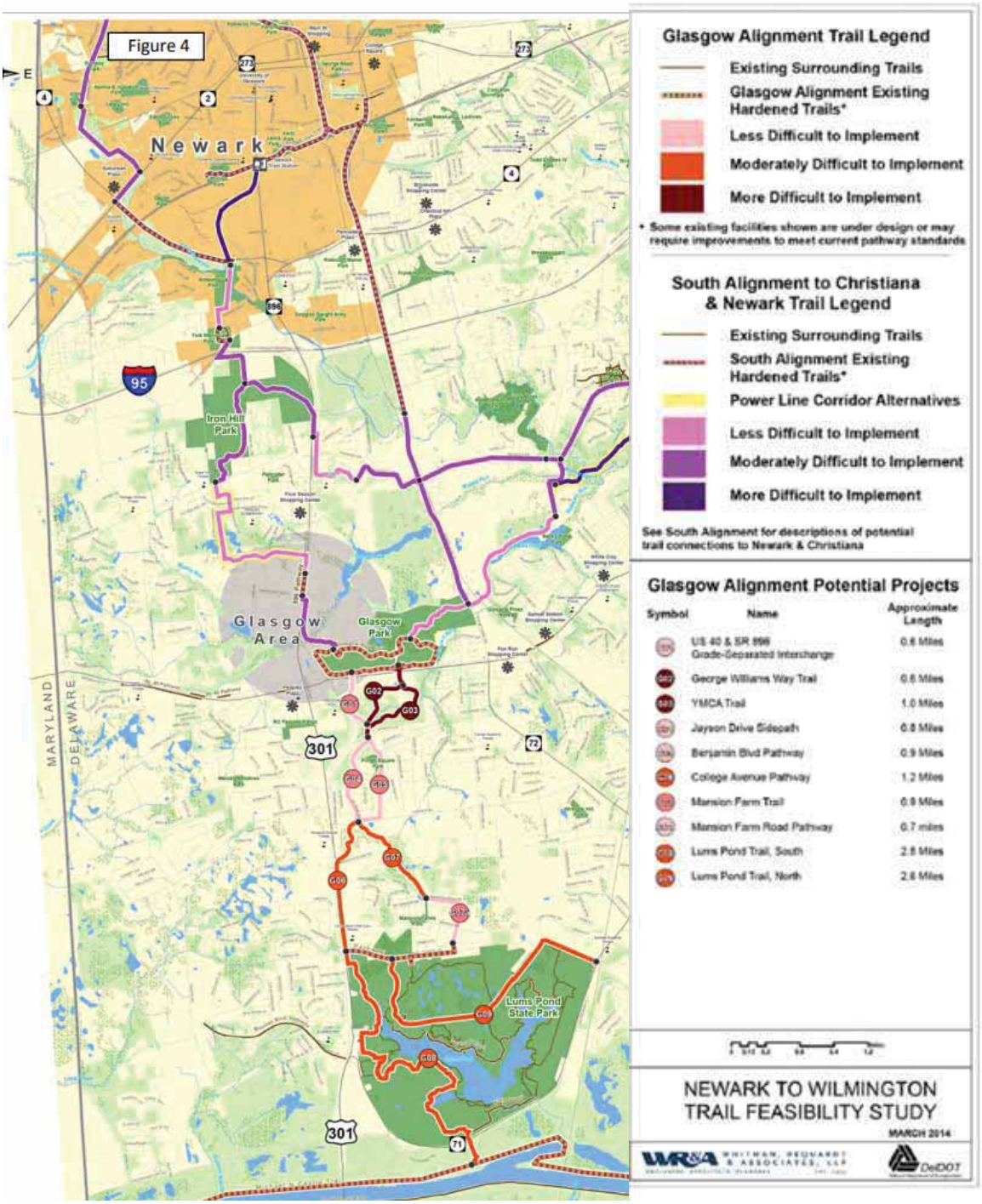


Figure 3
N
W
E
S
PENNSYLVANIA
White Clay Creek State Park
Middle Run Valley Natural Area
Newark
Glasgow Area
Glasgow Park
95
South Alignment Trail Legend
Existing Surrounding Trails
South Alignment Existing Hardened Trails*
Power Line Corridor Alternatives
Less Difficult to Implement
Moderately Difficult to Implement
More Difficult to Implement
* Some existing facilities shown are under design or may require improvements to meet current pathway standards
South Alignment Potential Projects
Symbol
Name
Approximate Length
Fairfield Crest Trail 1.4 Miles
Mason-Dixon Trail, Phase 1 0.8 Miles
Mason-Dixon Trail, Phase 2 1.1 Miles
Elkton Road Pathway 0.3 Miles
Rittenhouse Park Pathway 0.6 Miles
Newark Station Pathway 1.0 Miles
Chestnut Hill Road Pathway 0.4 Miles
Iron Hill Park Pathway, Phase 1 1.4 Miles
Four Seasons Trail 1.8 Miles
Glasgow Park Connector 0.7 Miles
Iron Hill Park Pathway, Phase 2 0.9 Miles
Glasgow High School Trail 0.8 Miles
Eggerts Lane Pathway 0.7 Miles
Reybold Road Pathway 1.2 Miles
Newtown Trail 2.8 Miles
Sunset Lake Preserve Trail 0.7 Miles
Sunset Lake Trail 1.1 Miles
Becks Pond Trail 1.3 Miles
Salem Church Road Pathway 0.6 Miles
Power Line Trail 2.5 Miles
Smalleys Dam Trail 0.7 Miles
Christiana Crossing, Phase 1 0.9 Miles
Christiana Crossing, Phase 2 0.9 Miles
Christiana Crossing, Phase 3 0.9 Miles
Christiana Mall Multi-Modal Improvements 2.4 Miles
Churchman's Road Pathway 0.9 Miles
Lewden Green Trail 0.4 Miles
SR 72 Sidepath Extension 0.6 Miles
SR 273 Pathway 0.7 Miles
NEWARK TO WILMINGTON TRAIL FEASIBILITY STUDY
MARCH 2014
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
DelDOT



What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

In a formal feasibility study, there are specific challenges that need to be investigated in order to achieve low-stress bicycle facilities. Those segments of focus include:

- **Segment A: between Old Baltimore Pike and Glasgow Park** (segments S27, S16, and S15 on Figures 3 & 4 above) around the Newark Anglers property. This segment totals approximately 2 miles and would extend the existing SR 72 sidepath from Old Baltimore Pike (and the City of Newark) to Glasgow Park. Currently, bicycle facilities through this segment include a wide shoulder along this stretch of road with posted speeds of 50

miles per hour. Anticipated challenges include private property coordination (e.g. Angler's property and Delmarva substation) and environmental constraints (e.g. wetlands).

- **Segment B: from Glasgow Park across Route 40 through the Caravel Farms area** (segment options G1, G2, and G3 on Figure 4). Initial discussion with the YMCA indicates that the G2 option may be the most desirable option to pursue. More detailed discussions on specific alignment, taking into account how the YMCA uses their property for summer camps and other activities, would be part of the study.
- **Segment C: from the Caravel Farms area to the Route 896 sidepaths** (segment options G4, G5 and portions of G6 on Figure 4). This segment will include exploration of two path options which would require retrofitting a path adjacent to existing neighborhood roads to get to Porter Road. From there, a connection between Porter road to Lums Pond will focus on creating a fully complete route, which will require integration of segments of existing, intermittent sidepaths along Route 896. Some segments have been built or are under construction through land development requirements. These facilities would then tie into the recently completed Howell School Road facilities, which connect to Lums Pond State Park.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

This proposed pathway would provide valuable connections for both transportation and recreational purposes. Residents living in the Bear/Glasgow area could more safely commute to the many employers in Newark by bicycle and access the existing low-stress network in the city. According to Census data, approximately 6,000 people live within 0.5 miles of the anticipated trail alignment and there are nearly 14,000 jobs therein (2015 estimates, LEHDOnTheMap).

Creation of these connections among White Clay Creek State Park, Glasgow Park and Lums Pond State Park would serve local families as well as local and regional recreational riders. The Bear/Glasgow YMCA, a heavily used fitness center, would become more easily accessible to nearby residents. Furthermore, the State of Delaware has invested in the Castle Trail, and this proposed pathway would allow more people in the Bear/ Glasgow/ Newark region to be able to directly access that trail.

Describe how this project will fill a gap or create a bicycling transportation connection:

This connection will broaden the impact of the State's investment in the Castle Trail, making the trail more accessible to even more residents. Similarly, the impact of the investments that the City of Newark has made in cycling infrastructure to earn the designation of being a Bicycle-Friendly Community will grow if more people are able to safely access the City's network from south of the City.

Describe any community support for this project that you are aware of:

As we prepared an application for the DBC Cycling Infrastructure Innovation Grant, we received letters of support from Wilmapco, Delaware Greenways, State Senators Sokola, Hansen and Townsend, State Representatives Osienski, Baumbach and Jacques, County Council Members Diller, Tackett, Carter and Sheldon, Bike Newark, and Delaware State Parks.

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	New Castle County
Project name:	Middletown to South St. Georges Pathway
Location:	Starting on the north side of the City of Middletown at North Broad Street and Shallcross Place, north along North Broad Street to Cedar Lane Road; then northeast along Cedar Lane Road past Marl Pit Road to Boyds Corner Road; then along Jamisons Corner Road, past US 301 and Hyetts Corner Road to Lorewood Grove Road; then east along Lorewood Grove Road, past SR 1 to the St. Georges Bridge at US 13/DuPont Highway. From there, the St. Georges Bridge provides the only dedicated bicycle and pedestrian access over the C & D Canal or access via the low-stress street network of South St. Georges to the southside of the C&D Canal.

Project description (attach a map, graphics, and/or photos if available):

This pathway would provide the most direct connection between the rapidly growing City of Middletown and the St. Georges Bridge --which has the only dedicated bicycle and pedestrian crossing of the C & D Canal.

All exhibits: *Proposed alignments (red). Existing alignments (blue). Other alignments (green)*

Phase I – Beginning at Shallcross Place and run along the northbound side of North Broad Street. The right-of-way and/or building setbacks along this section of North Broad Street is relatively wide. Additionally, Shallcross Place provides access to the low-stress street network of the northside of Middletown. The pathway would turn east on Cedar Lane Road and connect to an existing pathway/sidewalk associated with the Frog Hollow community. This existing pathway/sidewalk may need to be upgraded to 10' feet in the future.

Phase 2 – Beginning at the end of the existing pathway along Cedar Lane Road at Congressional Village Drive and continuing northwards along Cedar Lane Road past Parkside, Marl Pit Road, Walters Middle School/Cedar Lane Elementary and numerous other subdivisions until it reaches Boyds Corner Road. At this intersection the road nomenclature transitions to Jamison Corner Road, and the pathway continues north for 1/3 mile until it reaches an existing pathway.

Phase 3 – Beginning at the end of an existing pathway near the roundabout intersection for Jamison Corner Road and Lorewood Grove Road. The pathway continues eastwards along Lorewood Grove Road to the SR 1 (Roth Bridge) and US 13 (St. Georges Bridge) bridge complex. One pathway spur could roughly parallel beneath the Roth Bridge to directly connect to the proposed Southside C&D Canal Pathway.

Phase 3 (continued) – As the pathway follows Lorewood Grove Road east to the intersection with US 13, it would connect to the existing St. Georges Bridge's bicycle lanes. Southbound would be a direct connection alone Lane Road, whereas northbound would route beneath the St. Georges Bridge and connection along North Main Street. Access to the low-stress street network of South St. Georges is possible, as well as a connection to a future pathway along Biggs Lane.

Number of projects submitted by your organization:	4
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

The pathway would consist of a paved (concrete or asphalt), minimum 10' wide surface sufficient for two-direction bicycle and pedestrian travel, with drainage and landscaping features (e.g. street trees) provided as necessary. Additionally, in a few locations, upgrades to existing sidewalks or narrow pathways would need to be made.

What are the primary expected benefits of the project:

This project would provide the most direct pathway linkage between Middletown and the only dedicated bicycle and pedestrian crossing of the C&D Canal. It leverages the work of previous and current pathway projects associated with both private development (e.g. Frog Hollow) and public capital projects (e.g. US 301 at the Jamison Corner interchange). Finally, it creates a pathway spine to which all other future pathways along the alignment --as it traverses the central core of southern NCCo-- will connect.

What other plans, if any, include this project (attach or include links if available):
None.

New Castle County's on-going Southern New Castle County Master Plan will show this alignment. Additionally, it will feature in the upcoming 2022 New Castle County Comprehensive Plan update.

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Challenges will be typical to any new pathway project. Particularly right-of-way or easement acquisition and navigating wetlands or water crossings, while providing the most safe, direct, comfortable, attractive and user-friendly pathway facilities and routing.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

This pathway would connect the many businesses on the northern side of Middletown along or adjacent to North Broad Street with the existing and planned residential areas towards the north.

Describe how this project will fill a gap or create a bicycling transportation connection:

This connection will broaden the impact of the State's investment in the Castle Trail, the St. Georges Bridge's buffered bike lanes and other capital projects, such as the US 301 interchange at Jamison's Corner Road, which includes extensive pathways. A critical gap in the State/County bicycle and pedestrian system between South St. Georges and Middletown will be filled --for other developments and capital projects to connect to it.

Describe any community support for this project that you are aware of:

The County would endeavor to work with the local community and elected officials at all levels, as well as with DelDOT, DNREC, Army Corps of Engineers, US Fish and Wildlife and the City of Middletown.

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	New Castle County
Project name:	South Bank C&D Canal
Location:	This pathway would be placed generally along the Tier 1 road (lowest tier) directly along the South Bank of the C&D Canal from the MD Stateline to South St. Georges.

Project description (attach a map, graphics, and/or photos if available):

This pathway would be placed generally along the Tier 1 road (lowest tier) directly along the South Bank of the C&D Canal from the DE/MD Stateline to South St. Georges. A western extension into Maryland could bring the pathway to South Chesapeake City, while an eastern extension beyond South St. Georges could bring the pathway to the terminus of Biggs Lane and back to South St. Georges via Biggs Lane. Additional connections along the South Bank of the C&D Canal to various existing and planned neighborhoods, roadways, trailheads and protected open space may also be feasible.

All exhibits: Proposed alignments (red). Existing alignments (blue). Other alignments (green)

Figure 1: South St. Georges looking west towards the St. Georges and Roth Bridges.

Figure 2: South St. Georges looking east.

Figure 3: *Near MD State Line looking west towards Chesapeake City and MD Route 213 Chesapeake City Bridge.*

Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

The pathway would consist of a paved (asphalt), 10' wide minimum surface sufficient for two-direction bicycle and pedestrian travel, with drainage and landscaping features provided as necessary. Similar to the Castle Trail, a gravel equestrian path could be provided along the paved pathway. Additionally, in a few locations, trailhead parking and amenities could be provided similar to those along the Castle Trail.

What are the primary expected benefits of the project:

This project would provide a direct pathway linkage along the South Bank of the C&D Canal between South St. Georges and the MD State Line, with a future anticipated connection west to Chesapeake City. Additionally, it will provide more formalized access from the C&D Canal to the St. Georges Bridge, the only dedicated bicycle and pedestrian crossing of the C&D Canal. Finally, it opens-up recreational and transportation connections along the south bank, for the various existing and future communities and other pathway/trail connections, in similar fashion to the Castle Trail.

What other plans, if any, include this project (attach or include links if available):
None.

New Castle County's on-going Southern New Castle County Master Plan will show this alignment. Additionally, it will feature in the upcoming 2022 New Castle County Comprehensive Plan update.

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Challenges will be typical to any new pathway project. Particularly right-of-way or easement acquisition and navigating wetlands or water crossings, while providing the most safe, direct, comfortable, attractive and user-friendly pathway routing and facilities. Decisions on where to place trailhead facilities and how best to navigate the tier roads of the C&DC Canal are other challenges. Finally, integrating the programing with current uses along the C&D Canal, including the Canal itself, will be a challenge.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

It would connect South St. Georges to the MD Stateline and all the public open space located along the C&D Canal located in between. Additionally, future trails and pathways could connect to existing and future subdivisions located along the alignment.

Describe how this project will fill a gap or create a bicycling transportation connection:

This connection will broaden the impact of the State's investment in the Castle Trail, the St. Georges Bridge's buffered bike lanes and other capital projects, such as a potential pathway connection from Jamison Corner at White Hall along Lorewood Grove Road to South St. Georges. A critical gap in the State/County bicycle and pedestrian system between South St. Georges and the MD State Line would be filled.

Describe any community support for this project that you are aware of:

The County would endeavor to work with the local community and elected officials at all levels, as well as with DelDOT, DNREC, Army Corps of Engineers, US Fish and Wildlife and MD DOT officials.

New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	New Castle County
Project name:	Augustine Cut-Off Connector, Segment 1
Location:	Along Augustine Cut-off, from Edgewood Road to Incyte campus entrance

Project description (attach a map, graphics, and/or photos if available):

This project is a 0.50 mile on-road separated pathway connection along Augustine Cut-Off, running from the existing Blue Ball pathway near Edgewood Road to the pathway recently completed as part of Incyte's Phase I corporate headquarters expansion.

Augustine Cut-Off serves as a major thoroughfare for both County and City of Wilmington residents. As part of a critical connection to the City, a multi-use off road trail terminates at the north end of Augustine Cut-Off, in Alapocas Run State Park. The U.S. Census 2015 American Community Survey estimates 16,975 people are living directly adjacent to the Route 202 Corridor in the surrounding neighborhoods. Of these 16,975, 3,638 are under 18 years of age and 13,337 are over 18 years of age. Improvements along Augustine Cut-Off would directly connect these communities to the major employment center in Wilmington and the recreational trails in Brandywine Park.

This particular project is highlighted as Segment 1 in the map below.

Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

A feasibility study conducted in 2017/2018 identified alternative options for completing this connection:

- A two-way cycle track along Augustine Cut-off
- A bicycle boulevard along School Road connecting through parcels owned by Wilmington Friends School and Incyte.

The accompanying report details these two options. (*Augustine Cut-Off Bicycle Facility Feasibility Study*)

What are the primary expected benefits of the project:

Completion of a relatively small link of bicycle facility that would connect to miles more of low-stress facilities on both ends of the proposed link.

Though this project is noted as "on street", depending on further evaluation and public engagement, the project may be a "calming/bicycle boulevard" project.

What other plans, if any, include this project (attach or include links if available):

The Wilmington Bike Plan includes this corridor as one route for residents connecting between the city and the county. See Figure 12 on page 3 of the report: https://www.wilmingtonde.gov/home/showdocument?id=8552

What is the project's current phase:	**Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

A community meeting is one next step to identify neighbors' reactions to these alternatives.

Neighbors along Augustine Cut-Off may be concerned about a cycle track perpendicular to their driveways. However, the cycle track option would lie within the DelDOT right-of-way and so no land acquisition would be needed.

The bicycle boulevard alternative will require cooperation of and agreements with Wilmington Friends School and Incyte.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

This project provides multiple connections:

- Between Alapocas Run State Park and Brandywine Park
- To nearby schools: Wilmington Friends School; Salesianum School; and Warner Elementary School
- For commuters moving between residential, employment, and retail of N. Wilmington and those of Wilmington proper.

Describe how this project will fill a gap or create a bicycling transportation connection:

The trail within Alapocas Run State Park ends abruptly when Augustine Cut-Off intersects with Edgewood Road. Similarly, the pathway built by Incyte as part of their construction ends abruptly at the end of their parcel, and so a 0.5 mile gap exists between those two facilities. This project will close that gap.

Describe any community support for this project that you are aware of:

Delaware Greenways has been engaged in the planning for this project. The City of Wilmington and Delaware State Parks were also part of the feasibility study phase, and Incyte—through the land development review process—has been involved and will be contributing to completion of an 8' wide extension of the existing multi-use sidepath from where it currently terminates at 18th Street to the Bridge over the Brandywine (to complete Segment II, shown on the map).

AUGUSTINE CUT OFF AREA
TRAIL FEASIBILITY STUDY

WHITMAN, REQUARDT & ASSOCIATES, LLP
MAY 25, 2018

Table of Contents

Project Description and Purpose

The City of Wilmington and New Castle County recognize the importance of providing safe, comfortable options for all modes of travel, including bicycles and pedestrians. Accommodating pedestrians and bicyclists for travel and recreation purposes contribute toward overall community quality of life. Specific benefits to the community can include:

- Reduced reliance on single occupant vehicles
- Improved travel times and traffic flow
- Reduced vehicular air emissions and noise exposure
- Increased opportunities for physical activity
- Improvements in equity through improved safety, mobility and accessibility for those who must rely on non-motorized travel, such as children and the elderly

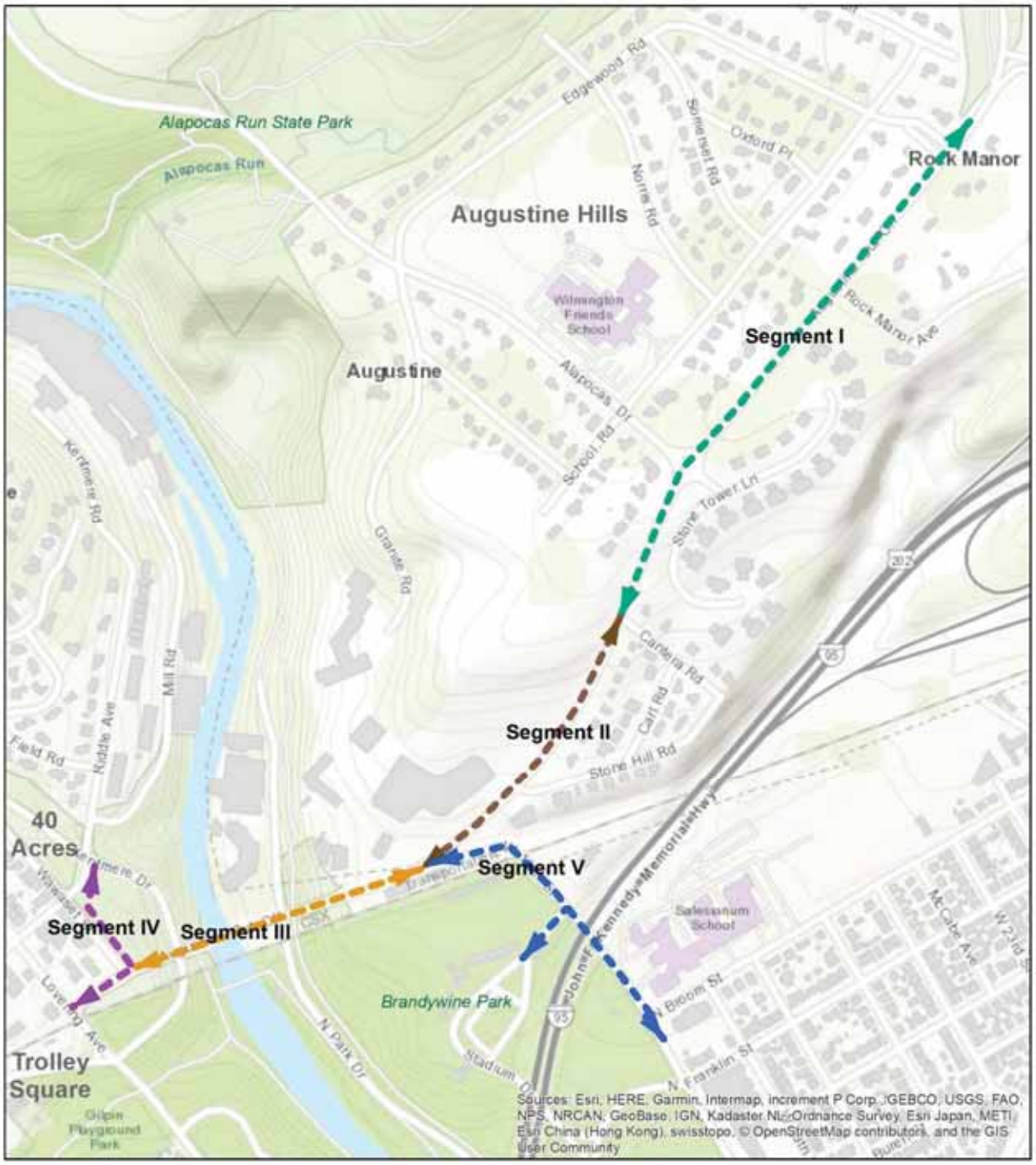
With funding support through the Delaware Bicycle Council's *Cycling Infrastructure Innovations Grant Program,* the City of Wilmington and New Castle County seek to identify a range of opportunities to complete the low-stress bicycle network along Augustine Cut Off between the Trolley Square and Forty Acres neighborhoods of Wilmington and the Augustine Hills and Rock Manor neighborhoods of New Castle County. Connecting this corridor from one end of the study area to the other offers an opportunity to build on multiple existing trail (low-stress bicycle facility) segments, including the existing multi-use path to Brandywine Park on the west side of Brandywine Creek, the multi-use sidepath recently completed along the phase I development of the Incyte property, the Alapocas Run Trail at the north end of the study area, and trails along the east bank of Brandywine Creek in Brandywine Park.

Completion of connections examined in this study will improve bicycle and pedestrian accessibility in areas of dense residential population and employment and mixed land use—areas where distances between destinations are amenable to travel by walking and bicycling. The options presented in this study, if completed, would enhance connections among an extremely popular cluster of recreational facilities that includes the Alapocas Run State Park, Northern Delaware Greenway, Brandywine Park and Zoo, and numerous community sports facilities.

This trail feasibility study assesses the potential for enhanced bicycle and pedestrian connections along Augustine Cut Off. Figure 1 shows a map of the study area, which falls in the jurisdiction of both the City of Wilmington and New Castle County, and highlights the following segments being considered under this study:

I. Northern connection—from the Alapocas Run Trail (Edgewood Road) to the northernmost driveway of the Incyte property (Cantera Road)
II. 18th Street connection (Cantera Road to West 18th Street, including the Augustine Cut Off and West 18th Street intersection)
III. Brandywine Creek connection (from the Incyte phase I development across the bridge to Wawaset Street)
IV. Lovering Avenue and South Park Drive connection
V. Franklin Street/Stadium Drive (via 18th Street) connection

Figure 1: Map of Study Area and Segments Evaluated



The content of this report includes a review of the existing conditions of the corridor and explores a range of opportunities to create connections for bicyclists, with consideration of opportunities to also enhance the pedestrian experience.

Overview

Existing Conditions

Augustine Cut Off is primarily a two-lane road with varied and intermittent bicycle and pedestrian accommodations along its length. The latest Delaware Department of Transportation (DelDOT) traffic counts along Augustine Cut Off indicate average daily traffic volumes of approximately 10,000 vehicles per day through this corridor. On-street parking along Augustine Cut Off is only possible in limited locations from 18th Street north/west through Edgewood Road at the north end of the study area. Where available currently, on-street parking is typically sparsely used, with occasionally higher usage. Land use along the corridor ranges from a mixed use, urban neighborhood at the south/west end to suburban, single family development at the north/east end.

Starting at Lovering Avenue in the City of Wilmington (at the south/west end of the study area), Augustine Cut Off includes sidewalks and on-street bike lanes. Proceeding into the corridor that is in the jurisdiction of New Castle County (to the north/east) facilities transition to a single multi-use path on the north side of Augustine Cut Off and terminate with neither bicycle or pedestrian facilities through the remainder of the corridor. West 18th Street currently has a sidewalk on the south side of the street that continues through the study area, with sidewalks on both sides of the street starting approximately at the bridge across I-95.

Subsequent sections of this report are organized according to the corridor segments identified on page 1 and Figure 1.

Recommended Alternatives

Many options were considered in developing the alternatives presented in the following pages. In general, the most desirable options are those which provide bicyclists with a low-stress option and have fewer anticipated impediments to implementation, which could include private property issues and limited right of way, environmental/infrastructure constraints that would require greater impacts of more costly designs, or more stakeholders and complexity for consensus and decision making.

The full range of ideas that are worth considering for further study and development are presented below, from low cost minor improvements to more impactful improvements with greater complexity.

The alternatives presented below were examined at a level of detail suited for feasibility analysis. In all cases, more detailed measurements and review will be necessary to proceed toward implementation, such as traffic counts, stakeholder engagement/coordination, and more precise survey/measurements.

Alternative designs presented below also hinge closely on the following property development related issues:

- Phase II development of the Incyte property;
- the Brandywine Mills property and connections at Mill Road;
- management/redevelopment of the Baynard Stadium; and
- a possible agreement between the Augustine Hills community and DelDOT that may have implications for bicycle and pedestrian facilities through that section of the corridor

The specific limits of our analysis are noted as they relate to each alternative presented below.

Note: According to correspondence with the Delaware Architectural Accessibility Board, trail facilities that are parallel to an existing road facility—whether private or public—can exceed the maximum 5 percent grade limit established under ADA, as long as the grade does not exceed that of the grade of the adjacent road.

Alternatives are described in the following narrative section of this report and supported by graphical illustration on concept plans (found in Appendix A, page 30).

Segment I—Northern Connection (jurisdiction: New Castle County)

Existing

The Alapocas Run multi-use trail system, which is part of the Northern Delaware Greenway, has a terminus at Edgewood Road and Augustine Cut Off. At this point, there are no sidewalks present on Augustine Cut Off through the remainder of the segment. A bicycle lane is present in the southbound direction of Augustine Cut Off starting at Alapocas Drive. Wide shoulders along each side of the road are present between Alapocas Drive and Edgewood Road. Approaching Alapocas Drive in both directions, shoulders on Augustine Cut Off disappear and are used for right turn lanes. Through travel/merge lanes are right up against the edge of the pavement on the far sides of intersections, leaving no space for pedestrians or bicycles. Pedestrians are known to use the grass adjacent to the roadway and bicyclists must use the travel lanes for a brief period through this section of roadway.

Curbs are not present north of Alapocas Drive, except at the intersection. The paved road width through this segment ranges from approximately 43 feet (just north of the northern entrance to Incyte) to approximately 50 feet, north of the Alapocas Drive intersection. Right of way ranges from approximately 80 feet between Alapocas Drive and Edgewood Road to approximately 90 feet from Cantera Drive to Alapocas Drive.

Alapocas Drive is the only traffic controlled intersection in this segment. It is the only entrance point for traffic entering the Stone Tower Lane neighborhood of approximately 40 residences to the south/east. Alapocas Drive serves as the primary entrance for buses and traffic associated with Wilmington Friends School to the north/east. During school drop off and pick up times this intersection experiences traffic delay.

Twenty residential driveways are accessed directly from Augustine Cut Off through this segment. Sixteen driveways are located on the west side of the road and four are located on the east.

Sidewalks are present along Edgewood Road and along School Road, a neighborhood street that runs parallel to Augustine Cut Off with low volumes except for occasional peaks during school hours and off-hour functions for the Wilmington Friends School.

The posted speed limit is 35 miles per hour through this segment of Augustine Cut Off.

A culvert was identified near Stone Tower Lane on Augustine Cut Off and is used for roadway drainage, which would impact any designs along the east side of Augustine Cut Off. (See photo 19 in Appendix C.)

Key issues:

- Aim for bicycle and pedestrian facilities to be on the north / west side of Augustine Cut Off to align with existing bicycle and pedestrian facilities located on the north / west side of Augustine Cut Off at each end of this segment.
- Right of way through this segment is ample, at approximately 80 to 90 feet.

- Many residential property owners could be impacted by changes, especially on the north / west side of the corridor, and should be engaged early in subsequent consideration of opportunities for improvement and development of potential changes.
- Turn lanes into Stone Tower Lane, from both directions, may not be necessary given traffic volumes.
- The supposed agreement between DelDOT and the community in this area was requested through Robert Cunningham (DelDOT), but has not been produced at the time of this document was published.

Alternatives

Bicycle Boulevard on School Road (see page 30, Appendix A, concept plan sheets 4 and 5, orange lines)

An alternative would be to establish a bicycle boulevard from the terminus of the existing Alapocas Run Trail at Edgewood Road, up to and along School Road, across Alapocas Drive, to connect to the existing multi-use side path along the Incyte Property and Augustine Cut Off through the Wilmington Friends School athletic complex and the Incyte Development. The connection at the north end to the Alapocas Run Trail could alternatively be through the Rockland Court cul-de-sac, which would impact one or two private property owners and a small amount (approximately 20 feet or less in length) of those properties.

A bicycle boulevard is a street with low motorized traffic volumes and speeds designed to provide priority for bicycles. School Lane already has many characteristics of a bicycle boulevard, including low traffic volumes and speeds, few intersections, and direct access to destinations. Additional treatments that are typically applied include traffic calming treatments such as curb extensions, mini traffic circles, and green infrastructure.

Implementation of this alternative would require establishment of a connection through the Wilmington Friends School and Incyte properties at the south end of this segment. Currently, an asphalt path exists on the Wilmington Friends School property at the south/west end of School Road, through which access is managed through fences and gates (see Figure 2). This area is used heavily by athletes and spectators during sporting events and part is also occupied by a residence. A multi-use trail connecting the proposed bicycle boulevard would need to travel through

Figure 2: Existing asphalt path through the Wilmington Friends School athletic fields area (looking toward Incyte property)

this parcel and continue through the Incyte property to connect to the existing path along the Incyte property adjacent to Augustine Cut Off. This link would require clearing of forest edge and regrading along the northern periphery of the Incyte property. Figure 3 shows a portion of the wooded area on the Incyte property, which would need clearing and regrading. Currently, the grading of the land would not meet ADA requirements; however, there appears to be sufficient space for cut/fill to enable a trail to be created with grades less than the 5% maximum.

Figure 3: Looking west across Incyte property (north entrance) where a connection could be made as part of implementation of the Bicycle Boulevard on School Road option.

Community support, particularly from property owners along School Road, would be imperative. Given the extent of community stakeholders along School Road, garnering the support of the community may be a challenge. However, the benefits of a bicycle boulevard reach beyond the bicyclists using the facilities and should be emphasized. Benefits include aesthetic streetscape enhancements, added vegetation and green infrastructure, and calmed traffic. This option would not have impacts on parking or driveway access.

This option may be partially implemented, or implemented in stages, and still offer benefits. Early and low-cost options would include signage and pavement markings that would connect bicyclists and pedestrians from Edgewood Road to Alapocas Drive and might include some trial period to familiarize the surrounding community. A bicycle connection from Alapocas Drive to Cantera Drive could include reliance on the existing southbound bicycle lane and addition of a northbound lane, or the Two-way cycle track alternative noted below.

Pursuit of this option may be possible through the Transportation Alternatives Program, which provides funding to projects that emphasize non-motorized facilities and green infrastructure (among other characteristics). Early changes would include the addition of clear signs and pavement markings.

> **Rough Cost Estimate:** $200,000 (Assumes no geometric changes along School Road, such as mini-roundabouts, green infrastructure, etc.)

Two-way cycle track on north/west side of Augustine Cut Off (see page 30, Appendix A, concept plan sheets 4 and 5, yellow lines and associate typical sections A-D)

Establish a two-way cycle track of at least 10 feet (5 feet in each direction, plus buffer between it and traffic) and a sidewalk of at least 5-6 feet along the north / west side of Augustine Cut Off linking multi-use pathways at each end of this segment.

This option would fit within the available right of way and would likely be possible with little or no added pavement along most of the length of Augustine Cut Off.

Toward the south/west, at the intersection with Cantera Road and the Incyte access drive, the on-road facility may be transitioned to a curbed multi-use side path. This section is the most constrained with regard to available pavement, due to existing turn lanes. The adjacent land (on the north/west edge of the roadway) is currently covered with heavy vegetation, which would need to be removed within the space needed for the trail. The uphill grade through this section may require a retaining wall.

Additional pavement space and intersection reconfiguration would likely be needed between Cantera Road and Alapocas Drive. Adjustments to the intersection would be needed to ensure safe crossing by bicyclists and pedestrians across Alapocas Drive. This option would require further consideration of driveways/access to adjacent property and on-street parking, which would be affected.

At some point near the intersection with Alapocas Drive, there would be more extensive encroachment into the right of way and residents' mature trees and landscaped space.

Recommended options for transitioning options proposed along Augustine Cut Off through the intersection of Alapocas Drive include:

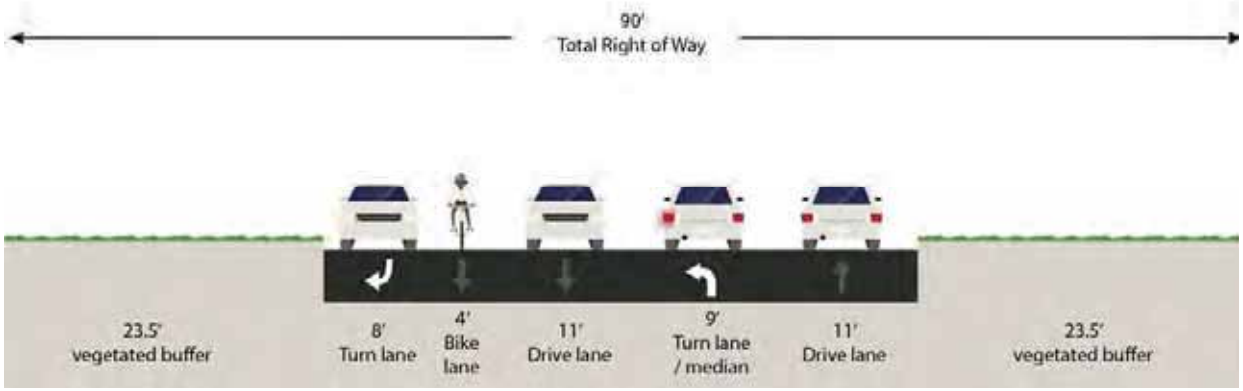
- Removal of separate turn lanes into the Stone Tower Lane development
- A roundabout

Feasibility of these alternatives would require additional traffic study and surveying of right of way to fully understand their potential and impacts.

The following proposed typical sections illustrate how the facility might be designed, starting at the intersection with Cantera Road and proceeding northward (see concept plan sheet 4 for specific locations A-D within the corridor segment):

<u>Typical Section A:</u> (see page 30, Appendix A, concept plan sheet 4)

Existing[1] (facing north)



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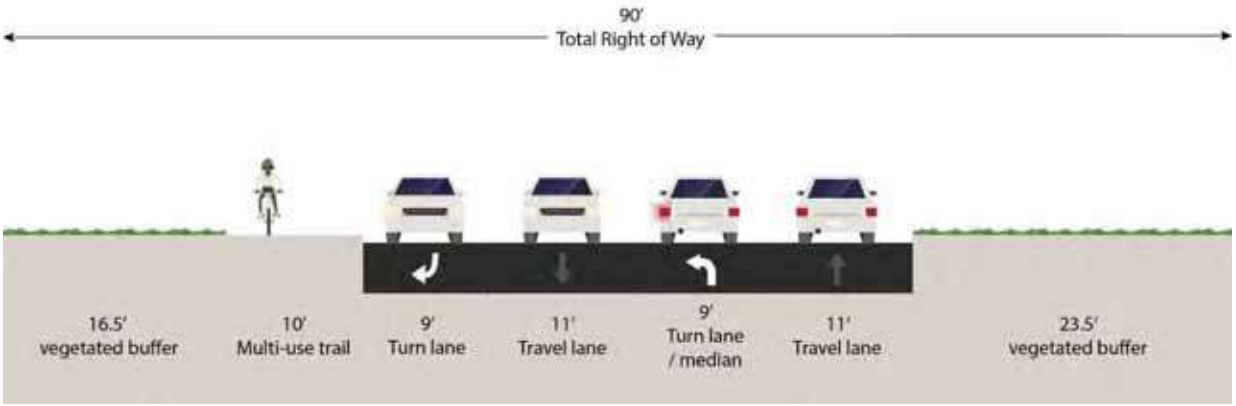


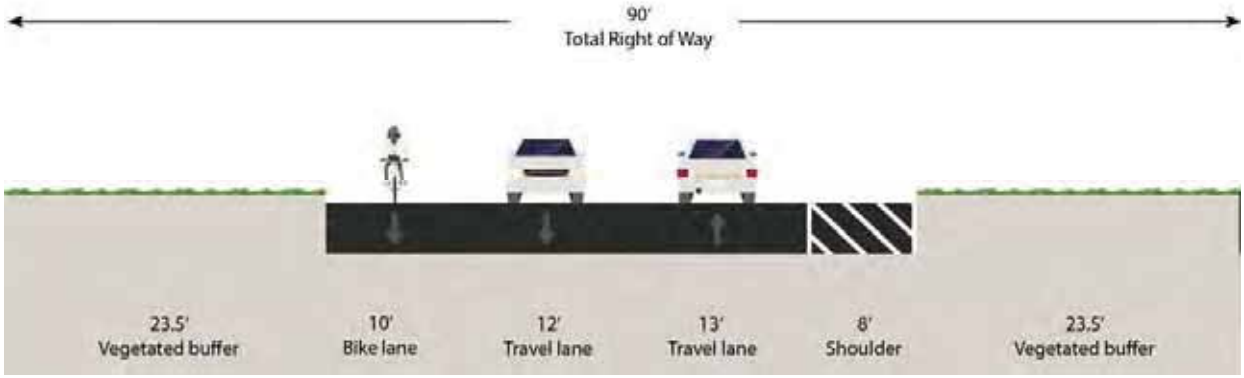
Impacts:

- Extend north / west curb into existing roadway approximately 3 feet
- Clear forest edge, grade and install retaining wall within existing right of way on north/west side of road (adjacent to Incyte property) to accommodate trail
- Stormwater management accommodations may be needed
- May need to use additional right of way to support bus stop (8-foot depth required for a landing pad between trail and curb/turn lane)
- Coordination with mail delivery needed

[1] All measures of existing conditions are approximate and must be verified through survey for design purposes.

<u>Typical Section B</u>: (see page 30, Appendix A, concept plan sheet 4)

Existing



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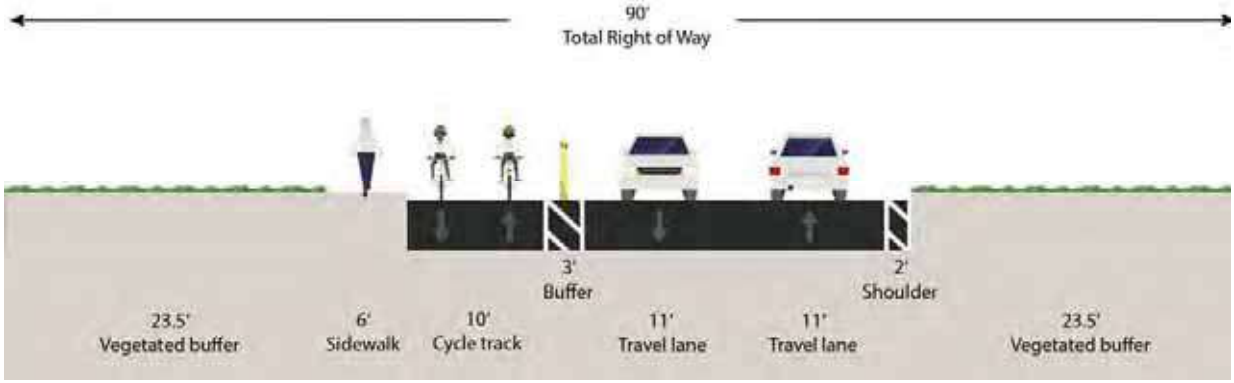
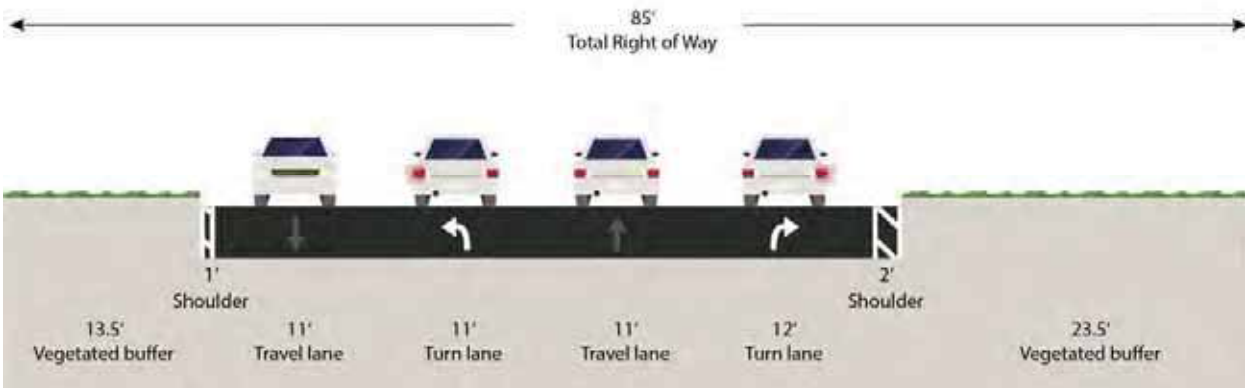


Impacts:

- No or limited impacts outside existing paved street width (approximately 43 feet)
- Addition of curb on north/west side of Augustine Cut Off extending into existing roadway by approximately 6 feet
- Impacts to drainage inlets likely
- No overhead utilities, but unknown underground utilities
- Relocation of mailboxes

<u>Typical Section C:</u> (see page 30, Appendix A, concept plan sheet 4)

Existing



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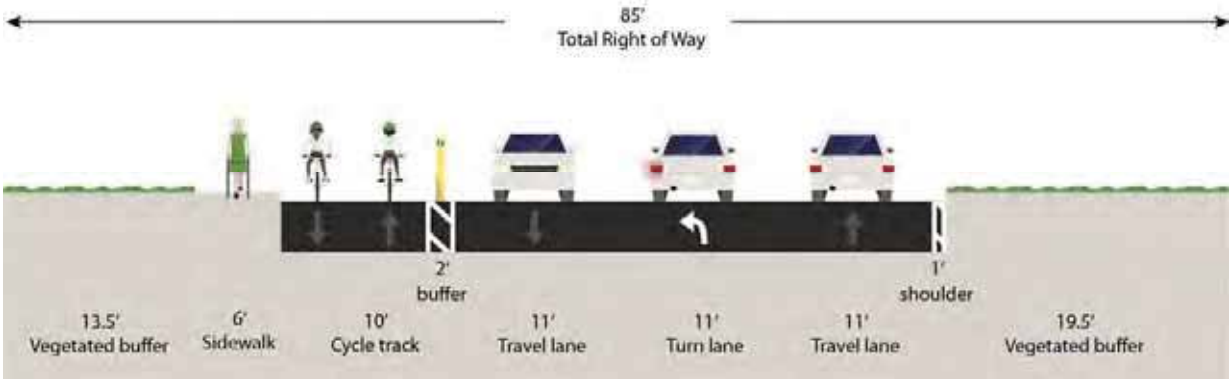
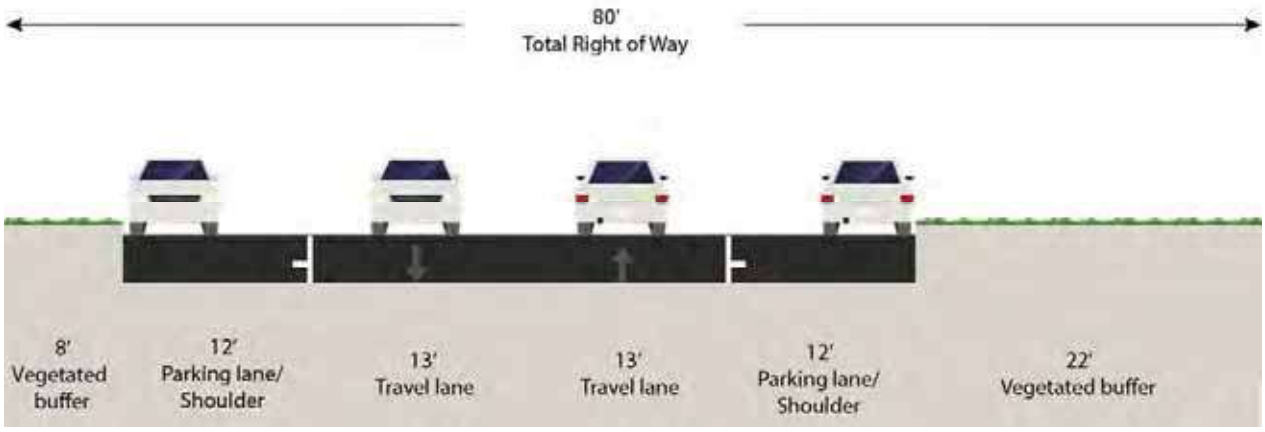


Impacts:

- Removal of right turn lanes on Augustine Cut Off approaching intersection of Alapocas Drive (if supported by traffic analysis)
- 4 feet of widening would be needed on south / east side of Augustine Cut Off (or offset accordingly on north/west side)
- Addition of curb and sidewalk into existing roadway, which may require stormwater adjustments and coordination
- Coordination of mailbox placement

<u>Typical Section D:</u> (see page 30, Appendix A, concept plan sheet 4)

Existing



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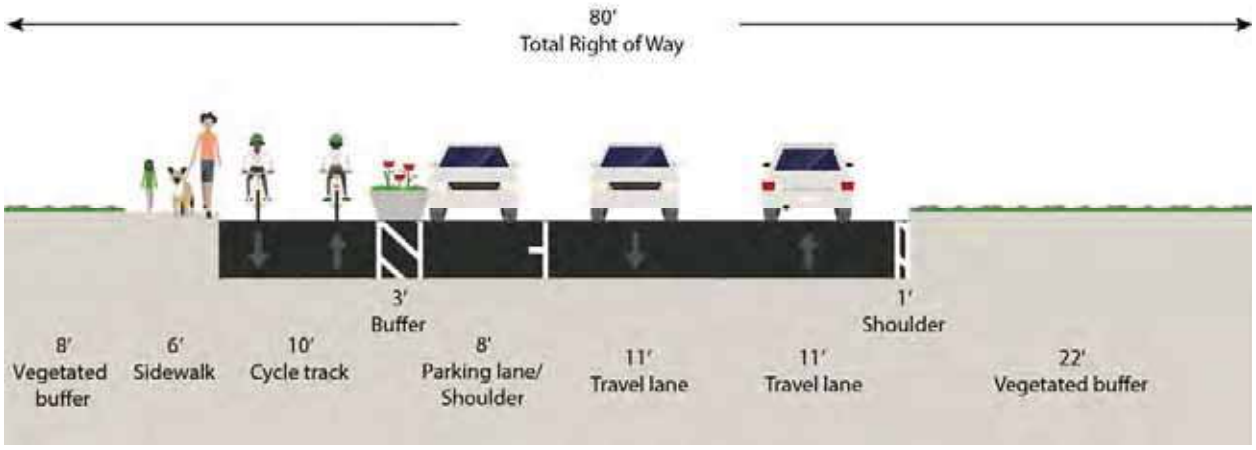


Impacts:

- No or limited impact on areas outside existing paved roadway.
- Extend curb into existing roadway on north/west side to accommodate sidewalk, which may have impacts on stormwater and underground utilities
- Parking on south/east side of Augustine Cut Off is removed (though minimal individual impact as there are only a few properties directly accessed on that side of the road)
- Coordination of mailbox placement and access points (driveways are generally consolidated and occur roughly every 150 feet)

The right of way available through Segment I is sufficient to allow flexibility in the width and kinds of treatments used to buffer the cycle track from motor vehicles lanes. Flexible tubes and planters (as

shown in the above cross section view) are a relatively low-cost and semi-permanent option, which could be used for a trial period or long term. Other buffer treatments could be wider (e.g. 6' or more) to provide greater protection and comfort for bicyclists and could include curbing and permanent landscaping. A wider buffer may require expanding the paved roadway further into the right of way. The following rough cost estimate does not factor in additional curbing and permanent landscaping.

Rough Cost Estimate (for cycle track): $1.5 million (does not include the multi-use path along the Incyte property)

Striped bicycle lanes on each side of Augustine Cut Off (not depicted on concept plans)

This alternative is recommended to supplement the Bicycle Boulevard option to provide a more direct route for cyclists of higher skill. This option could also be provided as a short-term / temporary improvement, providing bicycle connections through the study area while other, lower-stress improvements are made over time.

Continuing on-street bicycle lanes on both sides of Augustine Cut Off through the entire study area would require little investment and impact relative to the other alternatives. Through much of the corridor, this option would generally just require the addition of lane striping and symbols. Through the Cantera Road, Alapocas Drive, and West 18th Street Intersections, there would be more substantial adjustments, including short segments where asphalt would need to be widened (Cantera Road) and travel lane adjustments (Alapocas Drive and West 18th Street) made. No impacts to private property are anticipated.

Segment II—18th Street connection (jurisdiction: New Castle County)

Existing

This segment of the study area begins at the northern entrance to the Incyte development and the intersection with Cantera Road. A multi-use, curbed sidepath is situated directly adjacent to the road.

Augustine Cut Off is curbed through this segment. There is a single travel lane in each direction, with a wide shoulder on the east side of the road, used by adjacent residences for occasional parking. A bicycle lane is present through this section on the west side of Augustine Cut Off. Though the shoulder is wide, it is not marked as a bicycle lane.

Where Augustine Cut Off intersects with West 18th Street, at the north/east end of the intersection, the roadway measures approximately 62 feet curb to curb. (See Figure 4)

Figure 4: Intersection of Augustine Cut Off and West 18th Street looking south at existing pedestrian crossing of Augustine Cut Off (from Incyte property toward law office).

The south/west side of the intersection is approximately 71 feet curb to curb with a 5-foot sidewalk on the north side of Augustine Cut Off and a 6-foot sidewalk on the south side.

Augustine Cut Off and West 18th Street, right after the directional island in front of the salon area, measures 92 feet with a north sidewalk/trail at 10.6 feet and south sidewalk at 6.8 feet.

The intersection with West 18th Street and the entrance to the Incyte development is complex, with multiple turn lanes and driveways, which poses extra challenges for bicycle and pedestrian navigation.

Key Issues:

- Bicycle travel through this segment is currently provided for by the multi-use side path along the Incyte property and the southbound bicycle lane.
- Improvements through this segment should focus on reducing potential modal conflicts through the intersection and access to adjacent property.
- Addition of a northbound bicycle lane may be desirable through this segment, particularly if northbound bicycle lanes are maintained to the south and implemented to the north. Bicycle lanes would not be considered a low-stress option, however.
- Any alternatives considered for the intersection at West 18th Street will need to be coordinated with Incyte development plans. (Record plans have not yet been filed.)
- Coordination with nearby property owners, such as the salon and law offices on the south side of the road, and further review of traffic volumes and signal timing issues, will be important.
- The most desirable option is highly contingent on the design of the intersection of Augustine Cut Off with West 18th Street.

Alternatives

Continue multi-use sidepath along the north / west side of Augustine Cut Off (see page 30, Appendix A, concept plan sheets 2 and 3, orange linework along Incyte Phase II)

One recommendation is to extend the existing 8-to-10-foot sidepath along the north / west side of Augustine Cut Off bordering the northern extent (Phase I development) of the Incyte property. The sidepath should continue alongside the Incyte property to the north side of the bridge over the Brandywine Creek, at which point the facility would transition to the design selected for that segment of the corridor. A 10-foot-wide path is desirable, and coordination with the Incyte development regarding the design details, access management, and intersection treatments at West 18th Street will be important to ensuring a facility that supports a full range of users.

(No cost estimate, as this is assumed to be incorporated into Incyte development plans.)

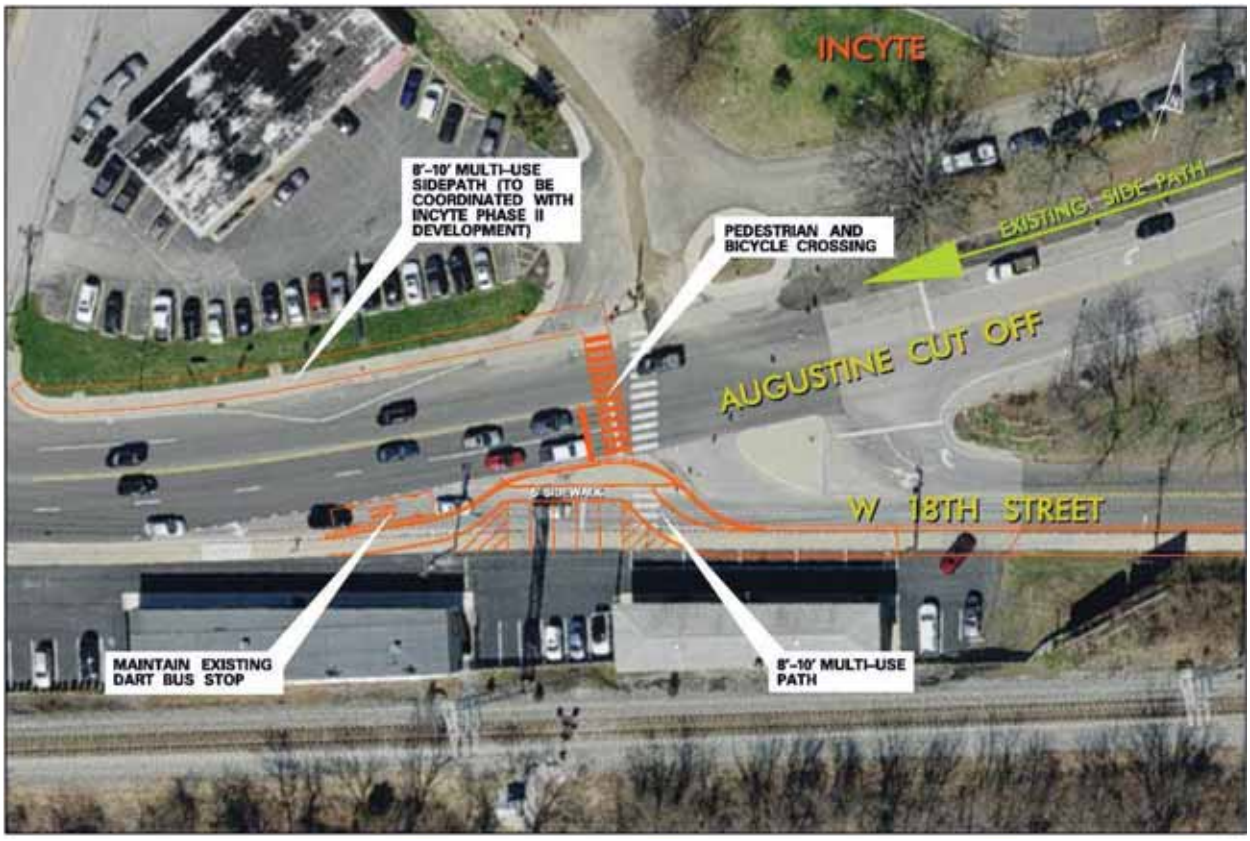
Intersection Treatment at Augustine Cut Off and West 18th Street (see page 30, Appendix A, concept plan sheet 3, orange lines on the south side of intersection)

This portion of the study area is one the busiest and most complex. This area is also quite constrained with regard to right of way, access management, and steep grades.

Designing this intersection to foster safe connectivity for bicyclists and pedestrians will be contingent on the next phase of development of the Incyte property, traffic counts, and coordination across many stakeholders. The following illustrates an innovative design that attempts to better accommodate bicyclists and pedestrians through the intersection, while also taking into account the needs of surrounding property owners and DART transit Route 28.

This possibility would rely on significant coordination with adjacent property owners—namely the Strand Salon—and other stakeholders and would require more in-depth study. See Figure 5 for details.

Figure 5: Innovative concept for enhancing the intersection of West 18th Street and Augustine Cut Off for bicyclists / pedestrians



Impacts:

- Removal of slip lane from northbound Augustine Cut Off to West 18th Street, with adjustment of curb and median islands. This modification would reduce speed of travel onto West 18th Street, which may make crossing safer for pedestrians and bicyclists, and improve ingress/egress from asingle northern access drive into salon.
- Addition of separate bus pull-off and enhanced transit stop for DART Route 28 users on east side of Augustine Cut Off in front of law offices.
- Salon parking moved from front of building to side adjacent to law offices.
- Enhancement to access and aesthetics of building frontage of salon, may include planters (to support sidewalk reconfiguration).
- Closure of southern access drive to salon and use of public right of way (slip lane) in front of the salon for new parking; existing sidewalk in front of salon is pushed out into existing median island.

Segment III—Brandywine Creek connection (jurisdiction: New Castle County; City of Wilmington)

Existing

From the intersection with West 18th Street across the bridge over the Brandywine Creek, and to Lovering Avenue, Augustine Cut Off is a single lane in each direction with bicycle lanes and sidewalks on both sides. The 40-foot curb-to-curb width includes 8-foot shoulders. There are 7-foot sidewalks on each side.

DART bus route 28 travels along Augustine Cut Off through this segment.

Key issues:

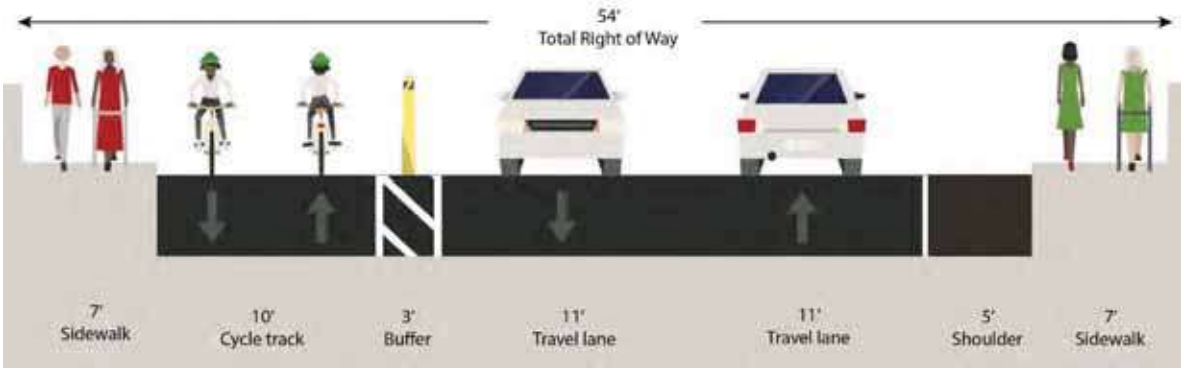
- Ideal location for a facility through this segment would be on the north / west side of Augustine Cutoff to join with recommended options for other segments of this study as well as other existing facilities on the north and west sides of this corridor
- Bridge structural capacity
- Emergency vehicle passage

Alternatives

Two-way cycle track on the north/west side of Augustine Cut Off (see page 30, Appendix A, concept plan sheet 2)

One option is to establish a two-way cycle track on the north/west side of Augustine Cut Off across the bridge. An 8-to-10-foot-wide, two-way cycle track would be established adjacent to the curb. A 3-foot buffer would be delineated using pavement markings and tubes to separate bicyclists from motor vehicle traffic. Figure 6 illustrates the recommended typical section (looking south/west) across the bridge, which would fit in the existing curb-to-curb space.

Figure 6: Proposed cycle track alternative for the Augustine Cut Off bridge across Brandywine Creek (looking north / east)



Rough Cost Estimate: $100,000.00 (including design and implementation)

This would be a continuation of a multi-use trail across the north side of the bridge by extending the sidewalk into the shoulder. However, the benefits of keeping pedestrian and bicycle traffic separated appear greater than the marginal benefit that might be made for bicyclists through elevating the bicycle facility. The cycle track alternative also offers a level of separation from motor vehicle traffic that will be more comfortable for bicyclists. Additional structural separation from motor vehicle traffic, such as Jersey barriers or concrete planters, could add additional comfort through this segment and would be worth evaluating in future study and design.

Evaluating the bridge's structural capacity is not within the scope of this study, so if this idea is deemed desirable, further evaluation would be needed.

Maintain striped bicycle lanes on each side of Augustine Cut Off across the bridge

Northbound bicyclists on Augustine Cut Off at Lovering Avenue do not have a bicycle lane, nor is there room within the existing curbed pavement to fit one. This option is less desirable, due to the challenge to provide a continuous facility for the full length of the segment and the Augustine Cut Off corridor.

Segment IV—Lovering Avenue and South Park Drive connection (jurisdiction: City of Wilmington)

Existing

At the south / west end of the bridge at Wawaset Street, Augustine Cut Off southbound consists of right and left turn lanes. The bicycle lane terminates at Wawaset Street. The sidewalk continues. There is a single northbound lane approximately 12 feet wide between the median island and curb. A 6- to 7-foot sidewalk is adjacent to the street.

There is a shared-use path along South Park Drive that connects to the trails along Brandywine Creek, to low-stress streets such as Kentmere Parkway, and to popular recreational destinations.

DART bus route 28 travels along Augustine Cut Off through this segment.

Key Issues:

- Consider eliminating left turns into and out of Wawaset Street to reduce conflicts; traffic study would be needed to evaluate the feasibility of this approach

Alternatives

At the south/west end of the bridge over the Brandywine Creek, two connections are being recommended to provide low-stress options for bicyclists to transition from facilities on the bridge to Lovering Avenue and the existing trail facilities along South Park Drive.

Multi-use side path from Wawaset Street to Lovering Avenue (see page 30, Appendix A, concept plan sheet 2)

It appears feasible to establish a 10-foot-wide multi-use side path by expanding the existing 6-foot-wide sidewalk into the adjacent green space, which is public right of way. There is approximately 24 feet between the edge of sidewalk and the nearest building, which would accommodate this treatment with no apparent private property impacts. The grading of the adjacent green space (shown in figure 7) may require a short retaining wall.

Figure 7: The suggested multi-use side path would require extending sidewalk into the grassy right of way along the north/west side of Augustine Cut Off between Wawaset Street and Lovering Avenue

Bike boxes and separate or advanced bike signal phases should be considered for the intersection at Lovering Avenue and Augustine Cut Off.

From Augustine Cut Off at Wawaset Street to South Park Drive (See page 30, Appendix A, concept plan sheet 2, orange linework meandering through open space)

As the two-way cycle track terminates on the west/south side of the bridge over the Brandywine, it should connect into a 10-foot multi-use trail through the green space on the northeast parcel at that intersection. The parcel is owned by the City of Wilmington (maintained by Delaware State Parks) and is partially covered with mature trees and mowed grass (see figure 8). The facility should traverse the parcel in a way that avoids impact to mature trees and utilities to the greatest extent possible.

Figure 8: Looking toward South Park Drive on parcel owned by City of Wilmington

The plan view shown on concept plan sheet 2 identifies those elements that should be avoided and provides a sample of how that pathway might traverse the space. Connections to the existing side path along the north side of South Park Drive will require ramp and grading transitions. Crosswalks should be added to draw attention to the likelihood of bicyclists and pedestrians crossing.

To reduce conflicts at Wawaset Street, motor vehicle access could be limited to right-in and right-out movements. This could be addressed by extending the median island further northward.

There is an existing DART bus stop (Route 28) located at the northeast quadrant of the intersection of Augustine Cut Off and Wawaset Street. This should be incorporated into future designs.

Development of any design for this area should review the status and details of any plans in place for the Brandywine Mill property to determine whether additional traffic may influence design details.

Rough Cost Estimate (for both connections): $200,000

Segment V--Connection to Franklin Street/Stadium Drive from 18th Street (jurisdiction: New Castle County; City of Wilmington)

Existing

West 18th Street between Augustine Cut Off and the railroad bridge measures 27.5 feet from curb to edge of asphalt with a 6.8-foot sidewalk on the south side. The posted speed limit along this corridor is 25 mph.

Directly under the railroad bridge, the road measures 24.4 feet from edge of asphalt to curb. There is a 6.4-foot sidewalk on the west side of West 18th Street with a total of 8 feet available between the west abutment and the bridge pier.

West 18th Street at the bridge over I-95 measures 39.5 feet from curb to curb with a 9.5-foot sidewalk on the north side and a 9.8-foot sidewalk on the south side.

At the parking lot on West 18th Street across from Salesianum School the road measures 39.5 feet wide with a 10.5-foot sidewalk on the north side and a 10-foot sidewalk on the south side.

At the North Broom Street intersection the road measures 39.5 feet with a 10.5-foot sidewalk on the north side and a 6' sidewalk on the south side.

DART bus route 28 travels along West 18th Street.

Key Issues:

- Stadium Drive traffic, which includes Delaware State Parks maintenance vehicles, summer camp drop off and pick up traffic, weekend/seasonal sporting event traffic using the ballfields and stadium
- Coordination with any redevelopment plans for Baynard Stadium and adjacent property owners/managers
- West 18th Street serves as one of few east-west connections between the Augustine Hills area and the destinations along the east bank of the Brandywine Creek, including the Triangle neighborhood
- Delaware State Parks suggested there may be an opportunity to create a connection between the east banks of the Brandywine Creek to West 18th Street by following an existing footpath under I-95 that extends from North Park Drive to Stadium Drive and then connecting to North Franklin Street and West 18th Street.
- Recommended alternatives through this segment will partially depend on and need to be coordinated with modifications to the intersection of Augustine Cut Off and West 18th Street (addressed under Segment II)

Alternatives

Multi-use side path under railroad bridge connecting to Stadium Drive (see page 30, Appendix A, concept plan sheets 3 and 6)

Key Issues:

- Alternatives through this segment are constrained by limited right of way and property access, particularly for 1702/1704 Augustine Cut Off, the roadside grades, and the CSX railroad bridge within a few hundred feet of the Intersection of Augustine Cut Off and West 18th Street.
- Because bicyclists are not allowed to ride on sidewalks in the City of Wilmington, appropriate signage would be needed to communicate permissible use of this facility.

Providing a low-stress facility for bicyclists traveling on West 18th Street could be accomplished by expanding and converting the existing 6-foot-sidewalk on the south side of West 18th Street into a side path. The side path would be 8 to 10 feet wide and would tie into the proposed crossing of Augustine Cut Off. Retaining walls and utility relocation may be needed to accomplish this option (see Figure 9).

Figure 9: Existing sidewalk on the south side of West 18th Street, looking east toward the curve in the road that travels under the railroad bridge. Extending the sidewalk into the grassy right of way to become a multi-use trail would likely require retaining walls and utility pole relocation.

Any option to establish a facility under the railroad bridge is limited by the 8-foot space between the abutment and pier (see Figure 10). Thus, the multi-use trail must be 8 feet for approximately 20 feet. Space on both sides of the bridge is sufficient to accommodate a 10-foot multi-use trail, which would require extending the curb into the street and/or the sidewalk toward the property line.

The use of signage and pavement markings alerting users to limited sight lines and a narrow passage at the railroad overpass is critical. Figure 11 shows the approach to the railroad bridge underpass on West 18th Street from the north side of the bridge. Users must be advised to travel in single file at slow speeds. Bicyclists and pedestrians would be required to share a facility in a complex and constrained corridor. As such, precautions for safety and reducing potential for conflict between modes is important for the safety of all users.

Figure 10: Existing sidewalk under railroad bridge along West 18th Street, looking south/east; clearance between pier and wall measures 8 feet.

Figure 11: Approach to the railroad bridge underpass on West 18th Street from the north side of the bridge. Limited sight lines and a narrow passage should be addressed by alerting users with pavement markings, signage, and other methods.

Recommended alternatives through this segment will partially depend on and need to be coordinated with modifications to the intersection of Augustine Cut Off and West 18th Street.

The sidepath from Augustine Cut Off could be continued along the south side of West 18th Street. The path should widen to at least 10 feet on the south side of the railroad bridge. This could be accomplished by pushing the curb into the existing roadway, and/or into the right of way at the back of the existing sidewalk. The latter may require retaining walls. Figure 12 shows the existing sidewalk, looking southeast.

The impacts of this alternative between the railroad and Stadium Drive would consist of curb relocation and stormwater impacts, relocation of two existing utility poles on the west side of West 18th Street, and removal of mature trees (some in decline and good candidates for removal) in front of Baynard Stadium. Actions in this area should be coordinated with any management/development agreements related to the stadium.

This option will also likely require stormwater adjustments. Based on the existing condition of the curb, gutter, and drainage in this area, such interventions may be needed regardless. (See photos 30-35 in Appendix C, photo log.)

Figure 12: View of the sidewalk along West 18th Street looking southeast from the southeast side of the railroad bridge (Baynard Stadium at right)

Continuation of multi-use trail on the south / east side of 18th Street (see page 30, Appendix A, concept plan sheet 6)

This option may be pursued as either widening the existing sidewalk or creating a new multi-use path separate from the existing sidewalk and within the park property.

The first route would require converting the existing 9.8-foot-wide sidewalk into a multi-use path. Once across the bridge, the facility would continue, requiring the existing sidewalk to be widened to 10 feet. This option would include utility pole relocation and impacts. It would also likely require adjustments to

the parking lot on the south side of West 18th Street adjacent to I-95. Mature trees along West 18th Street are likely to be impacted. Some are in decline and therefore may merit removal anyway.

Alternatively, a separate multi-use pathway could be created within the Brandywine Park property, toward the ball fields. This option would require closer review and coordination with park management to design an alignment that does not disrupt the sports activity and users. Parking, sidewalks, dugouts, and permanent concrete bleachers are all in close proximity to possible trail alignment. This option would maintain separate sidewalk along the street and may lessen the number of trees impacted, though some may still need to be removed due to impacts on the root systems.

Rough Cost Estimate (for multi-use path from west driveway of the Strand Salon to North Franklin Street): $1 million

Two-way cycle track across I-95 bridge (see page 30, Appendix A, concept plan sheet 6)

This option would require establishment of a 10-foot-wide, protected, two-way cycle track across the I-95 bridge on the west side of West 18th Street, adjacent to the existing 9.8-foot sidewalk. This option is unlikely to be feasible further south beyond the entrance to Brandywine Park ball fields parking lot. This approach would need to be integrated with other bicycle facility alternatives suggested for this West 18th Street corridor.

Rough Cost Estimate: $50,000 for design and implementation

Connecting to North Franklin Street / Brandywine Park along Stadium Drive (see page 30, Appendix A, concept plan sheet 6)

Stadium Drive offers a winding route for bicycles to points east. Bicyclists could be accommodated through this segment with the following general alternatives:

- Multi-use path integrated into the uses and circulation patterns of Baynard Stadium.
- On-street bicycle facilities using an advisory bike lane. This type of facility is made up of lines on the street that delineate bike lanes on each side of a single motor vehicle lane in the middle; when two cars meet, they both pull into bike lanes, but yield to cyclists. See figure 13 for further description[2].

Both alternatives are contingent upon closer review of traffic volumes on Stadium Drive (used heavily during sports seasons and certain days/times), and coordination with stakeholders, property owners and management (City of Wilmington, Salesianum School, Delaware State Parks).

[2]Source: White Paper: Advisory Bike Lanes in North America, August 2017, Alta Planning + Design

Figure 13: Diagrams of bicycle and motor vehicle travel use of an advisory bike lane facility

Operations of an Advisory Bike Lane

Streets with Advisory Bike Lanes operate as a type of shared-roadway environment where mixing, merging, and yielding is required and should be expected. The degree of mixing depends on the volume of bicyclists and motor vehicles, the directional flow of those volumes, and the width of various geometric design elements.

Diagrams of typical user interactions on Advisory Bike Lane installations are illustrated in **Exhibit 3** and **Exhibit 4**.

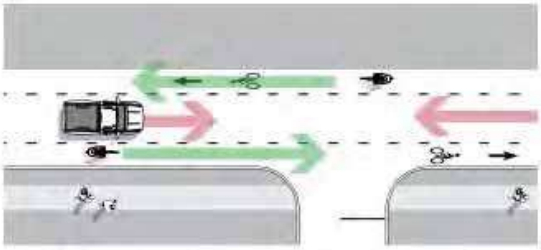


Exhibit 3: On a street with Advisory Bike Lanes during regular operations, motorists travel within the two-way travel lane and do not need to change lanes when approaching or passing bicyclists.

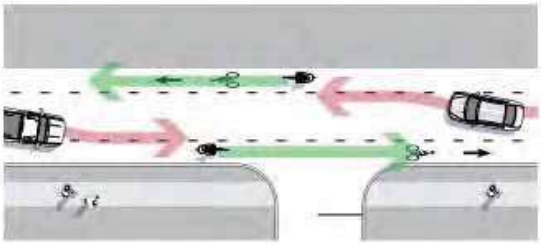


Exhibit 4: When approaching oncoming motor vehicles, motorists must merge into the Advisory Bike Lane. If a bicyclist is present, motorists must slow and yield to bicyclist traffic prior to entering the Advisory Bike Lane.

Natural and Cultural Resources

Natural Resources

Preliminary assessment of the environmental features of the project area indicate there are no natural resources present within the project area that are likely to dictate and/or restrain future design.

Our team reviewed the Watershed Resources Registry, Delaware version spatial analyses, that allows users to view any area in Delaware that displays areas of protection of high quality resources, restoration of impaired resources, and improvement of water resources. An environmental specialist also visited the corridor to identify potential jurisdictional wetlands and waterways. The registry shows no wetlands or waterways within the project area. Brandywine Creek is directly adjacent to and under the project area, but no impacts are anticipated, given that alternatives being considered for this study would not involve structural modifications to the bridge.

New Castle County is a designated bog turtle area. Future phases of design/construction may require a bog turtle assessment. For a construction project, the area needs to be searched for wetlands within 300 feet of the project area. Given the nature of the steep banks and no wetlands observed near the bridge, it is unlikely this would be a concern.

Subsequent concept development and design efforts associated with specific alternatives should include more thorough review to ensure that natural resources will not be adversely impacted.

Cultural Resources

It is important to note that the southern part of the study area borders the National Register Historic Districts of Brandywine Park and Kentmere Parkway, with a small portion of South Park Drive and Augustine Cut Off from Wawaset Street to the start of the bridge over Brandywine Creek being in this historic district. The historic district designation may place some minor constraints on subsequent design. This information was gathered on the State of Delaware's Cultural and Historic Resource Information System (CHRIS) mapping program and is shown on concept plan sheets 1 and 2 in Appendix A.

Conclusion

The study recommends the following next steps in exploring how low-stress bicycle facilities could be incorporated into the Augustine Cut Off area:

- Initiate/conduct public outreach to engage stakeholders in understanding opportunities, sharing their concerns, helping guide further design, and building support for possible implementation
- Develop concept and final designs, based on public outreach and the following implementation and phasing guidelines:

  The project study area was considered in terms of five main segments and each segment was considered in smaller sections to address different existing conditions and opportunities to limit impacts and costs. Should the City and/or County proceed with further design and construction, these segments can be packaged to meet grant funding requirements and/or implemented separately as funding and opportunities are available.

The alternatives considered in this plan are presented below in three categories related to phasing. Projects were assigned to a category based on the extent to which the alternative would add to the existing, surrounding low-stress bicycle facilities and network and also an approximate level of difficulty expected for proceeding with implementation.

Priority 1: higher connectivity value, low to moderate difficulty

- Segment IV, multi-use side path along Augustine Cut Off between Wawaset Street and Lovering Avenue
- Segment IV, multi-use side path from Augustine Cut Off to South Park Drive
- Segment III, explore options as part of Phase II of Incyte development plans for:
    - the multi-use trail connection between the bridge over the Brandywine and the existing side path along the Incyte property to the north

Priority 2: moderate value, moderate difficulty

- Segments I and II, work with the Wilmington Friends School, Incyte, and the surrounding community to explore options as part of Phase II of Incyte development plans for:
    - the Bicycle Boulevard on School Lane and multi-use trail connections through the Wilmington Friends School and Incyte properties
      OR
    - the multi-use side path and two-way cycle track along the north/west side of Augustine Cut Off

Priority 3: lower connectivity value, high to moderate difficulty

- Segment II, intersection redesign
- Segment V, all alternatives

New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	New Castle County
Project name:	Commons Boulevard Connector – Phase 2
Location:	Overall pathway will connect the Markell Trail to Commons Boulevard. This specific segment is between Rt. 141 and Airport Road, along Commons Boulevard

Project description (attach a map, graphics, and/or photos if available):

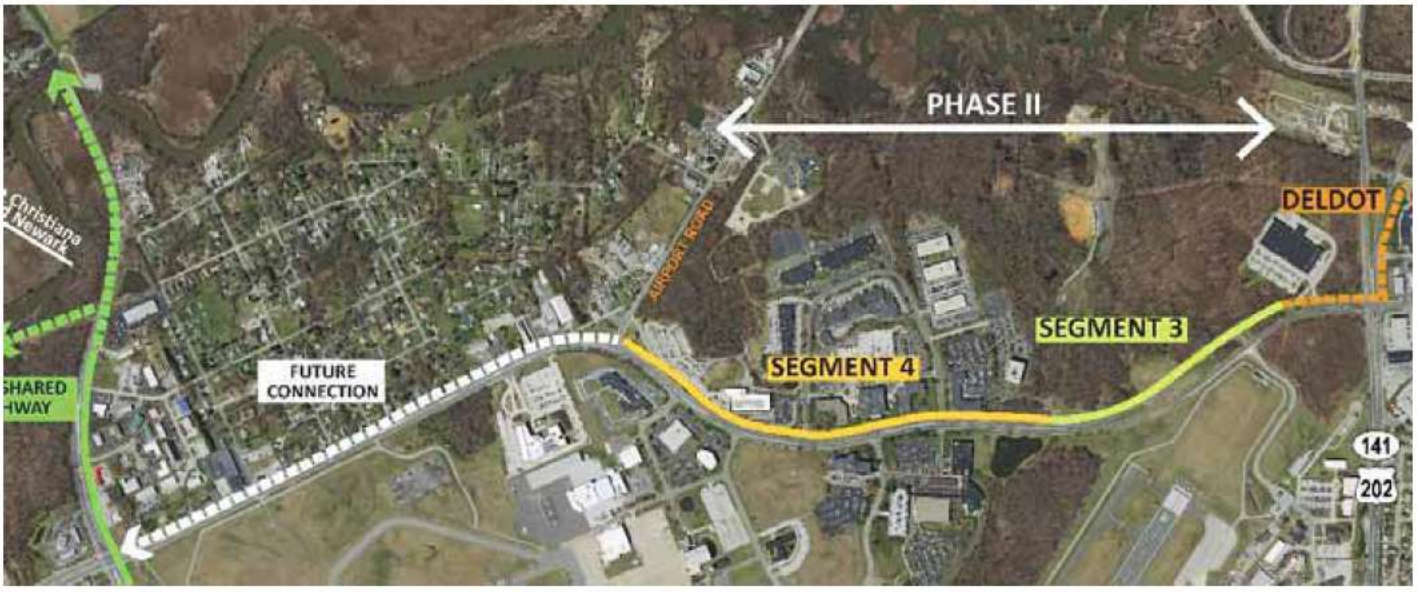
The Commons Boulevard Connector is a planned spur from the Jack A. Markell Trail to the employment center of Corporate Commons in New Castle. Specifically, the overall project will spur from the Markell Trail near the I-295 tunnel, connect through some Delmarva property and along Creekside Road, cross Rt 141, and continue as a separated pathway parallel to Commons Boulevard.

An initial feasibility study deems the project feasible, and this project description is specifically for the Phase 2 portion between Rt 141 and Airport Road, along Commons Boulevard. This is a one-mile segment planned to be a separated pathway for pedestrians and cyclists paralleling Commons Boulevard on the north / west side of the road.

Map 1: Overall project

Map 2: Project Phases

Map 3: Phase 2 details (focus for this project description)



Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)

For cycling infrastructure, what type is suggested: Off road path/trail

Please provide additional description about the suggested facility or program type if known:

The alignment for this off-road, separated pathway is entirely in the DelDOT right-of-way. The feasibility study assumes a 10' wide asphalt shared pathway with 5' buffers. Details are in the attached study (Commons Boulevard Pathway Feasibility Study). See pages 22 – 28 for the phase highlighted in this project summary.

Separately, New Castle County is seeking grant funding to complete final design for the Phase 1, Section 1 portion of the project. We anticipate that this section, mostly on Delmarva property, is one that the County's construction team can build.

What are the primary expected benefits of the project:

This pathway will connect anyone accessing the Markell Trail with the largest employment center in the county: Corporate Commons. Residents in both the City of Wilmington and the Town of New Castle (and the communities in between) will be able to safely commute via this project. Currently there are pedestrians and cyclists walking and riding in the gutter along Commons Boulevard, where drivers regularly exceed the speed limit. This separated pathway will alleviate that safety hazard and allow more people to get to work and the Wilmington University campus on Reeds Way without needing car transportation.

What other plans, if any, include this project (attach or include links if available):

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Need to complete:

- Legal agreement with Delmarva
- Easement agreement with Gannett (News Journal building)

Other considerations:

- There are multiple streams with existing culverts, some of which will require extensions
- There are some above and below-ground utility boxes in the proposed alignment
- While the proposed alignment is within the right-of-way, collaboration with employers (both tenants and property owners) will be critical. Initial discussions with corporate leaders have proven positive, as they see the benefits to employees.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

There are approximately 10,000 employees in the Corporate Commons East and West complexes. Additionally, Wilmington University's graduate campus sits on Reeds Way, accessible to the planned project.

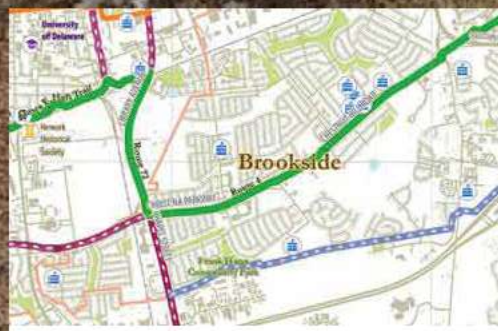
This pathway would provide safe off-road access for those employees commuting from Wilmington or New Castle or communities in between.

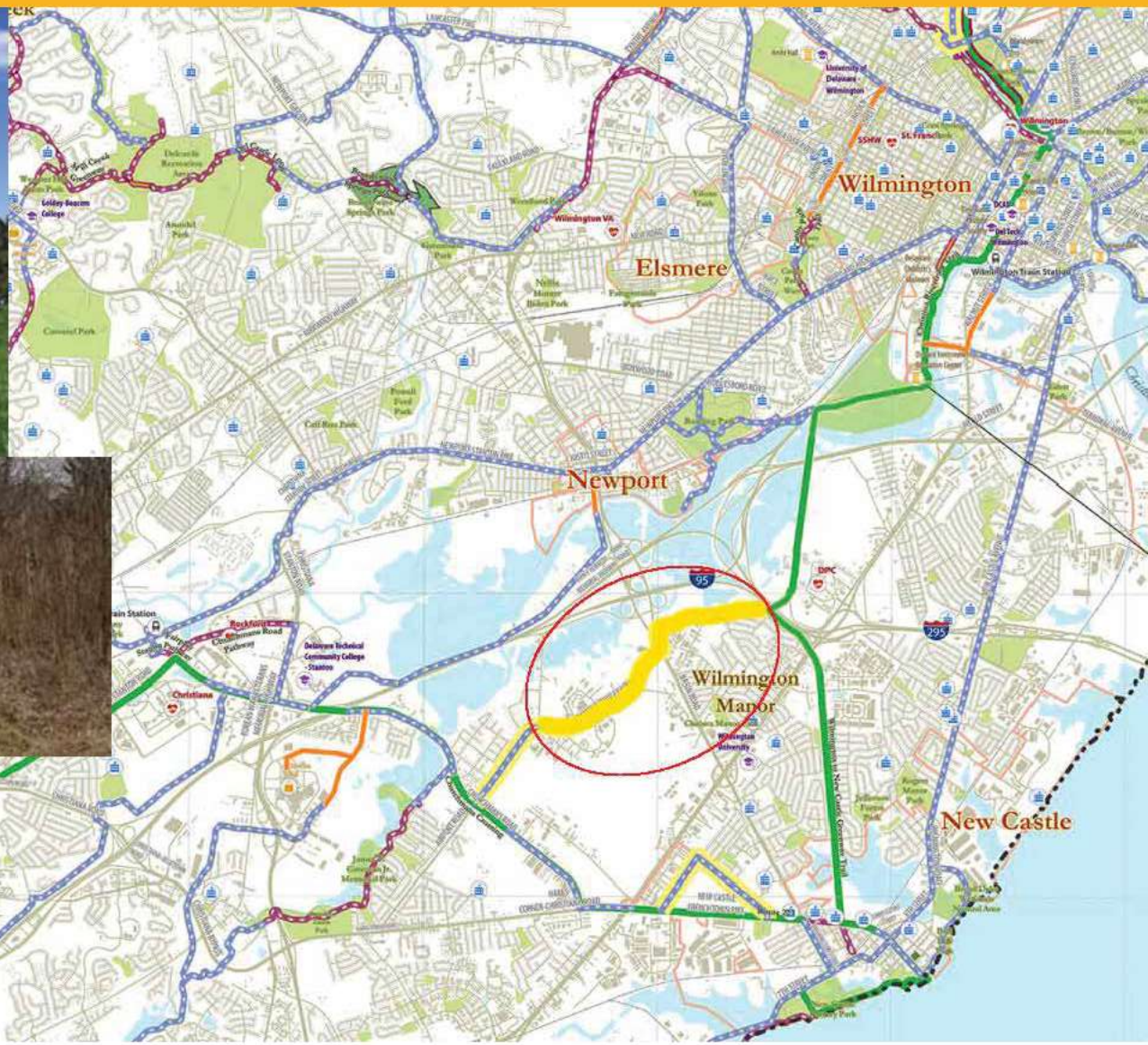
Describe how this project will fill a gap or create a bicycling transportation connection:

Describe any community support for this project that you are aware of:

Delaware Greenways provided funding toward the feasibility study.
Employers along the proposed alignment have participated positively in reviewing the feasibility study.
State Representative Melissa Rogers-Brown and Senator David McBride have been engaged in the project discussion.
County Councilman George Smiley is supportive and plans to participate in public discussions.
Meeting with the closest residential community to the pathway (Robins Nest) is next on project plan, followed by broader cluster of neighborhoods (Wilmington Manor, Leedom Estates, Chelsea Estates, Robins Nest).

Commons Boulevard Pathway Feasibility Study





Stakeholder Meeting - April 2019

Project Introduction

New trails planned: 12

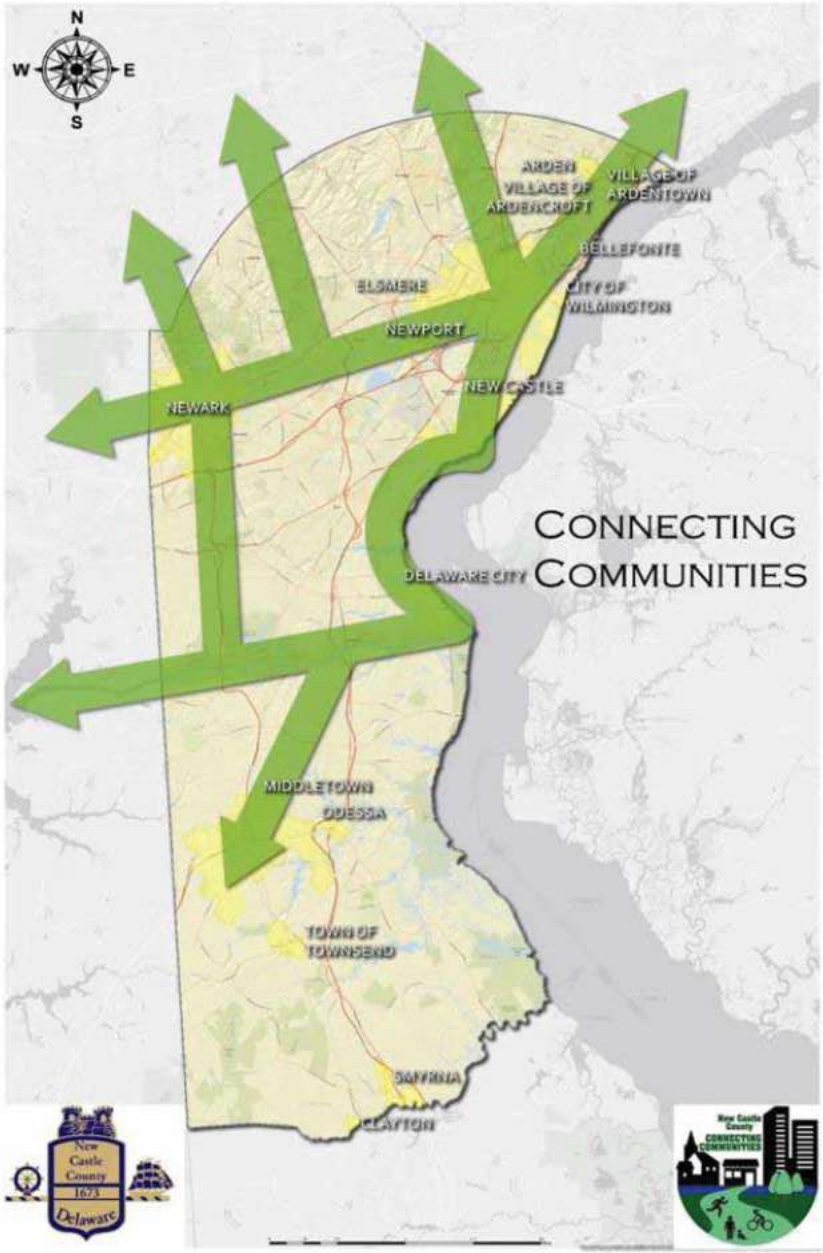
Miles of trails: 100 by 2024

New trails started: 3

Outside funding awarded: $50k

Partners:

- Federal, state and local government
- Delaware Greenways
- East Coast Greenway Alliance
- WILMAPCO
- Delmarva Power
- Delaware River and Bay Authority
- Private sector employers



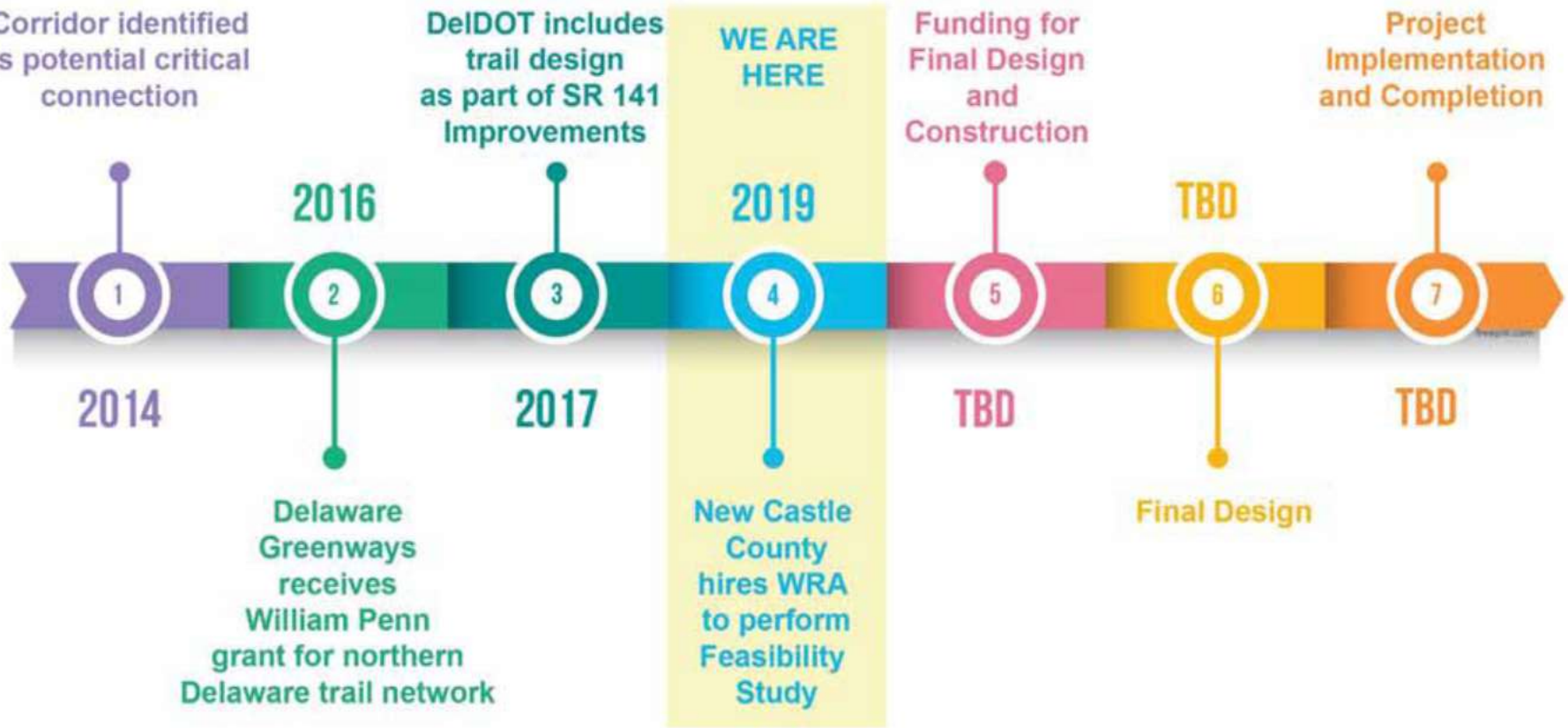
Project Introduction

- The County is finalizing a shared use pathway feasibility study to provide a connection from the existing Jack A. Markell Trail near I-295 to New Castle County's largest employment center along Commons Boulevard
- Project promotes Walkable, Bikeable Delaware
- In support of the County's Connecting Communities Initiative

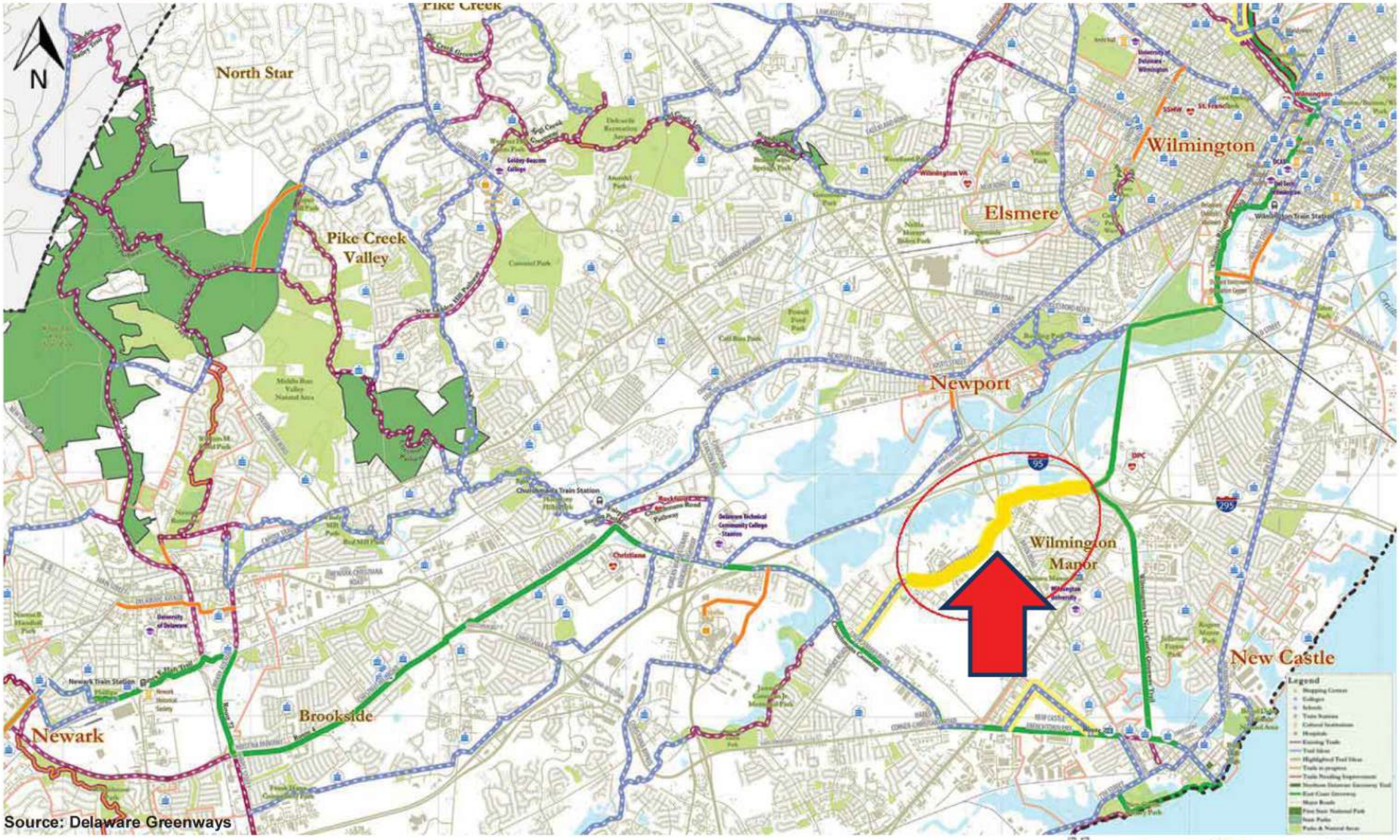
Project Introduction

- Provides a key bicycle and pedestrian connection from Wilmington to major employers
- Expands a low stress alternative Countywide transportation network
- Initiates a trail connection between Wilmington to Christiana area and beyond

Project Background



Context


N
North Star
Pike Creek
Pike Creek Valley
Elsmere
Wilmington
Newport
Wilmington Manor
New Castle
Brookside
Newark
Source: Delaware Greenways

Project Phases

1 Phase I - Segments 1 & 2
Jack A. Markell Trail to SR 141

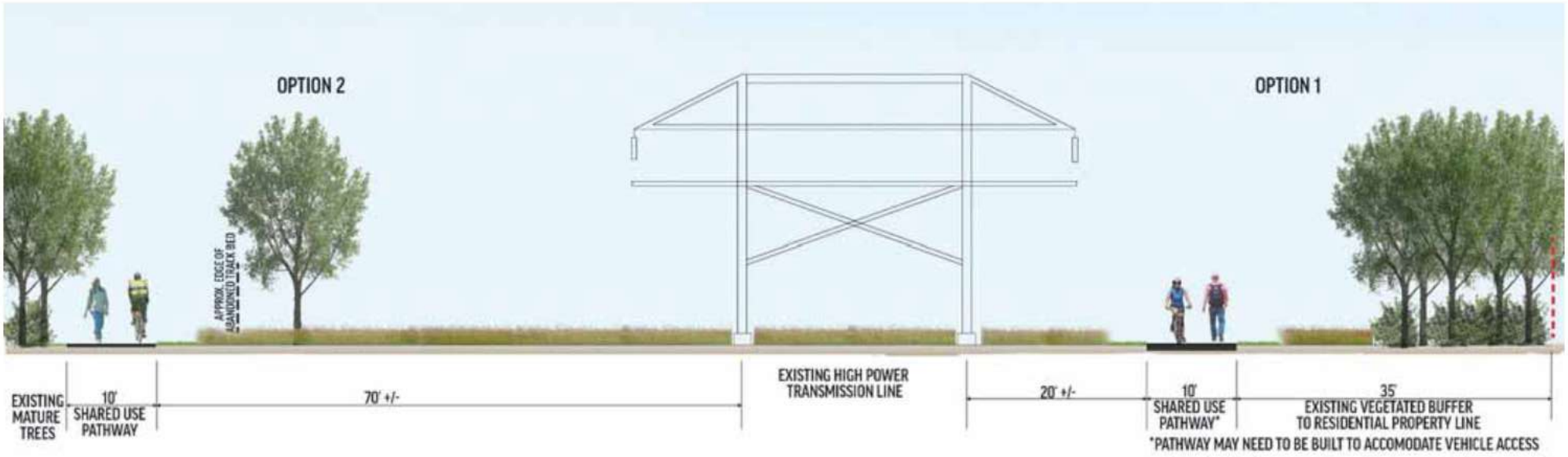
- Approximately 0.85-mile section that connects the existing Jack A. Markell Trail to proposed SR 141 intersection improvement project
- Private property owners: Delmarva Power and Harvey Hanna
- Primary alignment follows abandoned railbed and Creekwood Road
- Trail design must meet Delmarva requirements to allow access and maintenance of overhead high voltage transmission lines
- Direct access from businesses along Creekwood Road
- Potential access from adjacent residential neighborhoods

1

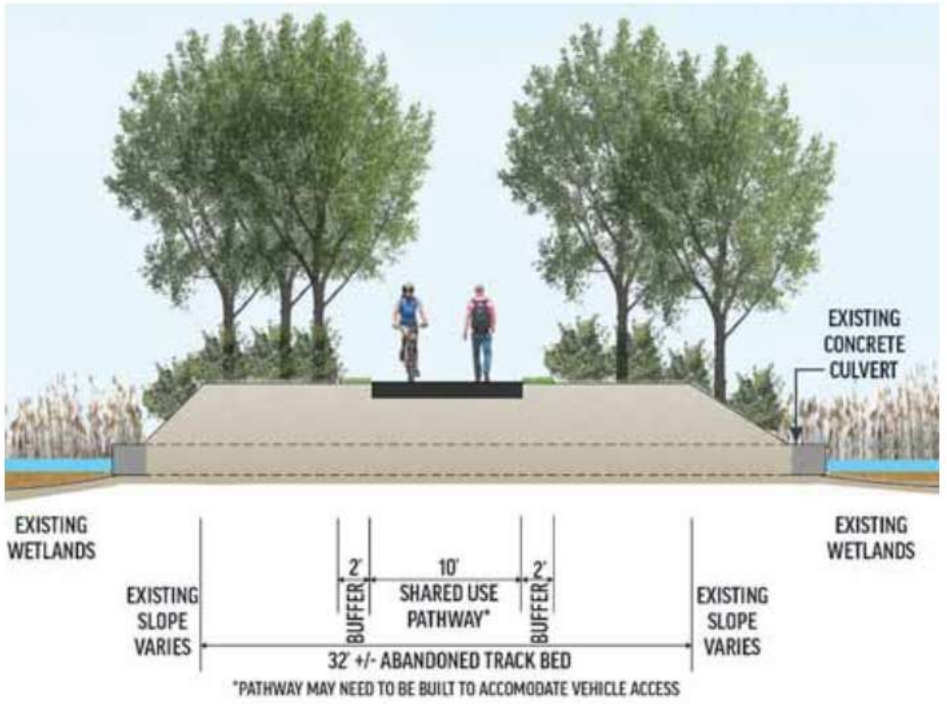
Phase I - Segment 1

Jack A. Markell Trail to Creekwood Road

1 Phase I - Segment 1
Jack A. Markell Trail to Creekwood Road



1 Phase I - Segment 1
Jack A. Markell Trail to Creekwood Road



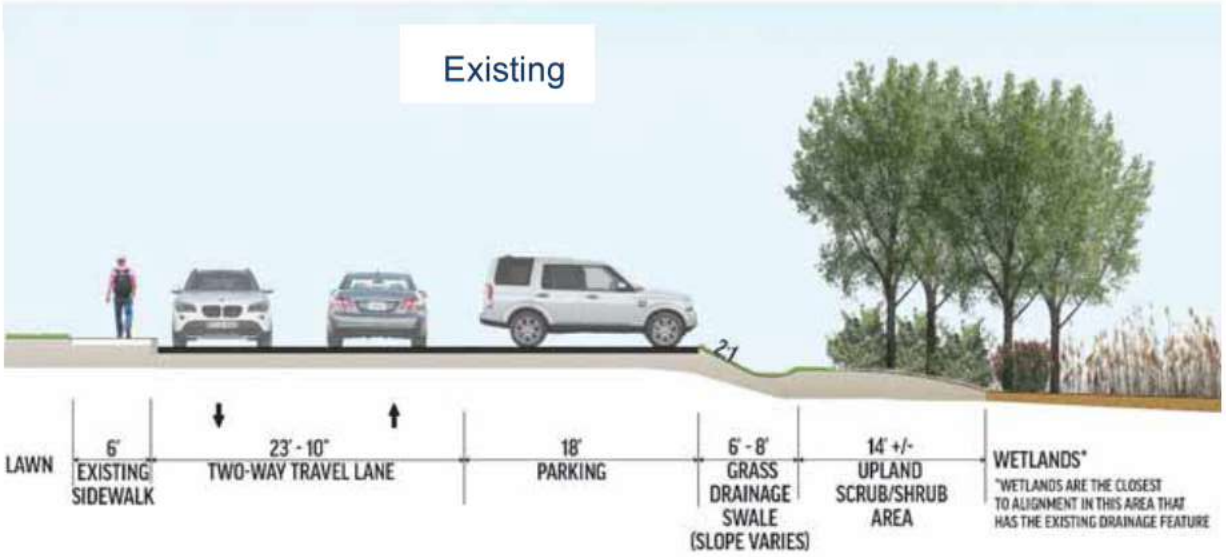
1 Phase I - Segment 2
Creekwood Road to SR 141

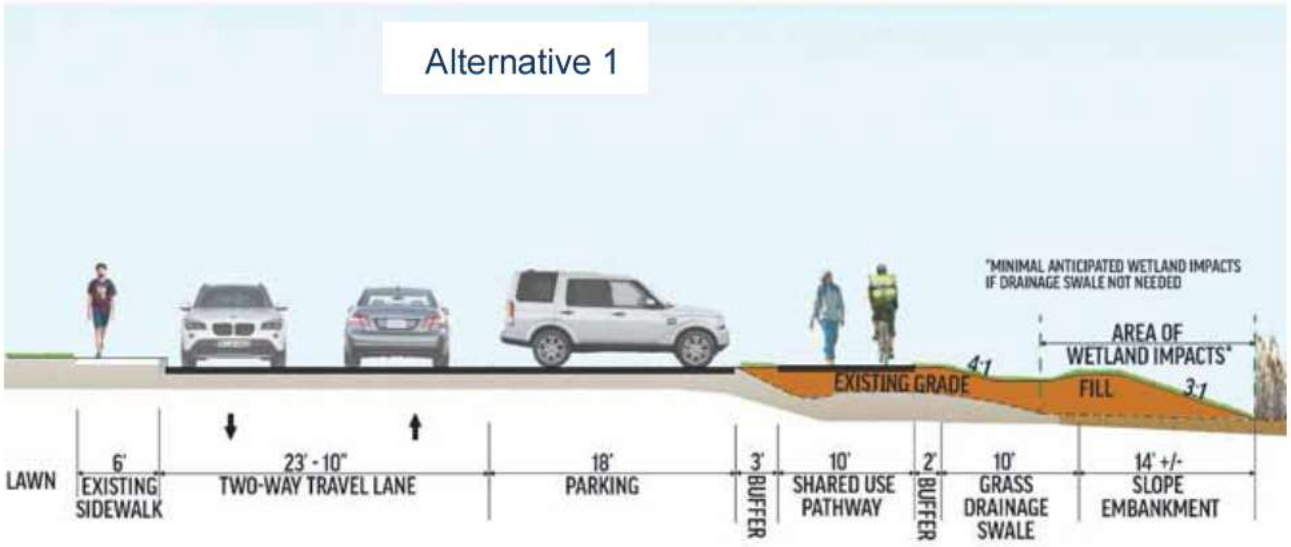
1 Phase I - Segment 2
Creekwood Road to SR 141

1 Phase I - Segment 2
Creekwood Road to SR 141

Parking Lot Area
Alternative 1

- 10’ wide asphalt shared use pathway
- Relocation of drainage swale; recommended slopes and width shown
- Anticipated impacts to wetlands in some locations

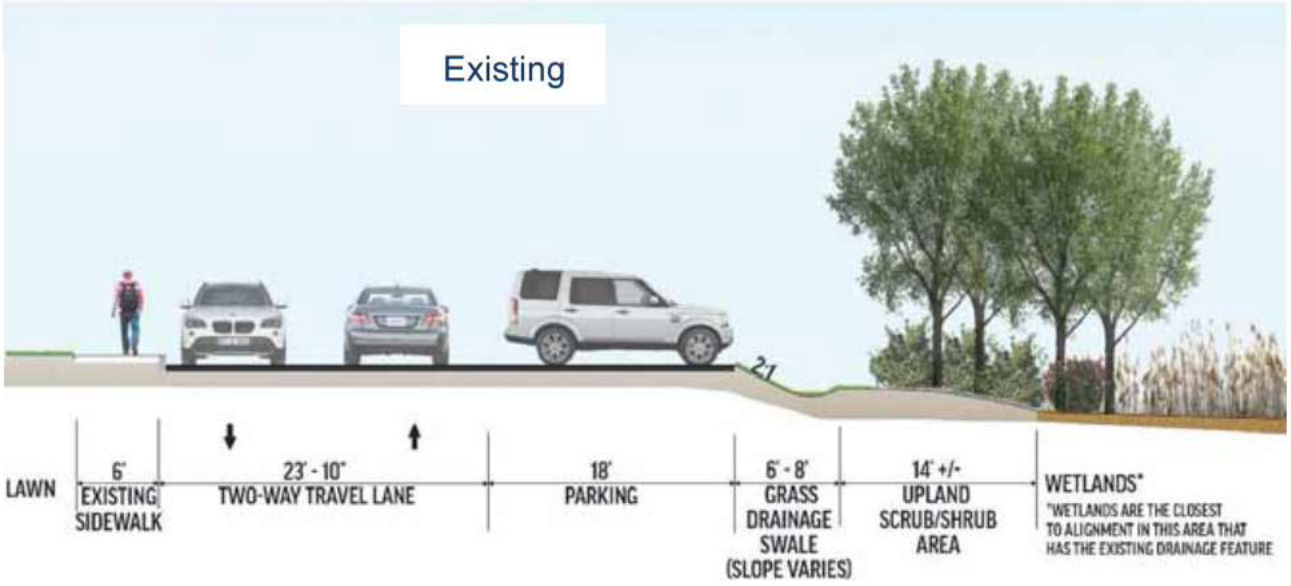


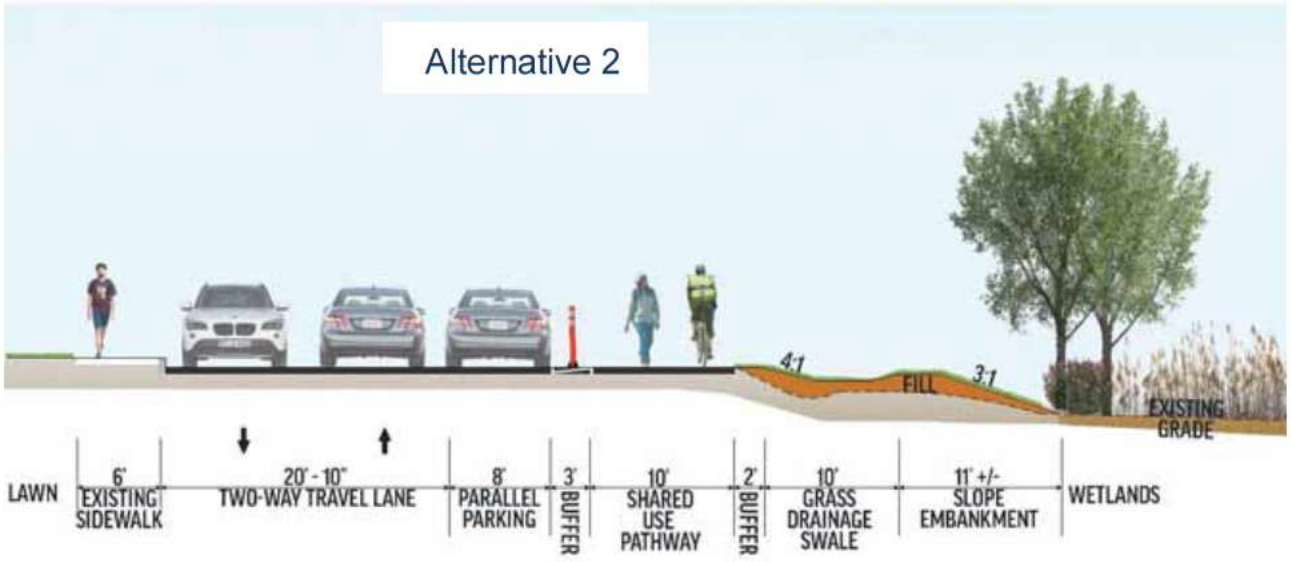


1 Phase I - Segment 2
Creekwood Road to SR 141

Parking Lot Area
Alternative 2

- 10’ shared use pathway
- Reconfigure existing parking spaces to parallel parking
- Reconstruct drainage swale with recommended slope and width
- No impacts to wetlands anticipated



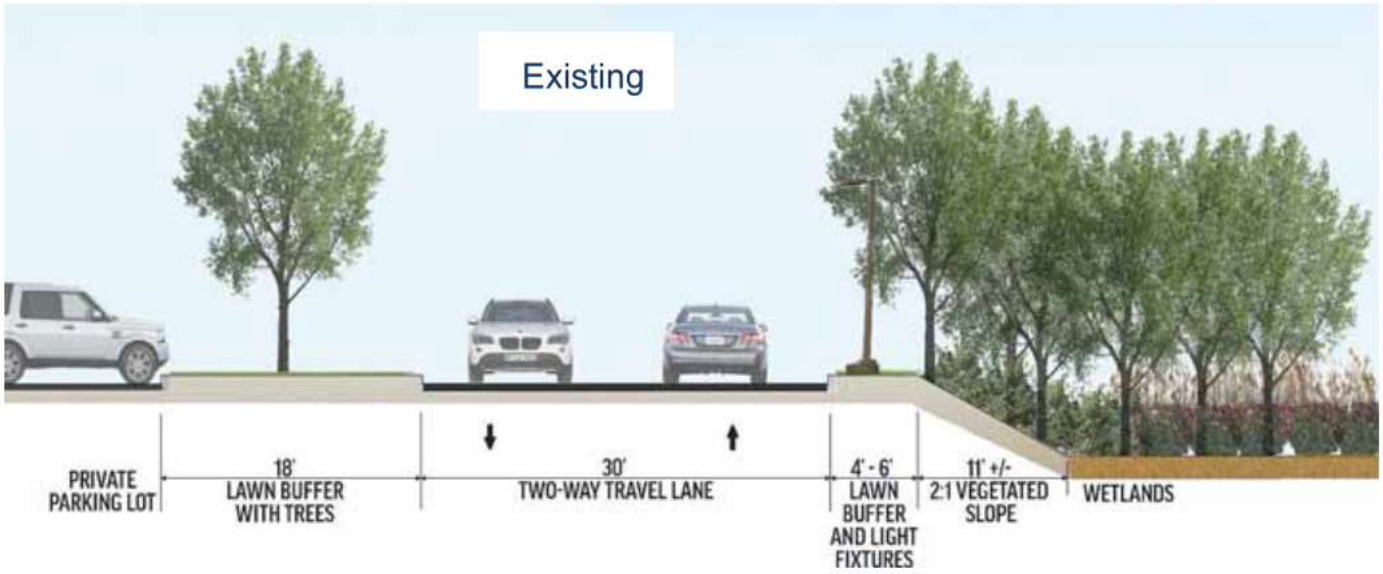


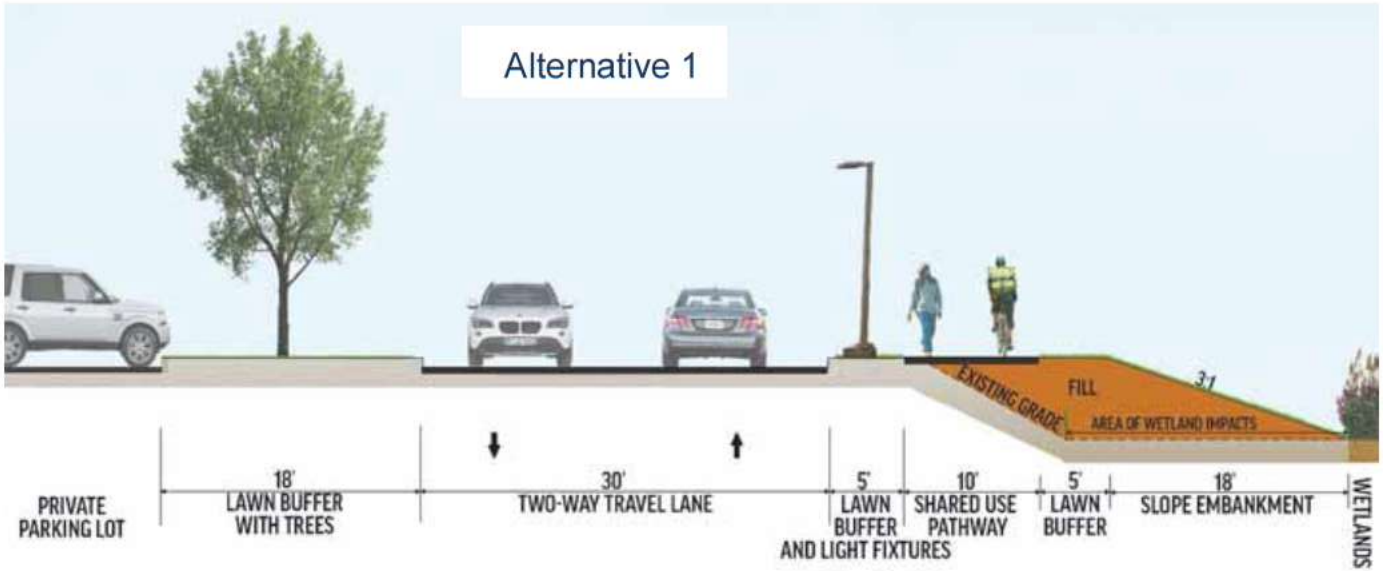
1 Phase I - Segment 2
Creekwood Road to SR 141

1 Phase I - Segment 2
Creekwood Road to SR 141

Creekwood Entry Drive
Alternative 1

- 10’ wide shared use pathway with required 5’ buffer from travel lane
- Impacts to wetlands and streams
- 4 existing curb cut inlets for roadway drainage
- Higher cost alternative



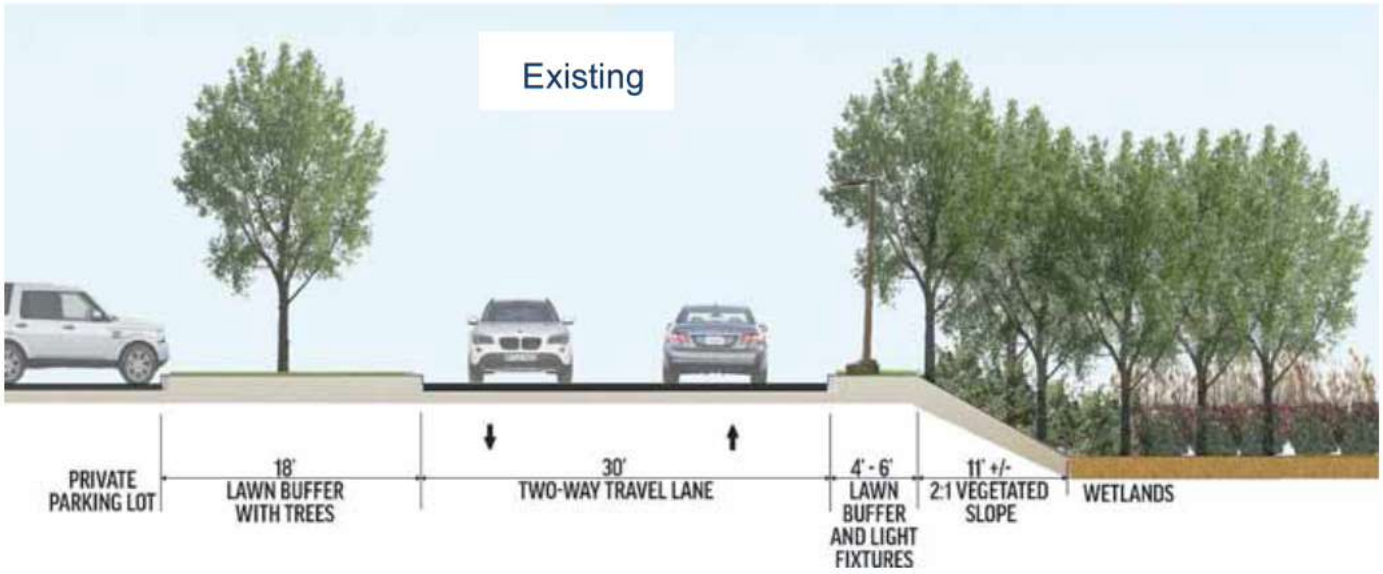


1 Phase I - Segment 2
Creekwood Road to SR 141

Creekwood Entry Drive

Alternative 2

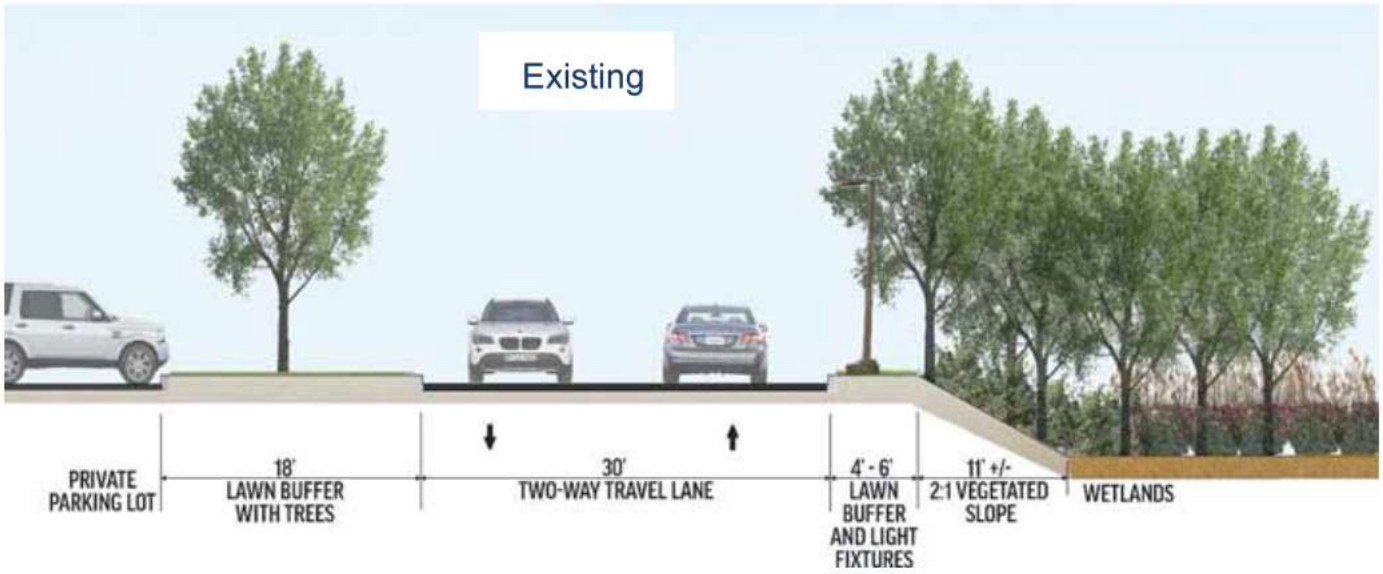
- 10’ wide shared use pathway on existing privately owned parking buffer area
- No impacts to streams or wetlands
- Removal of trees in buffer area
- Lower cost alternative



1 Phase I - Segment 2
Creekwood Road to SR 141

Creekwood Entry Drive
Alternative 3

- 6’ sidewalk in existing lawn buffer area
- 8’ wide two-way cycle track with 2’ buffer on existing drive
- Reduction of existing travel lane by 10’
- No impacts to wetlands or streams
- Lower cost alternative



DelDOT

Connecting Across SR 141

SR 141 Intersection Improvement Project by DelDOT

- Connects Creekwood Road to future Commons Boulevard pathway to the west of FedEx
- Currently in final design
- Anticipated construction completion in 2020

Project Phases

2 Phase II – Segments 3 & 4
SR 141 to Airport Road

- Approximately 1-mile section that connects Phase I and the SR 141 intersection improvement project to businesses along Commons Boulevard
- Alignment entirely in public right of way
- Potential for businesses to connect to trail
- Multiple stream crossings with existing culverts
- Multiple underground and above-ground utilities in Segment 4
- For Phase II to be a success, public and private partnership is a must

2 Phase II - Segment 3
SR 141 to Speedway Drive

LEGEND

- PROPOSED 10' WIDE ASPHALT SHARED USE PATHWAY
- ALTERNATIVE ALIGNMENT FOR PROPOSED SHARED USE PATHWAY
- PROPOSED CONCRETE CURB AND GUTTER OR DRIVEWAY APRON
- PROPOSED RETAINING WALL
- PROPOSED GRASS BUFFER
- EXISTING PHOTO LOCATION
- EXISTING UTILITY POLE
- EXISTING TRAFFIC POLE
- EXISTING CURB AND GUTTER
- EXISTING ABOVE GROUND UTILITY
- EXISTING MAILBOX
- EXISTING STREAM
- EXISTING WETLAND (DELINEATED)
- EXISTING WETLAND (GIS MAPPING)
- EXISTING DRAINAGE FEATURE
- EXISTING CULVERT

2 Phase II - Segment 3
SR 141 to Speedway Drive

2 Phase II - Segment 3
SR 141 to Speedway Drive

Typical Stream Crossings

- 10’ wide asphalt shared use pathway with required minimum 5’ buffer
- Culvert extension and stream impacts anticipated

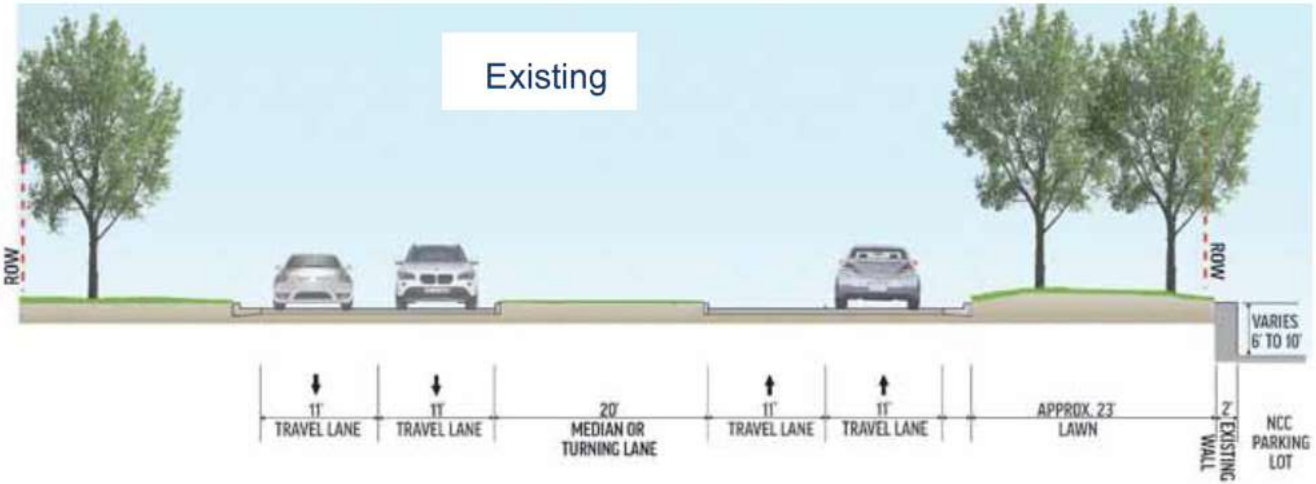
2 Phase II - Segment 4
Speedway Drive to Airport Road

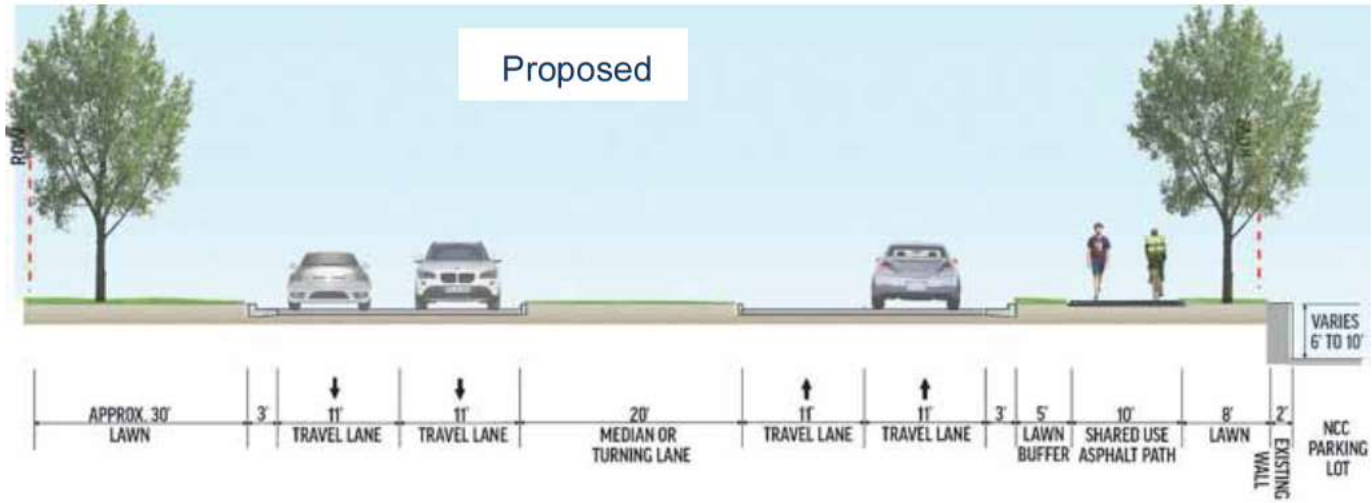
2 Phase II - Segment 4
Speedway Drive to Airport Road

2 Phase II - Segment 4
Speedway Drive to Airport Road

Typical Section near NCC Building

- Significant available right-of-way
- Minimal tree impacts
- Retaining wall offset to avoid impacts





3 Future Connections

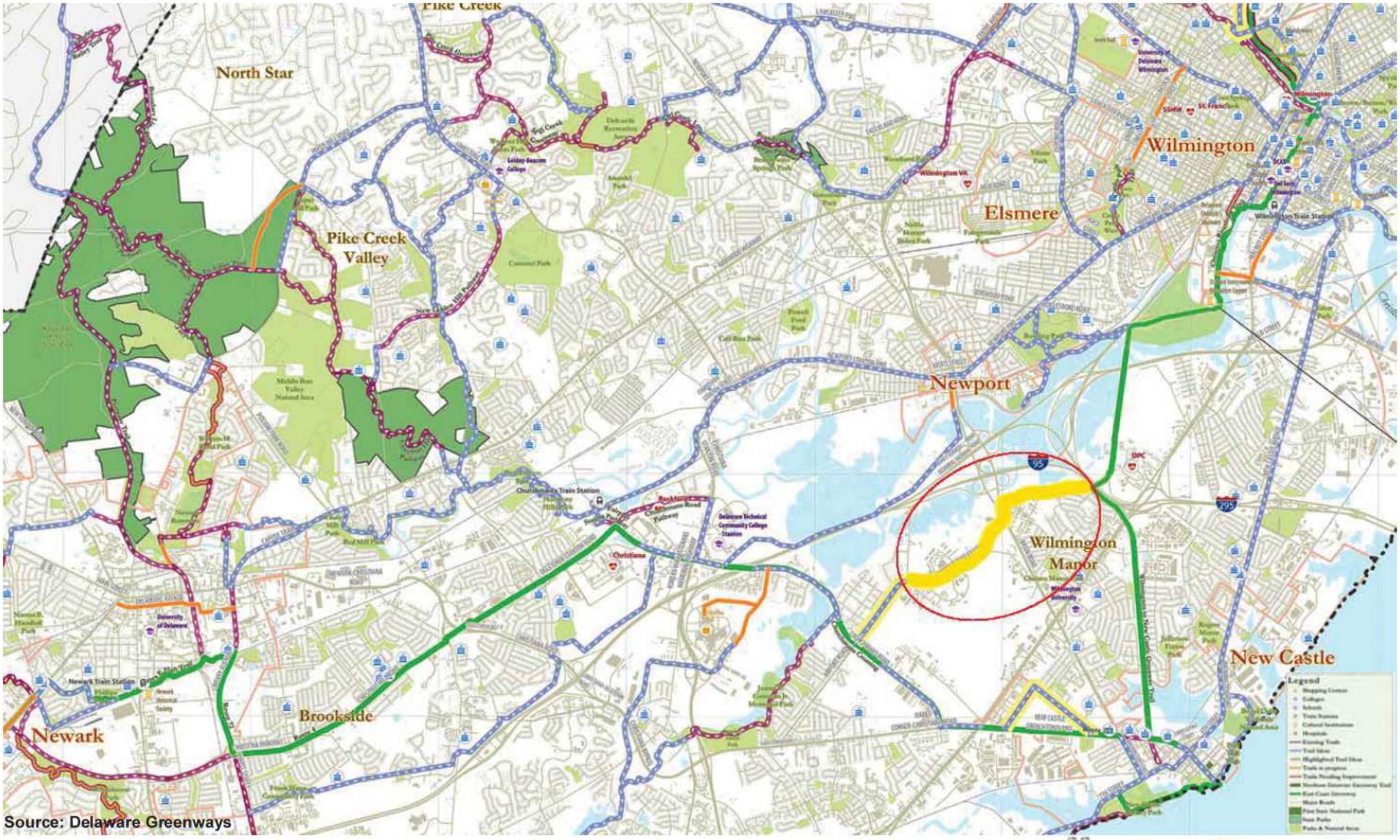
- Potential connection from Phase II of Commons Boulevard trail to existing shared use trail at Churchmans Road Intersection
- Expands the low stress alternative transportation network from Wilmington to Christiana area and beyond
- Some existing sidewalks and on roadway bike lanes

Next Steps

- Finalize feasibility study and level of cost
- Present feasibility study to the community
- Identify final design and construction funding sources

BUILD IT!

Questions/Comments



New Castle County Bicycle Plan
Priority Project Information

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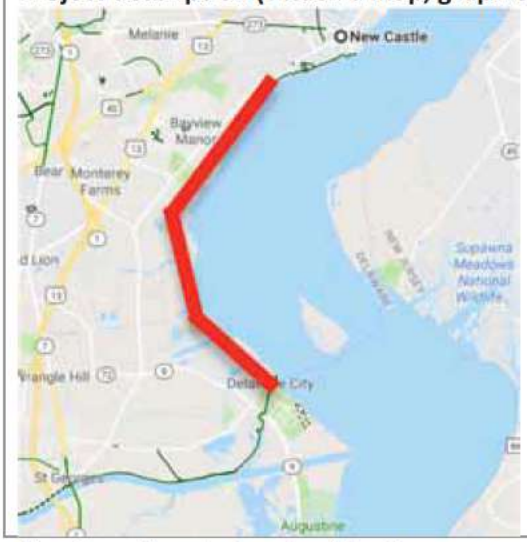
Project Summary

Submitting organization:	New Castle County
Project name:	Battery to Battery Trail (Connecting the Markell and Castle Trails)
Location:	New Castle to Delaware City

Project description (attach a map, graphics, and/or photos if available):



Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

The proposed project would extend the New Castle Riverwalk Trail (a paved asphalt pathway) along the Delaware River to Battery Park in Delaware City thereby connecting the Markell and Castle Trails and creating an uninterrupted trail all the way from Wilmington to Chesapeake City, Maryland (creating what would be one of the longest continuous trails anywhere on the East Coast).

The 10-mile section of the Delaware River between New Castle and Delaware City is currently almost completely inaccessible to the public but includes beautiful and undiscovered views of the Delaware River, unknown beaches, marsh lands and other natural areas that rival in visual interest the most scenic parts of Delaware's coast.

What are the primary expected benefits of the project:

This project would connect the state's longest trail (the Castle Trail) to the Markell Trail, creating an uninterrupted bicycle pathway all the way from Wilmington to Chesapeake City, Maryland (also creating what would be one of the longest continuous trails anywhere on the East Coast).

What other plans, if any, include this project (attach or include links if available):

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

Property ownership along the Delaware River and east of Route 9 River Road is mostly private commercially owned property and largely vacant along the proposed route. Delaware City Refinery security requirements, wetlands, inland creeks, and marshlands access will all require evaluation.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

Historic Cities of Delaware City and New Castle commercial districts, places of employment along Route 9, residential communities already in place and recreational destinations such as Kirkwood Soccer.

Describe how this project will fill a gap or create a bicycling transportation connection:

This project would connect the state's longest trail (the Castle Trail) to the Markell Trail, creating an uninterrupted bicycle pathway between Wilmington, New Castle, Delaware City and Chesapeake City, Maryland.

Describe any community support for this project that you are aware of:

In both New Castle and Delaware City, municipal and community leaders have been elated with the activity and business that the Markell and Castle Trails have brought to their communities. Sen. Majority Leader Nicole Poore, House Majority Leader Valerie Longhurst, New Castle City Council President Linda Ratchford, New Castle Mayor Michael Quaranta and Mayor Paul Johnson of Delaware City will all be highly supportive.

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	New Castle County
Project name:	Newport Connector
Location:	Connecting Markell Trail to Newport along Christina River & Newport Industrial Park

Project description (attach a map, graphics, and/or photos if available):
This approximately 2-mile pathway will connect the Markell Trail to S. James Street in the Town of Newport. Image 1 below shows in blue the intersection with the Markell Trail and the proposed alignment along and over the Christina River (and parallel to the Amtrak line).

Image 2 shows in yellow how the pathway would continue through the Newport Industrial Park, along Water Street and connect into the heart of Newport.

An alternate alignment in orange shows an option to continue the pathway to the boat dock and proposed future home of an environmental center.

Number of projects submitted by your organization:	7
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Regional facility (greater than 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

This pathway would provide a valuable connection between the Town of Newport and the Markell Trail, allowing cyclists and pedestrians to connect among Wilmington, New Castle and Newport for work and play. The Newport Industrial Park, Newport Boat Ramp, an anticipated new SEPTA station in Newport, a planned environmental education center along the Christina River, and other planned residential and commercial development in Newport would all become accessible to transportation and recreational cyclists.

This connection would be a combination of off-road pathway / boardwalk in some sections, and on-road facility in the Newport Industrial Park. A 2018/2019 feasibility study made possible in part by a DBC Cycling Infrastructure Innovation grant investigated alignment options and challenges.

What are the primary expected benefits of the project:

The Newport Connector Pathway will link three of New Castle County's population centers. Once completed, 55% of New Castle County residents will have access to a safe off-road pathway connection between the City of Wilmington, the City of New Castle and the Town of Newport.

Demand for these types of pathway connections is demonstrated by a recent Statewide Comprehensive Outdoor Recreation Plan (SCORP) survey, which shows that 98% of New Castle County residents indicate investments in parks, trails and natural spaces are important. The same survey shows that nearly two thirds of New Castle County residents think that bike and pedestrian pathways between places of work, school, shopping areas and other neighborhoods should be an important priority for state and local decision makers.

What other plans, if any, include this project (attach or include links if available):

This pathway is identified in both DelDOT's 2014 Newark to Wilmington Pathway Study and the 2014 Town of Newport's 2014 Comprehensive Plan.
DelDOT's 2014 Newark to Wilmington Pathway Study considered the whole region, evaluated the existing trail network, and determined where trail connections should be further evaluated and prioritized, emphasizing the importance of completing "missing links," or filling in the gaps of Delaware's trail network in this region. The report identifies a pathway (Segment C09 of the Central Map) that extends west from the Wilmington to New Castle Pathway at I-95 to James Street in the Town of Newport, which mirrors this proposal (see image below).

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

The anticipated route runs near that Amtrak tracks and also near the County's Christina River Sewer Force Main (main artery of the sewer system). A feasibility study conducted by WRA identified an alignment that would avoid the Force Main and would have a boardwalk and bridges over the Christina River and wetlands.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

This pathway would provide a valuable connection between the Town of Newport and the Markell Trail, allowing cyclists and pedestrians to connect among Wilmington, New Castle and Newport for work and play. The Newport Industrial Park, Newport Boat Ramp, an anticipated new SEPTA station in Newport, a planned environmental education center along the Christina River, and other planned residential and commercial development in Newport would all become accessible to transportation and recreational cyclists.

Describe how this project will fill a gap or create a bicycling transportation connection:

This 'spur' leveraging the investment in the Markell Trail will allow people living and working in Newport to connect easily to Wilmington and New Castle. This connection will also make progress toward connecting Wilmington to Newark.

Describe any community support for this project that you are aware of:

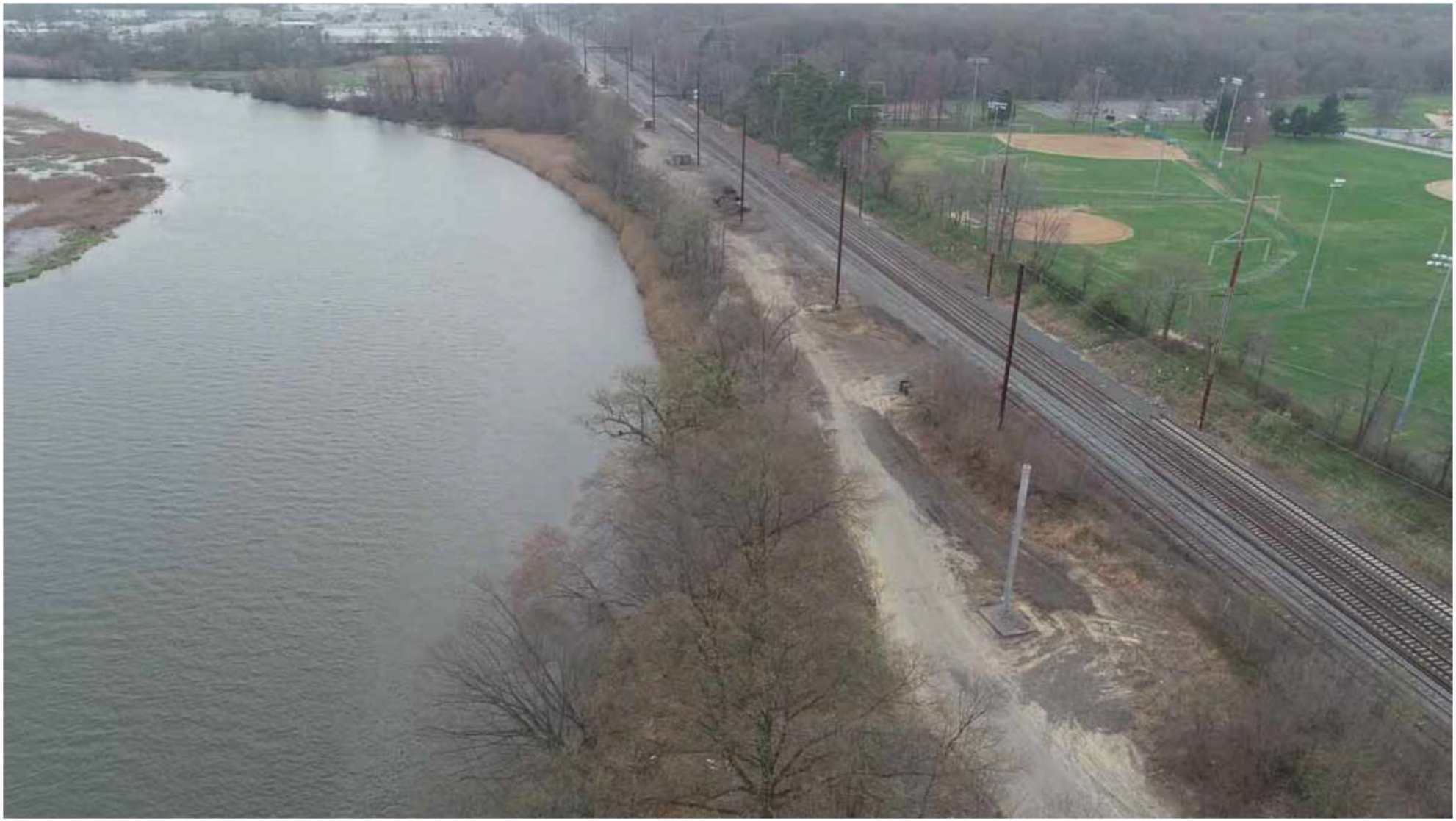
Leadership from New Castle County and the Town of Newport, members of the Delaware General Assembly, County Councilman Kenny Woods, Harvey Hanna & Associates, and Delaware Greenways all support this project conceptually. We have letters of support that accompanied the joint New Castle County / Town of Newport application for a Delaware Bicycle Council Cycling Infrastructure Innovation Grant application in 2018.

K2002: Olan Thomas Sidewalk Improvement

Supporting Documentation - Page 1

(Below map is horizontal for sizing and spacing purposes)

Newport River Trail Feasibility Study



Concept Presentation Meeting - June 2019

Meeting Agenda

- Introductions
- Summary review of existing conditions & constraints
- Concept alignments
- Structural considerations
- Concept level of cost
- Next steps

Existing Conditions & Constraints

- Environmental
  - Tidal wetlands
    - DNREC and U.S. Army Corps of Engineers (USACE) jurisdiction
      - DNREC will require a “wetlands and subaqueous lands permit” and mitigation for permanent shading impacts beneath the structures
      - USACE will require a Nationwide Permit (NWP) 14 (Linear Transportation Projects); mitigation is not anticipated

Existing Conditions & Constraints

- Environmental
  - Non-tidal wetlands
    - USACE jurisdiction only
      - USACE will require a Nationwide Permit (NWP) 14 (Linear Transportation Projects)
      - USACE will require a Nationwide Permit (NWP) 23 (Categorical Exclusion, If NEPA applies)
      - Any non-tidal impacts would be permanent “conversion” impact where forest is removed and wetlands become emergent.

Existing Conditions & Constraints

- Environmental
  - Mitigation
    - If credits from private mitigation bank are not available, then onsite or offsite mitigation would be required
    - If cost beneficial, mitigation could be avoided by spanning all non-tidal wetlands and replanting trees in forested wetlands to a min. 20-foot clearing width

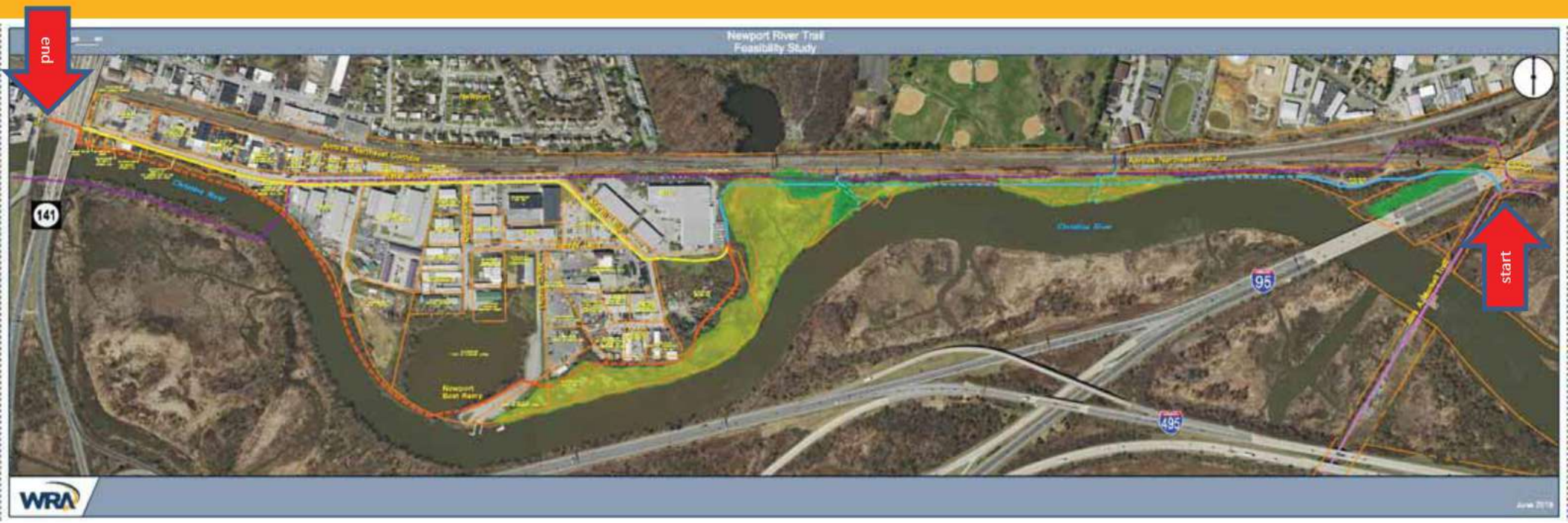
Existing Conditions & Constraints

- Utilities
  - New Castle County Christina River Force Main (CRFM)
    - WRA met with the County to discuss the 72” sewer force main coordination requirements for the trail
      - NCC requested a 20-foot minimum offset from either side of the utility for boardwalk and elevated structures
      - Offset may not be required for at-grade trail sections where sufficient soil cover is in place (Water Street)
      - Monitoring during construction will most likely be required
      - 40-foot easement through Harvey Hanna parcel

Existing Conditions & Constraints

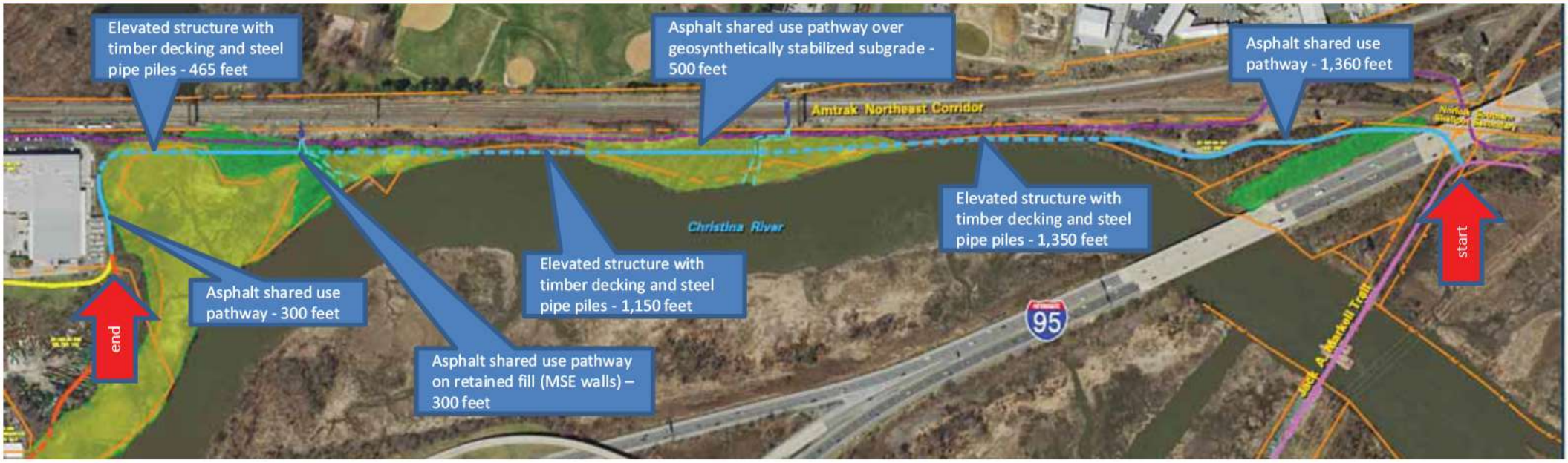
- Property ownership
  - Primarily on Harvey Hanna owned property east of the industrial park
  - Other private properties in the industrial park (though the trail will be in the river)
  - DelDOT at the Markell Trail end
  - Town of Newport at the boat ramp or along Water Street
  - Avoids Amtrak/Norfolk Southern properties
  - 40’ wide New Castle County Sewer Easement on Harvey Hanna Property

Concept Alignments



- Approximately two miles of shared use path connecting the Jack A. Markell Trail to S. James Street
  - Blue alignment
  - Yellow alignment alternative
  - Orange alignment alternative

Concept Alignments



- Blue alignment – approximately one mile
  - Avoids CRFM impacts
  - Significant environmental impacts
  - Contains both paved and on-structure segments

Concept Alignments

- Yellow alignment – approximately one mile
  - Shared use path adjacent to low volume (high truck use) travel lanes
  - Minimal environmental impacts
  - Lower cost
  - Potential for temporary on-road marked facility

Concept Alignments

- Orange alignment – approximately one and a quarter miles
  - Off-road shared use path
  - Mostly on elevated structure
  - Significant environmental impacts
  - Significant cost

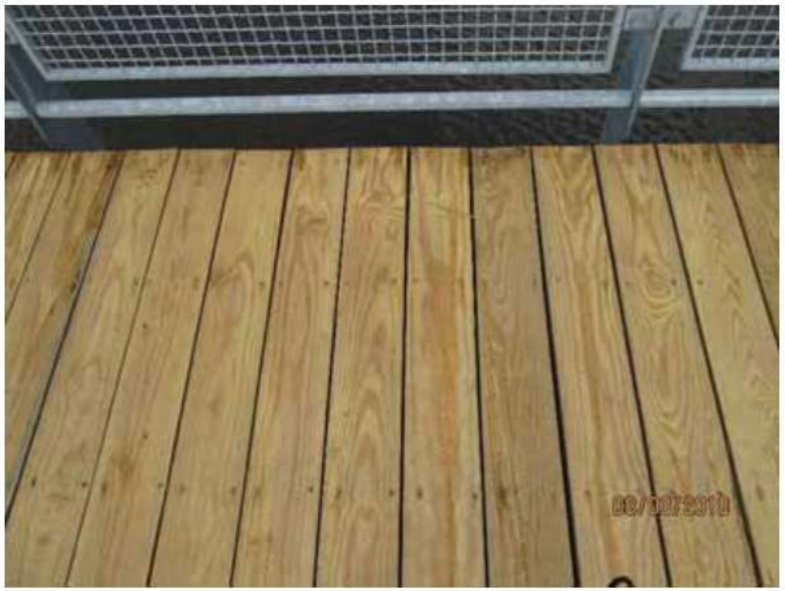
Structural Considerations

- Mechanically Stabilized Earth (MSE) walls
  - Lower cost method for bridge or elevated structure approach grade separation
  - Wire faced walls at Jack Markell trail shown

  - Wire facing with visible stone is aesthetic to environment
  - Low maintenance, discourages graffiti

Structural Considerations

- Glued laminated timber (Glulam) construction
  - Beams: increased span length capability over sawn lumber. (reduces no. of piers req'd)
  - Structural Decking: greater load capacity requiring less beams in cross section. Closed to light and water passage.



  - Structural Decking: fitted with timber plank wearing surface for rideability, appearance as a traditional plank deck, gapped for drainage.
  - Traditional Plank Deck: Open to light and water passage. Requires more beams in cross section.

Structural Considerations

- Prestressed Concrete PCEF Bulb-Tee Beams
  - Long span lengths achievable with minimum number in cross section
  - Resistant to water deterioration in low freeboard clearance environments

Structural Considerations

- Substructure Types
  - Steel pipe piles bents with concrete caps. Pier at Jack Markell Trail at DEEC building shown
  - Timber pile bents with timber caps. Pier at Jack Markell Trail boardwalk shown

- Steel pipe piles: ideal for in-water construction (variable length adaptability), ice load and collision vessel resistance.
- Timber Piles: ideal for support of short timber spans over wetlands, can be installed during top-down builds with small equipment
- Steel pipe pile bents with concrete caps ideal for longer span construction and higher load requirements

Structural Considerations

- Railing and fall protection considerations
  - Steel cable railing system used on Jack Markell Trail boardwalk
    - More transparent, allows for vegetation growth through rail, lighter feel
    - Higher cost/LF ($$$) and increased installation time, longer term maintenance requirement
  - Welded wire fabric infill panel system used at DEEC wetland walkway
    - Transparent, less installation time
    - Lower cost/LF ($$) and less maintenance required over time

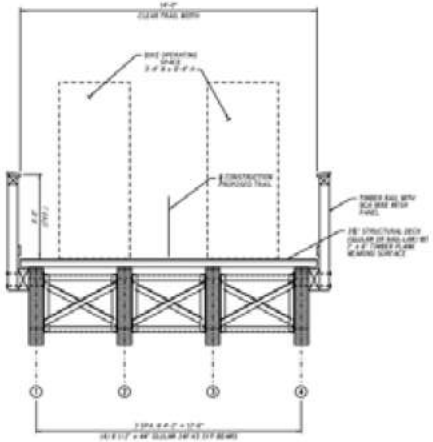
Concept Level of Cost

- Major cost considerations
  - Design vehicle requirements
    - H-10 Vehicular Load (2009 AASHTO Guide Specifications for Design of Pedestrian Bridges): increased structural capacity and robustness, increased material quantities
    - 14-ft wide trail width: increased material quantities
  - Handrail and protection fencing designs
    - Cost/LF for procurement and fabrication, long term maintenance costs, materials
  - Environmental mitigation costs
  - Construction access
    - Barge construction required (Blue and Orange Alignments in-water), may require Coast Guard Permitting due to stationing within channel and channel width reduction
    - Amtrak haul road access, boat ramp access for material on/off loading
    - Clearance below existing SR141 bridge (Orange Alignment)

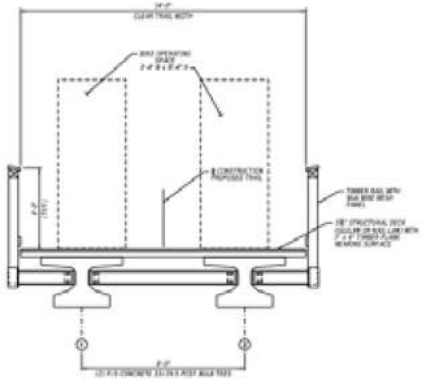
Structure Alternatives

- Structure Alternatives Considered

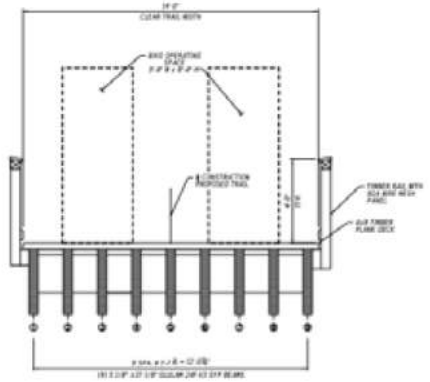
60-ft Span Length Alternatives



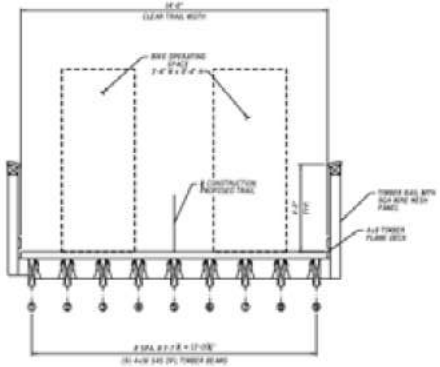
(4) Glulam Beams, Structural Timber Deck, Timber Plank Wearing Surface
Steel Pipe Pile Bent Piers



(2) P/S PCEF Bulb Tees, Structural Timber Deck, Timber Plank Wearing Surface
Steel Pipe Pile Bent Piers



(9) Glulam Beams, Timber Plank Deck "Boardwalk"
Steel Pipe Pile Bent Piers



10-ft Span Length Alternatives

(9) Sawn Timber Beams, Timber Plank Deck "Boardwalk"
Timber Pile Bent Piers

Concept Level of Cost

- Blue Alignment

  About $18 – $20 million

- Yellow Alignment Alternative

  About $2 million

- Orange Alignment Alternative

  About $20 – $25 million

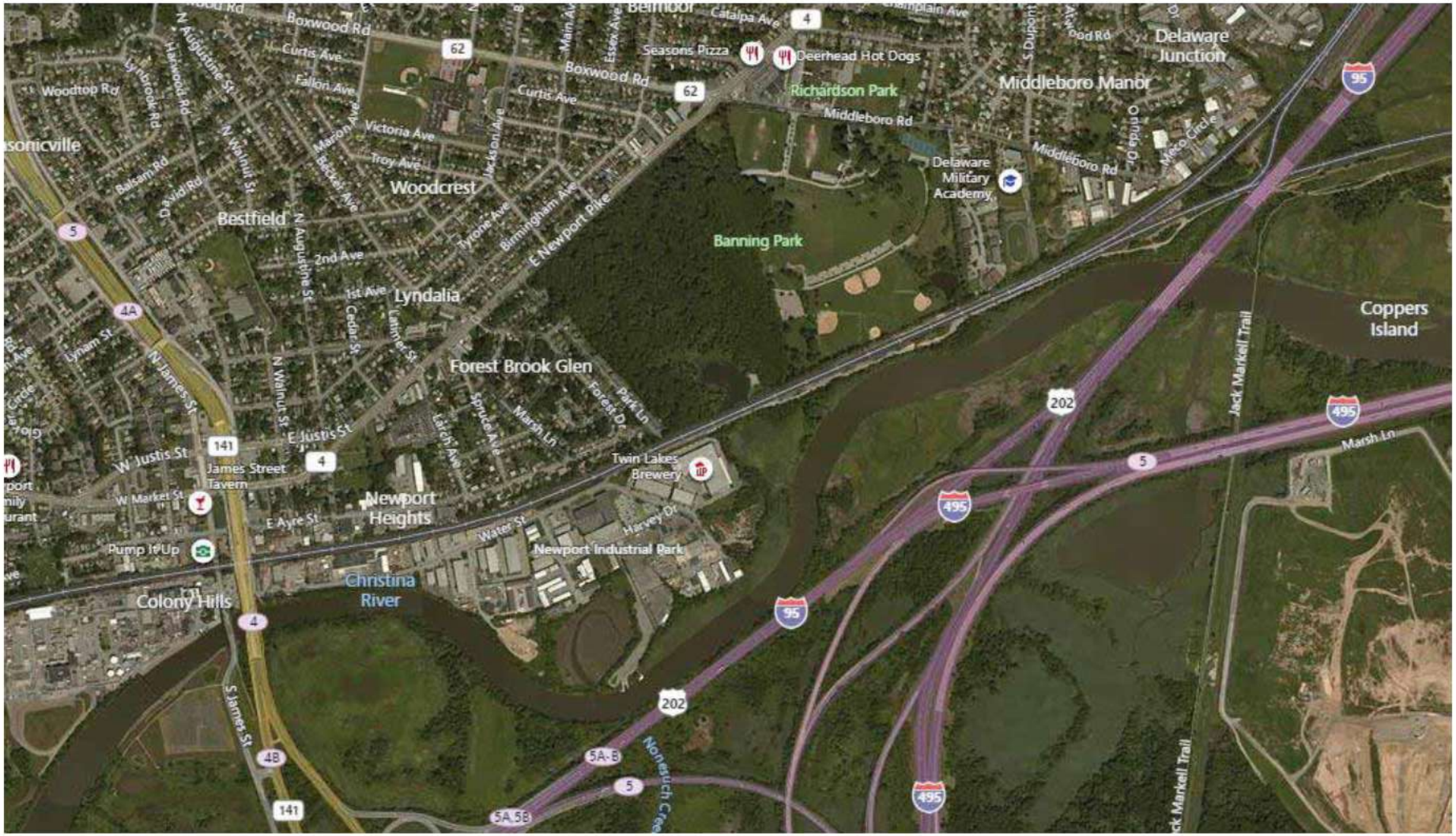
Next Steps

- Finalize feasibility study and level of cost
- Identify final design and construction funding sources

BUILD

IT!

Questions/Comments



New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	Downtown – Riverfront Connector (at MLK Boulevard and Shipley Street)
Location:	Intersection of MLK Boulevard and Shipley Street

Project description (attach a map, graphics, and/or photos if available):

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Spot improvement (i.e. crosswalk or facility less than 1000 ft)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

The proposed project is a signalized bicycle-only crossing of Martin Luther King Boulevard at Shipley Street.

What are the primary expected benefits of the project:

Martin Luther King Boulevard at Shipley Street is closed to vehicular traffic and, as a result, it offers an amazing (and relatively low-cost) opportunity to create a safe (free from vehicle turning movement conflicts) and low stress at-grade crossing for bicycles between Wilmington's two main employment and commercial centers (downtown and the Riverfront).

What other plans, if any, include this project (attach or include links if available):

This is one of the top 5 priority projects in the Wilmington Bike Plan.

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

DelDOT, which owns and maintains MLK Boulevard, is evaluating the feasibility of providing a low-stress and safe bicycle crossing of MLK Boulevard at the Shipley Street intersection. Traffic impacts along the MLK Boulevard corridor will be evaluated and a planning level estimate of design and construction costs will be completed. The feasibility of connecting the proposed MLK Boulevard bicycle crossing to the existing Jack A. Markell Trail, which traverses through the Wilmington Riverfront area, will also be evaluated.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

Downtown Wilmington (the largest concentration of jobs in Wilmington), the Wilmington Riverfront (multiple corporate employers, restaurants, residences, movie theater, museums and minor league baseball stadium) and the Amtrak/SEPTA station.

Describe how this project will fill a gap or create a bicycling transportation connection:

MLK Boulevard is the key "high stress" barrier for cycling between Wilmington's two main employment and commercial centers (downtown and the Riverfront). The proposed project would overcome that barrier with a signalized bicycle-only crossing of Martin Luther King Boulevard at Shipley Street. In addition, in conjunction with a planned North Wilmington Bikeway, it would fill fix the small crucial gap in a north-south "spine" for low stress cycling connecting Wilmington's northern residential areas, its downtown, the Riverfront and the Markell Trail (all the way to New Castle).

Describe any community support for this project that you are aware of:

Senator Tom Carper is planning an event on September 27, 2019 to highlight the importance of this project.

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	Adams and Jackson Streets
Location:	Maryland Avenue to 10th Street

Project description (attach a map, graphics, and/or photos if available):

The project includes a two-way Cross-Town Connector path paralleling the I-95 corridor, between Maryland Avenue and the intersection of N. Van Buren Street, Pennsylvania Avenue and Delaware Avenue. A total of twelve (12) blocks and one (1) bridge crossing encompasses the envisioned route, which would link the Christina Riverfront on the south end, to the Route 52 Scenic Byway and Brandywine Creek on the north end.

In addition, the City would like the I-95 Bridge crossings at 6th, 7th, 8th, 9th and 10th Streets evaluated for dedicated bike lanes. Currently these crossing are poorly striped and extremely wide. When cyclist exit the surrounding cross streets and enter the bridges there is no clear space for the cyclist and unclear striping for cars as well creating uncomfortable biking conditions.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

This proposed north-south route is located midway between two (2) established bike routes: the Bancroft Parkway bicycle route on the west end, and the Market Street bicycle route downtown. This one (1) mile-long route would connect neighborhoods including Trolley Square and Cool Spring and employment centers near the western end of the Central Business District to the expanding Christina Riverfront.

What are the primary expected benefits of the project:

- A dedicated bike route to carry riders from points south in the City from Maryland Avenue to approximately West 10th Street.
- Reuse of underutilized space along the I-95 corridor.
- Clear striping for both cars and cyclist on the I-95 bridge crossings.

What other plans, if any, include this project (attach or include links if available):

City of Wilmington Bike Plan

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Steep grade challenges along the 500 Block of North Adams Street
- Right of Way acquisition along portions of I-95 corridor

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

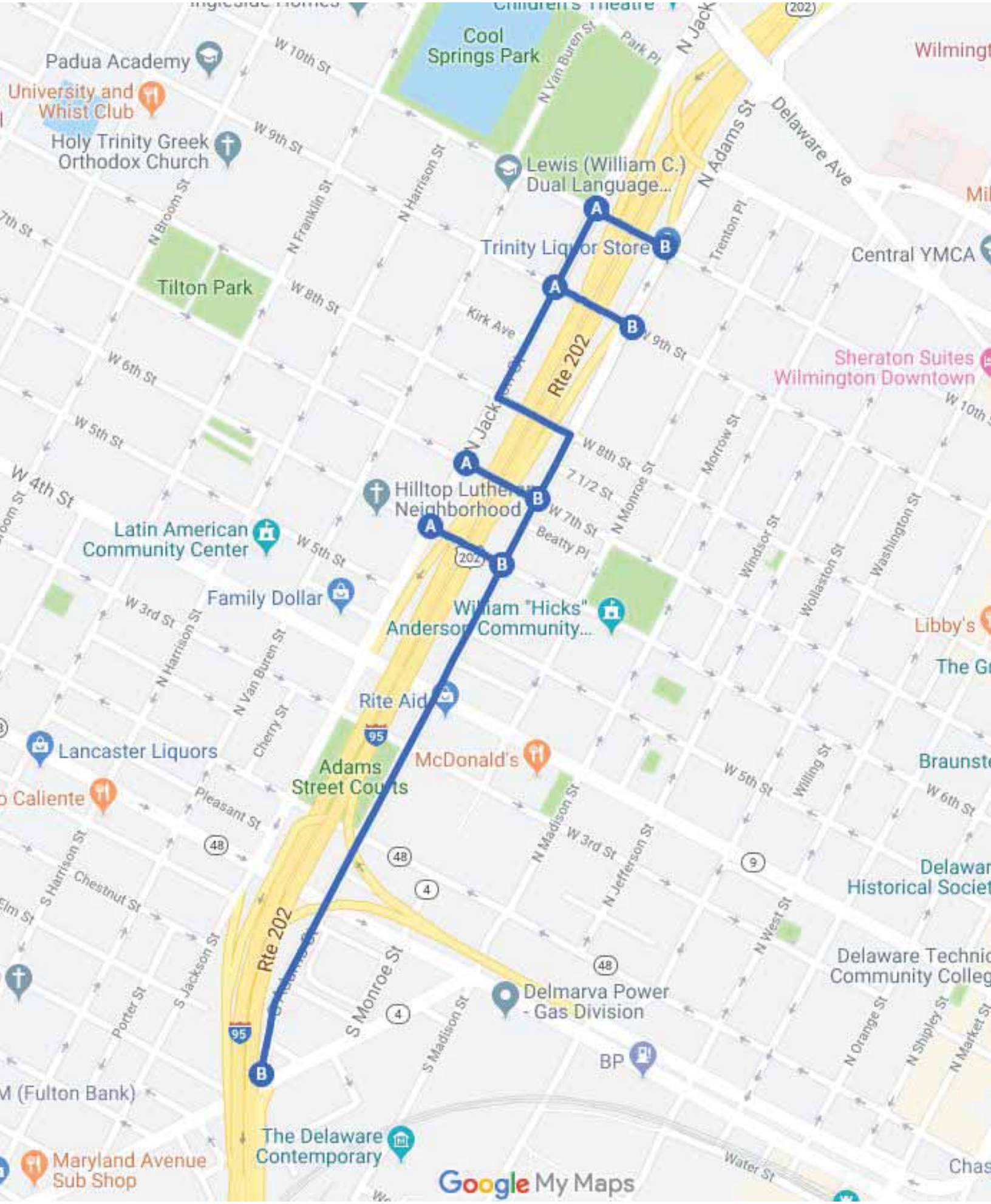
The project would provide a critical connection from the Wilmington Riverfront, Hedgeville and Browntown Neighborhoods to Route 52.

Describe how this project will fill a gap or create a bicycling transportation connection:

Currently much of this stretch of land is underutilized, a left remnant of when housing existed where I-95 currently sits. This project repurposes these these spaces for alternative transportation options.

Describe any community support for this project that you are aware of:

West Side Grows together has expressed interest in improving the connections along the I-95 bridges to better connect West Center City and other West Side neighborhoods.


Cool Springs Park
Padua Academy
University and Whist Club
Holy Trinity Greek Orthodox Church
Lewis (William C.) Dual Language...
Trinity Liquor Store
Central YMCA
Tilton Park
Rte 202
Sheraton Suites Wilmington Downtown
Hilltop Lutheran Neighborhood
Latin American Community Center
Family Dollar
William "Hicks" Anderson Community...
Rite Aid
Lancaster Liquors
Adams Street Courts
McDonald's
Delmarva Power - Gas Division
BP
The Delaware Contemporary
Maryland Avenue Sub Shop
Google My Maps

New Castle County Bicycle Plan
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Project Summary

Submitting organization:	City of Wilmington
Project name:	Augustine Cut-Off Trail and Connectors
Location:	Augustine Cut-Off from Lovering Ave to 18th Street, 18th Street from Augustine Cut-Off to N. Market Street, Wawaset Street from Augustine Cut-Off to N. Scott Street, N. Scott Street from Wawaset Street to S. Park Drive, Stadium Drive

Project description (attach a map, graphics, and/or photos if available):

A combination of separated pathways, standard bike lanes and protected bike lanes providing improved connectivity to trails in Alapocas Run State Park and Brandywine Park, as well as between the City and the County.

See attached map and photos.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street/ off-street

Please provide additional description about the suggested facility or program type if known:

In 2018, a feasibility study of a bike facility along Augustine Cut-Off, with connections from 18th Street and Wawaset Street. The feasibility study divided the total area up into 5 segments: 3 in the City, and 2 in the County. Having a facility on Augustine Cut-Off that ended at the City line would not be as useful, and therefore the County segments are also integral to the project.

What are the primary expected benefits of the project:

- Provide traffic calming on Augustine-Cut-Off
- Provide a low-stress connection from the City and Brandywine Park to Alapocas Run State Park

What other plans, if any, include this project (attach or include links if available):

-City of Wilmington Bike Plan (2019), which is referenced in the City of Wilmington Comprehensive Plan (2019)
-Augustine Cut Off Area Trail Feasibility Study (2018)

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Right-of-way constraints, particularly where 18th Street passes under rail
- Bridges
- Road geometry
- Trees
- Potential legal restriction on using right-of-way along Augustine Cut-Off for bike facility (this possibility was mentioned but never confirmed)

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

- Parks and trails, Baynard Stadium
- Elementary school, high school, Pre-K-12 school

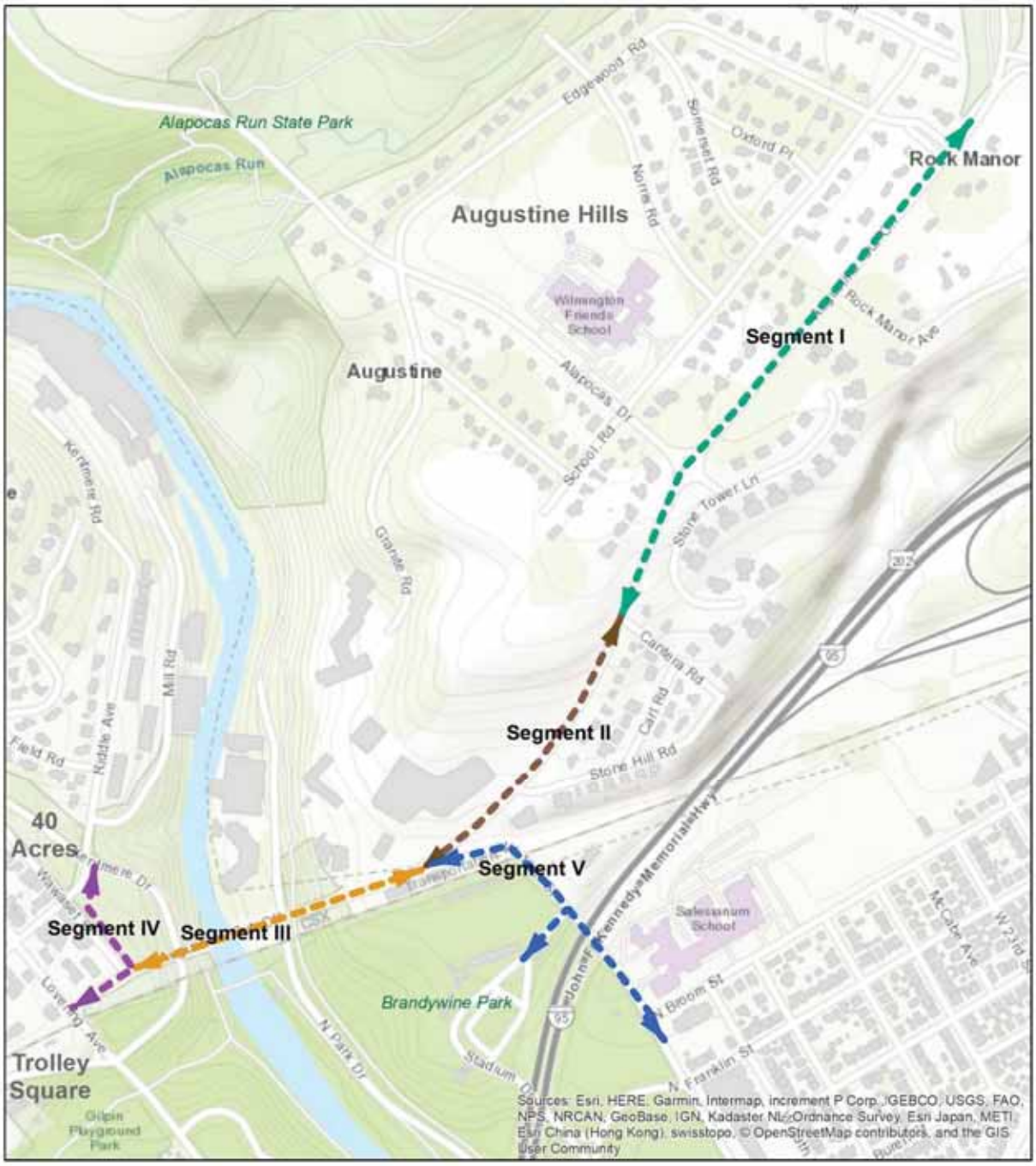
Describe how this project will fill a gap or create a bicycling transportation connection:

Currently, the only ways to get from Brandywine Park to Alapocas Run State Park on a bike are by biking on the street or on a technically challenging (hilly) trail. This trail and the proposed connectors would provide a low-stress connection to Alapocas Run State Park, thereby providing significant additional recreational and exercise opportunities for Wilmington residents. It would also provide a low-stress bike route to several schools.

Describe any community support for this project that you are aware of:

N/A

Figure 1: Map of Study Area and Segments Evaluated



The content of this report includes a review of the existing conditions of the corridor and explores a range of opportunities to create connections for bicyclists, with consideration of opportunities to also enhance the pedestrian experience.

Photo 13: Looking toward Strand Salon at West 18th Street from north/west side of Augustine Cut Off

Photo 14: Facing south on the north/west side of Augustine Cut Off at the north entrance to Incyte (entrance may be considered for part of a bike boulevard that would run parallel to Augustine Cut Off on School Rd, and connect to Augustine Cut Off around here)

Photo 17: Looking at heavy vegetation in northern parking plot of Incyte (vegetation is where a connection would be made to the recommended alternative for a bike boulevard on School Road)

Photo 18: Looking north on the north/west side of Augustine Cut Off (shoulder drops drastically in size; bicycles and pedestrians are forced to use the side of the road)

Photo 23: Looking north on the north/west side of Augustine Cut Off at Alapocas Drive intersection (any facility to be developed here would almost assuredly require expansion into the planted ROW)

Photo 24: Looking north on the north/west side of Augustine Cut Off at Alapocas Drive intersection (right of way appears ample on the west side of Augustine Cut Off up to Alapocas Drive, but further north is more constrained)

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	The Baynard Bikeway
Location:	Baynard / Washington Street extending from 9th Street north to Concord Avenue

Project description (attach a map, graphics, and/or photos if available):

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

The North Wilmington Bikeway would be the City of Wilmington's main bicycle route connecting its downtown to its northern residential areas. Starting at 9th Street downtown, the bikeway would extend north on Washington Street directly adjacent to Wilmington Hospital (one of Wilmington's largest employers). After the hospital, the bikeway would cross the Washington Street bridge, at which point Washington Street becomes Baynard Boulevard and passes through Brandywine Park. The bikeway would continue in the right-of-way on Baynard and terminate at Concord Avenue.

What are the primary expected benefits of the project:

For bicycling as transportation, connecting downtown employment centers to residential areas is the single highest priority to enable the bicycle to play a significant role in a transportation system. The North Wilmington Bikeway would create a direct and low stress bicycle network connection between Wilmington's downtown and two residential areas (the Triangle and Washington Heights). The current Governor of Delaware lives in the Triangle neighborhood. In addition, in conjunction with a Shipley Street bikeway, it would form Wilmington's main north-south "spine" for low stress cycling connecting the city's northern residential areas, its downtown and Riverfront area.

What other plans, if any, include this project (attach or include links if available):
This is one of the top 5 priority projects in the Wilmington Bike Plan.

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):
DelDOT maintains the entire corridor. Whitman, Requardt & Associates have completed some preliminary planning on this project (documented at https://www.wilmingtonde.gov/home/showdocument?id=8606) as part of the Wilmington Bike Plan. This work identified the need to eliminate parking lanes in two sections (Delaware Avenue to 14th Street and 18th Street to Concord Avenue).

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):
On the southern end: Downtown Wilmington
Heading north:
- Wilmington Hospital
- Brandywine Park
- Warner Elementary
- Sea

Describe how this project will fill a gap or create a bicycling transportation connection:
This route would be Wilmington's main bicycle network connection between its downtown and two of its northern residential areas (the Triangle and Washington Heights). In addition, in conjunction with a Shipley Street bikeway, it would form Wilmington's main north-south "spine" for low stress cycling connecting the city's northern residential areas, its downtown and the Riverfront.

Describe any community support for this project that you are aware of:

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	Christina River Southbound Crossing
Location:	Market Street from MLK Blvd to A Street

Project description (attach a map, graphics, and/or photos if available):

Protected bike lane providing a connection from downtown to the south side of the Christina River.

See attached map.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street/ off street pathway

Please provide additional description about the suggested facility or program type if known:

Currently, there are only 2 bridges across the Christina River that connect directly to the downtown: Market Street and Walnut Street. Both bridges are very stressful to cross for bikes, and so both are recommended for protected bike lanes. The Market Street bridge provides the southbound route, while Walnut Street provides the northbound route (Walnut Street is submitted as a separate project). This facility would connect with bike-friendly streets on Market and Shipley Streets, the Riverwalk, the planned Wetlands Park, and planned separated pathways along A Street and S. Walnut Street.

What are the primary expected benefits of the project:

- Provide a low-stress bike connection across the only southbound bridge from the downtown, as well as the train station and planned transit center
- Connection to several separated pathways
- Provides regional connection to JAM trail via Walnut Street separated pathway and Christina River Bridge

What other plans, if any, include this project (attach or include links if available):

-City of Wilmington Bike Plan (2019), which is referenced in the City of Wilmington Comprehensive Plan (2019)

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Bus travel and 1 bus stop along project extent
- Right-of-way constraints (both in terms of curb-to-curb and area for off-street pathway)
- Peak-hour traffic volumes
- Bridge
- Busy cross-street (MLK)

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

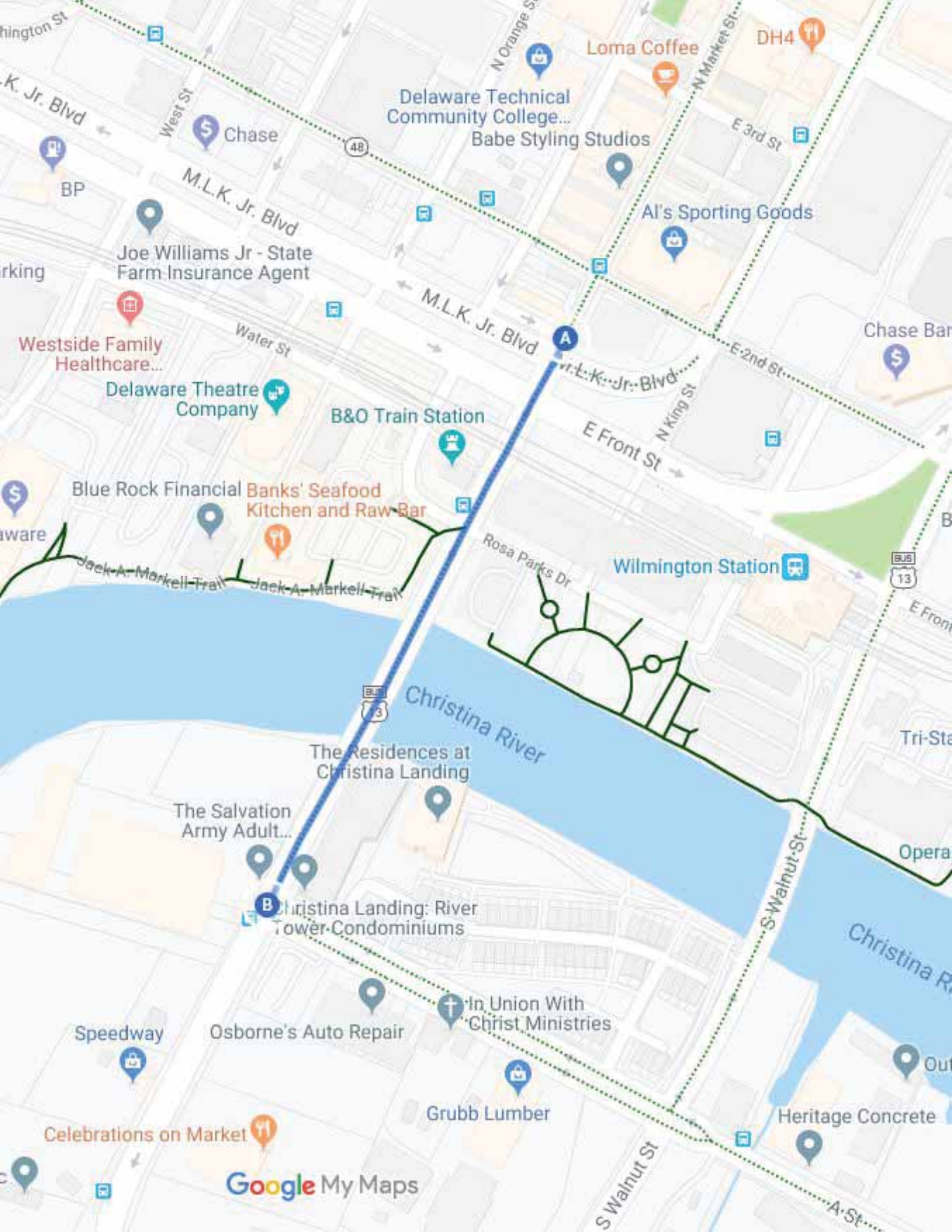
- Employment centers
- Train station and planned bus transit center
- DTCC
- ShopRite
- Riverfront
- Riverwalk, JAM Trail
- Planned Wetlands Park

Describe how this project will fill a gap or create a bicycling transportation connection:

Currently, there is no low-stress way for a bike to cross the Christina River from downtown. This project would provide that. If paired with a protected lane on the Walnut Street bridge, it would allow for easier bike travel between the downtown and South Wilmington.

Describe any community support for this project that you are aware of:

N/A. Most of the land uses along this project area are infrastructure and commercial. The Christina Landing Residential Development is adjacent to the route at A Street.


Loma Coffee
DH4
N Orange St
N Market St
Delaware Technical Community College...
Babe Styling Studios
E 3rd St
West St
Chase
48
BP
M.L.K. Jr. Blvd
Al's Sporting Goods
Joe Williams Jr - State Farm Insurance Agent
Water St
Westside Family Healthcare...
A
E 2nd St
Chase Bar
Delaware Theatre Company
B&O Train Station
N King St
E Front St
Blue Rock Financial
Banks' Seafood Kitchen and Raw Bar
Jack A. Markell Trail
Rosa Parks Dr
Wilmington Station
BUS 13
Christina River
The Residences at Christina Landing
The Salvation Army Adult...
B
Christina Landing: River Tower Condominiums
S Walnut St
In Union With Christ Ministries
Speedway
Osborne's Auto Repair
Grubb Lumber
Heritage Concrete
Celebrations on Market
A St
Google My Maps

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	E. 4th Street Bridge
Location:	E. 4th Street from Swedes Landing Road to Christina Ave, Christina Ave from East 4th Street to Claymont Street

Project description (attach a map, graphics, and/or photos if available):

A standard bike lane connecting from a proposed standard bike lane along Swedes Landing Road to a proposed bike-friendly street on Claymont Street.

See attached map.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

The right-of-way is wide enough to provide room for a standard bike lane simply through a lane diet. However, the intersection of E. 4th Street, Christina Ave and S. Heald Street is stressful enough that a protected facility would be merited to cross this intersection.

What are the primary expected benefits of the project:

- Provide traffic calming throughout the project extent
- Provide a low-stress bike connection between Southbridge, the East Side, and 7th Street Peninsula
- Make a portion of the journey from Wilmington neighborhoods to the Port of Wilmington less stressful.

What other plans, if any, include this project (attach or include links if available):

-City of Wilmington Bike Plan (2019), which is referenced in the City of Wilmington Comprehensive Plan (2019)

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Bridges
- Road geometry
- Difficult 3-way intersection

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

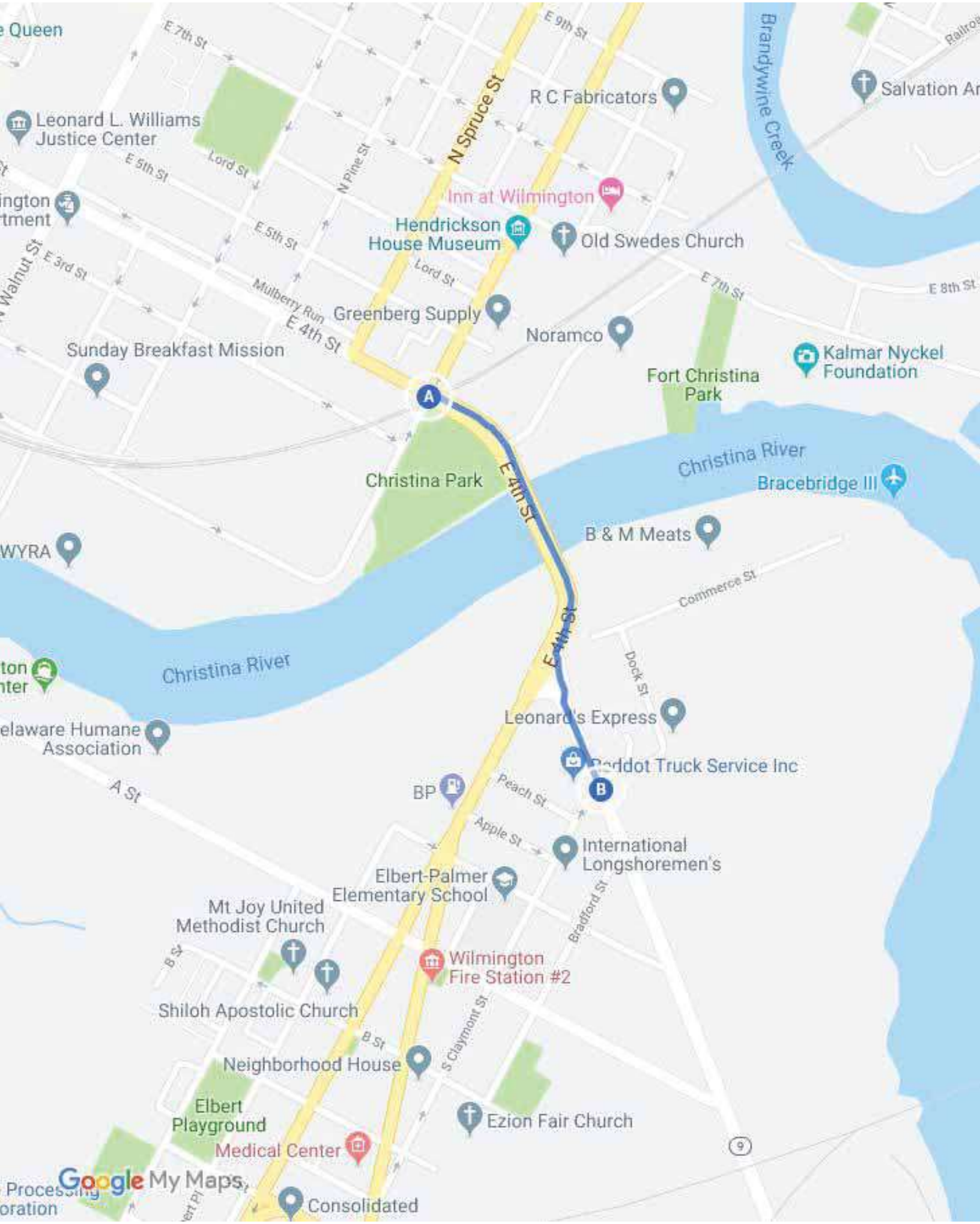
- Employment Centers
- Parks

Describe how this project will fill a gap or create a bicycling transportation connection:

This bride is the closest bridge to Southbridge so equipping it with a bike facility would allow this neighborhood to be better connected to the City.

Describe any community support for this project that you are aware of:

N/A


e Queen
E 7th St
E 9th St
N Spruce St
R C Fabricators
Salvation Ar
Brandywine Creek
Leonard L. Williams Justice Center
E 5th St
Lord St
N Pine St
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Inn at Wilmington
Hendrickson House Museum
Old Swedes Church
E 5th St
E 3rd St
Walnut St
Mulberry Run
Lord St
E 7th St
E 8th St
Greenberg Supply
E 4th St
Noramco
Sunday Breakfast Mission
Kalmar Nyckel Foundation
Fort Christina Park
A
Christina Park
Christina River
Bracebridge III
E 4th St
WYRA
B & M Meats
Commerce St
Christina River
E 4th St
Dock St
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Leonard's Express
elaware Humane Association
Reddot Truck Service Inc
A St
BP
Peach St
B
Apple St
International Longshoremen's
Elbert-Palmer Elementary School
Mt Joy United Methodist Church
Bradford St
B St
Wilmington Fire Station #2
Shiloh Apostolic Church
S Claymont St
B St
Neighborhood House
Elbert Playground
Ezion Fair Church
Medical Center
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New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	Northeast Boulevard Bike Lanes
Location:	City line to 11th Street

Project description (attach a map, graphics, and/or photos if available):

2 protected bike lanes (1 in each direction of travel) along a major corridor through the City's north side.

See attached map.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

Northeast Boulevard is currently a wide arterial street that likely could be road-dieted to provide room for a 2-way protected bike lane or 2 separate protected bike lanes. This would provide a major connector crossing the entire north side of Wilmington.

What are the primary expected benefits of the project:

- Provide traffic calming on a street that currently has excess capacity and acts as a barrier between two neighborhoods
- Provide a low-stress way for people to travel in and out of the City from the north; this will be especially useful if a protected bike lane is also built on Governor Printz Boulevard, beyond the City line, as this would provide a protected bike route all the way from Wilmington's East Side to Claymont, thereby making employment opportunities in Claymont more accessible to transportation justice households in Wilmington

What other plans, if any, include this project (attach or include links if available):

-City of Wilmington Bike Plan (2019), which is referenced in the City of Wilmington Comprehensive Plan (2019)

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Bus travel and several bus stops along project extent
- Political aversion to a road diet

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

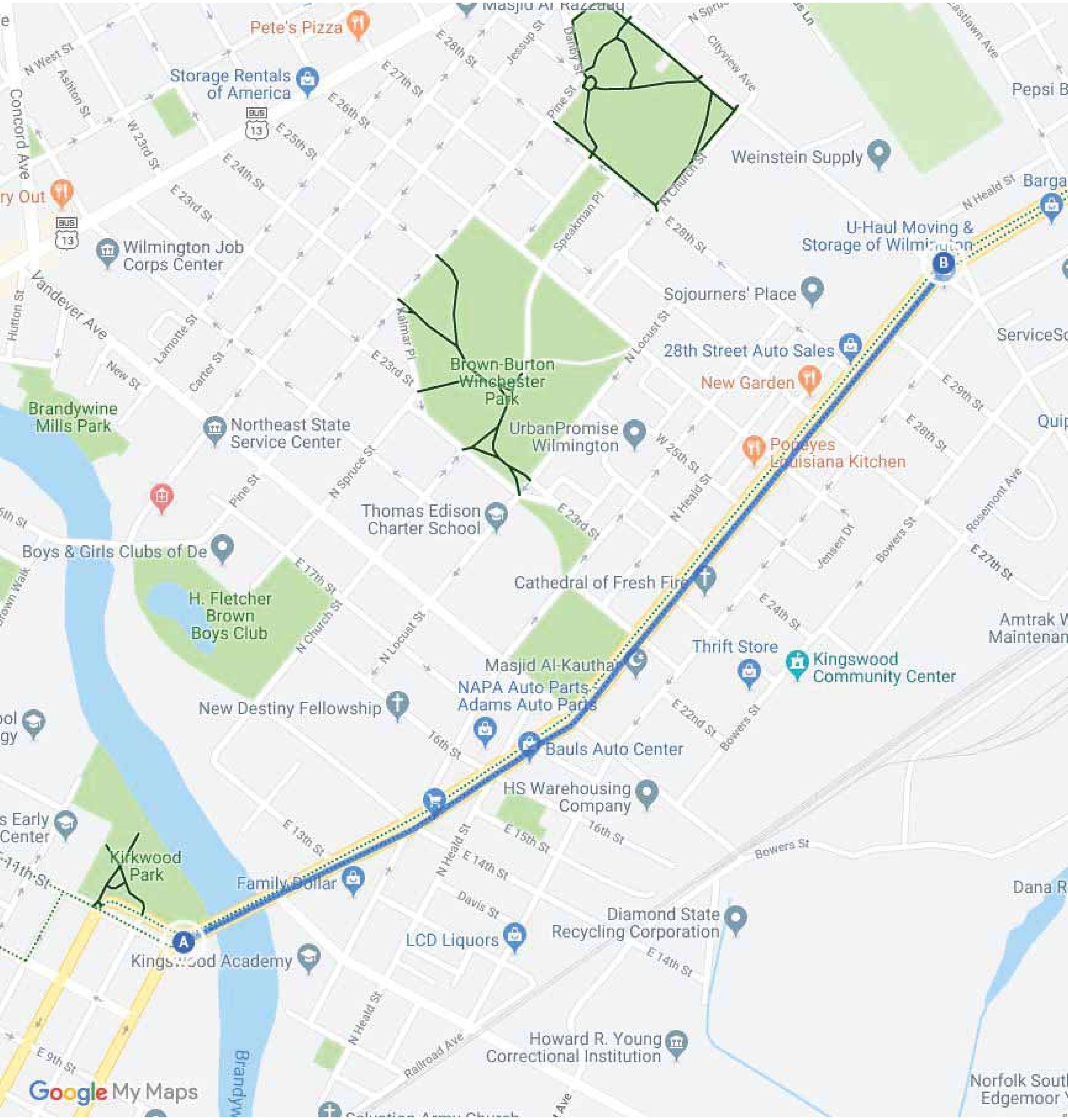
- Employment centers offering a wide variety of job types
- Parks
- K-8 School

Describe how this project will fill a gap or create a bicycling transportation connection:

Currently, Northeast Boulevard does have a continuous shoulder on the northbound side. However, the shoulder is disjointed on the southbound side and, in both cases, a biker is still traveling along vehicle traffic that is moving fast because of the street's excess capacity. It is also the longest continuous north-south corridor in Northeast Wilmington, and therefore provides the best way to traverse the neighborhood.

Describe any community support for this project that you are aware of:

Leadership of REACH Riverside and Brown Boys & Girls Club are interested in this project.



Pete's Pizza
Storage Rentals of America
Weinstein Supply
Wilmington Job Corps Center
U-Haul Moving & Storage of Wilmington
Sojourners' Place
28th Street Auto Sales
New Garden
Brown-Burton Winchester Park
UrbanPromise Wilmington
Popeyes Louisiana Kitchen
Brandywine Mills Park
Northeast State Service Center
Thomas Edison Charter School
Boys & Girls Clubs of De
H. Fletcher Brown Boys Club
Cathedral of Fresh Fire
Thrift Store
Kingswood Community Center
Masjid Al-Kauthar
NAPA Auto Parts - Adams Auto Parts
New Destiny Fellowship
Bauls Auto Center
HS Warehousing Company
Kirkwood Park
Family Dollar
Diamond State Recycling Corporation
LCD Liquors
Kingswood Academy
Howard R. Young Correctional Institution
Google My Maps

New Castle County Bicycle Plan
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Project Summary

Submitting organization:	City of Wilmington
Project name:	Access Road Trail from Brew Works
Location:	Parallel to Miller Road from Baynard Blvd Extension to Talley Road

Project description (attach a map, graphics, and/or photos if available):
The project includes an off-road trail connection from Talley Road to Baynard Blvd Extension using an existing maintenance road which currently exist. The road is used by DelDOT trucks and is currently a combination of dirt and gravel. The trail would connect into bicycle improvements along Baynard Blvd, which has also been included as part of this Priority Project Information. In addition, this would connect to the Greenway at Talley Road extending the Northern Delaware Greenway to dedicated bike infrastructure to take cyclist into downtown Wilmington.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 6-10 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	Off road path/trail

Please provide additional description about the suggested facility or program type if known:

What are the primary expected benefits of the project:

- Extension of the Northern Delaware Greenway to dedicated bike infrastructure into downtown Wilmington
- Connection to new businesses located along Miller Road

What other plans, if any, include this project (attach or include links if available):

City of Wilmington Bike Plan

What is the project's current phase: **Just an idea**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Potentially two crossings under the CSX rail viaduct.
- Steep grade challenges at the northern end of the trail
- Coordination with DelDOT on Maintenance yard of alternatives.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

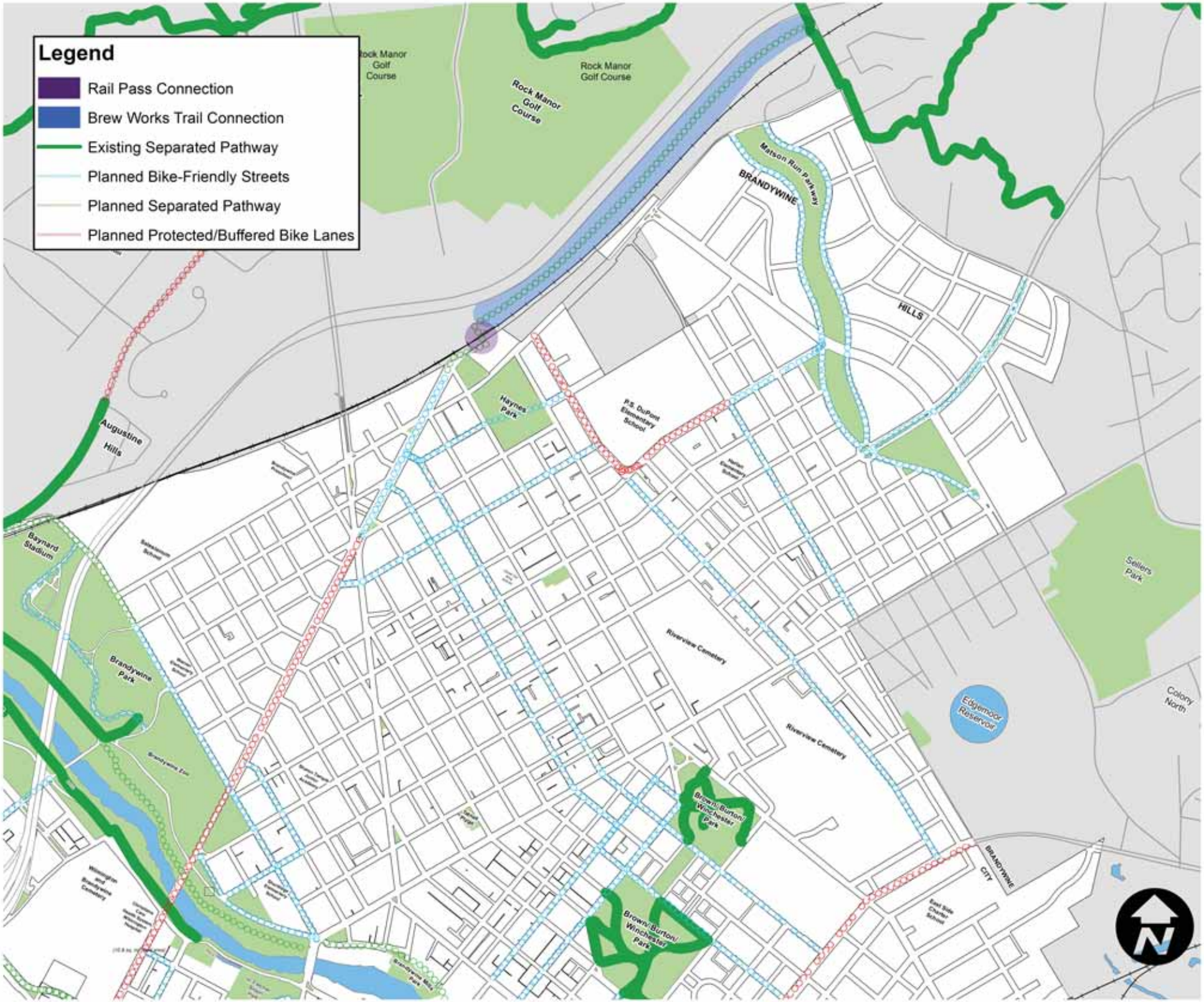
The project would provide a critical connection from the Northern Delaware Greenway to downtown Wilmington via planned improvements along Baynard Blvd.

Describe how this project will fill a gap or create a bicycling transportation connection:

Currently much of this stretch of land is underutilized and this would provide a comfortable trail for both recreational riders and bicycle commuters.

Describe any community support for this project that you are aware of:

The Wilmington Brew Works is very interested in this connection and being a destination along the bike trail.


Legend
Rail Pass Connection
Brew Works Trail Connection
Existing Separated Pathway
Planned Bike-Friendly Streets
Planned Separated Pathway
Planned Protected/Buffered Bike Lanes
Rock Manor Golf Course
Rock Manor Golf Course
Rock Manor Golf Course
Matson Run parkway
BRANDYWINE
HILLS
Haynes Park
P.S. DuPont Elementary School
Augustine Hills
Baynard Stadium
Brandywine Park
Riverview Cemetery
Riverview Cemetery
Edgemoor Reservoir
Sellers Park
Colony North
Brown/ Burton/ Winchester Park
Brown/ Burton/ Winchester Park
BRANDYWINE CITY
Brandywine Park
Brandywine Park
N

New Castle County Bicycle Plan
Priority Project Information

Thank you for taking the time to submit your organization's **highest priority projects** for inclusion in the New Castle County Bicycle Plan. Projects in the Plan will be identified through your feedback as well as public input and technical analysis. Please submit one form for each project. While the New Castle County Bicycle Plan is not a grant program, once the Plan is complete, projects will be shared with DelDOT for statewide prioritization. Please email completed form(s) and any additional materials you wish to share to hdunigan@wilmapco.org.

Project Summary

Submitting organization:	City of Wilmington
Project name:	Walnut Street
Location:	A Street to 16th Street

Project description (attach a map, graphics, and/or photos if available):

Beginning at A Street the City would like to implement at buffered/protected bike lane along the Walnut Street Corridor. This corridor will be integral to carry bicycle traffic into downtown Wilmington from destinations such as the Wilmington Train Station and the new Wilmington Transit Center.

See attached map.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street

Please provide additional description about the suggested facility or program type if known:

What are the primary expected benefits of the project:

- A dedicated bike route to carry riders into downtown Wilmington from the Wilmington Transit Center and Train Station.
- Traffic calming on Walnut Street and increased connectivity for the East Side to Downtown

What other plans, if any, include this project (attach or include links if available):

City of Wilmington Bike Plan

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

In the lower portion of Walnut Street there is a bridge which will require innovative solutions and at the north end of Walnut Street lanes are reduced from three to two north of 12th Street. At various blocks along the corridor limited on street parking is provided as well.

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

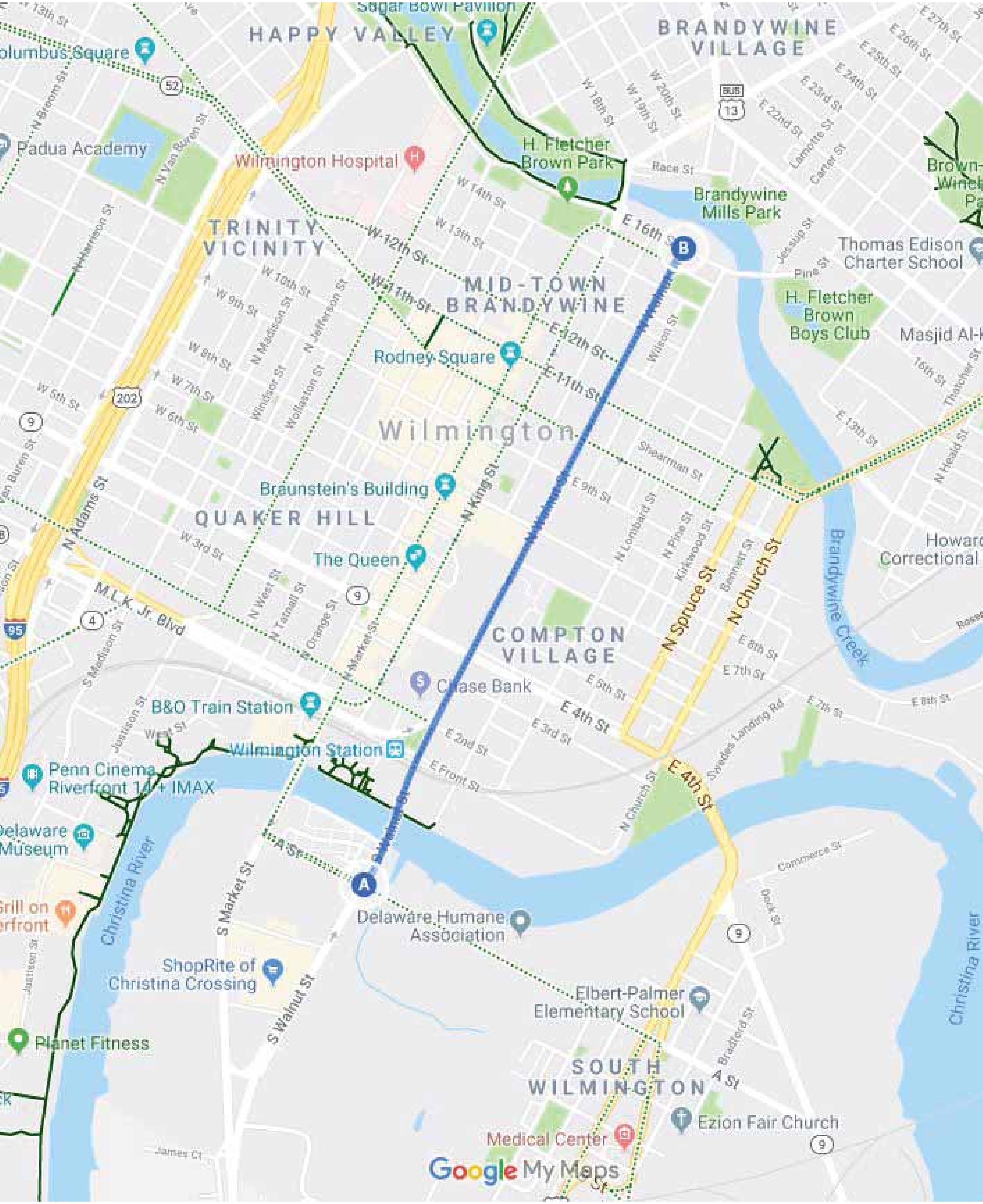
The project would provide a critical connection from the transit center and the train station to downtown Wilmington and ultimately loop into various other connections throughout downtown to carry cyclist to points not only in downtown but points throughout the City.

Describe how this project will fill a gap or create a bicycling transportation connection:

Currently there is no dedicated bike infrastructure from these transportation centers into downtown Wilmington.

Describe any community support for this project that you are aware of:

Speed has been cited by the community as a concern, especially in the northern most portion of Walnut Street. It is the goal that incorporating bike infrastructure will help as a traffic calming measure along this corridor.


HAPPY VALLEY
BRANDYWINE VILLAGE
Padua Academy
Wilmington Hospital
H. Fletcher Brown Park
Brandywine Mills Park
Thomas Edison Charter School
TRINITY VICINITY
MID-TOWN BRANDYWINE
H. Fletcher Brown Boys Club
Rodney Square
Wilmington
Braunstein's Building
QUAKER HILL
The Queen
Howard Correctional
M.L.K. Jr. Blvd
COMPTON VILLAGE
Chase Bank
B&O Train Station
Wilmington Station
Penn Cinema Riverfront 14 + IMAX
Delaware Museum
Christina River
Delaware Humane Association
ShopRite of Christina Crossing
Elbert-Palmer Elementary School
Planet Fitness
SOUTH WILMINGTON
Ezion Fair Church
Medical Center
Brandywine Creek
N Spruce St
N Church St
E 4th St
N King St
N Market St
S Market St
S Walnut St
N Adams St
Google My Maps

New Castle County Bicycle Plan
Priority Project Information

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Project Summary

Submitting organization:	City of Wilmington
Project name:	Wilmington CBD Westbound Bikeway
Location:	12th Street/Delaware Ave from Walnut Street to Adams Street

Project description (attach a map, graphics, and/or photos if available):

Bike lane along a major downtown westbound corridor. The facility would extend from Walnut Street to Adams Street. At both ends, it could connect to planned north-south facilities. It is expected that the lane would be largely protected by a parking lane from Walnut to Washington, while the portion from Washington to Adams would likely be a mixed-use path.

See attached map.

Number of projects submitted by your organization:	10
Priority of this project relative to other projects submitted:	Top 5 priority

Supplementary Details - Please include additional information if it is available.

What is the project's category:	Infrastructure: Local facility (approximately 1000 ft - 1/2 mile)
For cycling infrastructure, what type is suggested:	On street/ off-street pathway

Please provide additional description about the suggested facility or program type if known:

This project idea has already been analyzed through a corridor concept study prepared by WRA in early 2019. The study looked at individual segments of the project length and proposed one to three alternatives for each segment.

What are the primary expected benefits of the project:

- Provide a relatively low-stress bike route for moving westbound from Walnut Street, through the downtown, to Adams Street
- Connection to South Park Drive's existing separated pathway via Adams Street
- Potential connection to points west via facilities on Delaware and Pennsylvania Avenues
- Traffic calming on 12th Street

What other plans, if any, include this project (attach or include links if available):

-City of Wilmington Bike Plan (2019), which is referenced in the City of Wilmington Comprehensive Plan (2019)
-Wilmington Downtown Circulation Study (2011)
-Priority Corridor Concepts Report (2019)

What is the project's current phase: **Some planning underway or complete**

Describe anticipated challenges in completing the project (i.e. right-of-way constraints, wetlands, bridges, road geometry):

- Bus travel and 2 bus stops along route
- Right-of-way constraints (both in terms of curb-to-curb and area for off-street pathway along cemetery)
- Peak-hour traffic volumes
- Utilities

To what destinations would this project provide access (i.e. nearby schools, employment centers, community centers and services, parks):

- Employment centers
- Major hospital
- Schools
- Park/trail

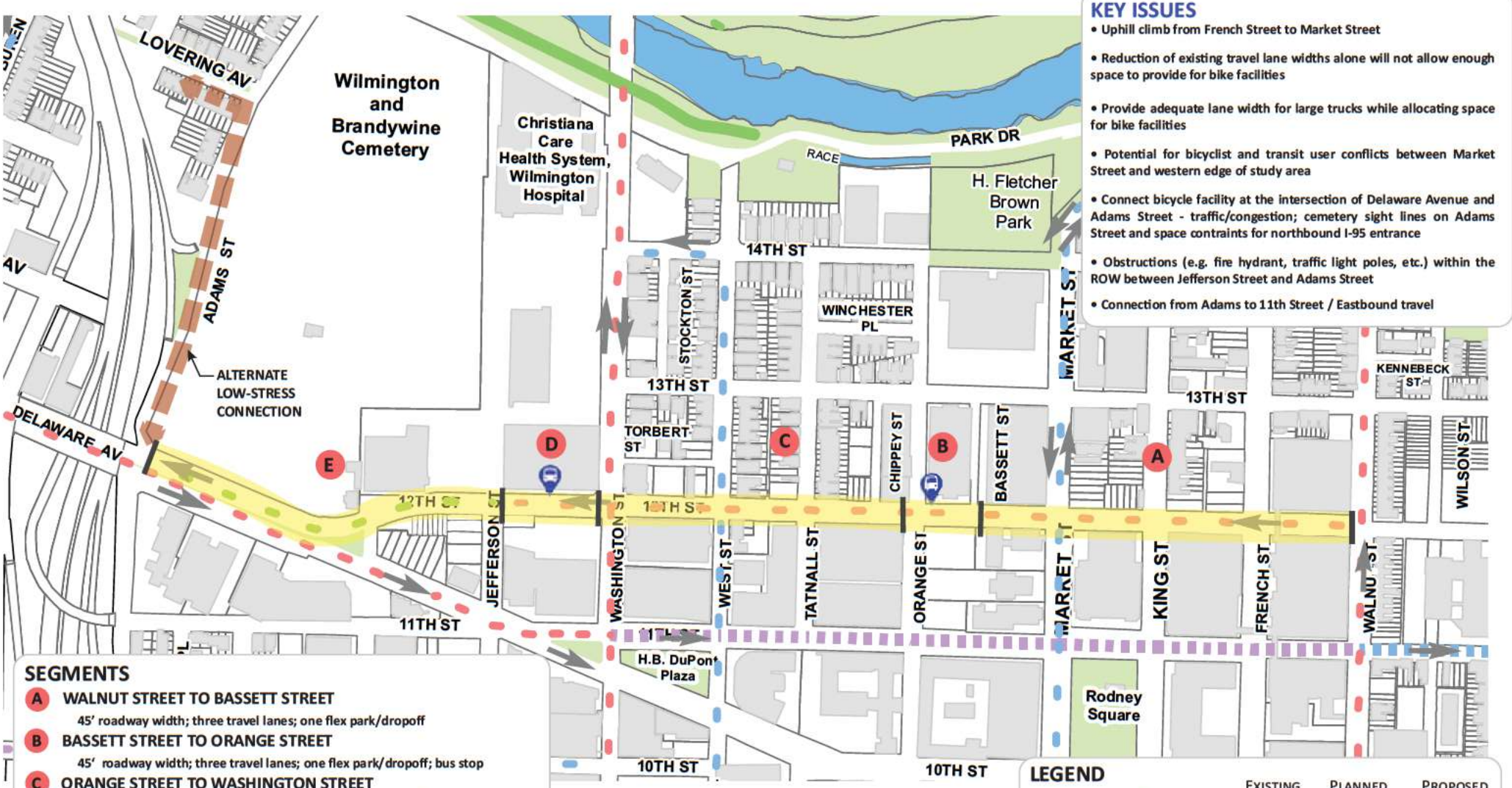
Describe how this project will fill a gap or create a bicycling transportation connection:

Currently, there is no dedicated bike infrastructure through downtown Wilmington/CBD. Additionally, due to the super block between King, 8th, Walnut and 4th Street, there are few east-west connections that cross the entire downtown.

Describe any community support for this project that you are aware of:

N/A. Most of the land uses along this project area are downtown businesses, so there is no community group that represents the immediately adjacent area.

12TH STREET CORRIDOR



KEY ISSUES

- Uphill climb from French Street to Market Street
- Reduction of existing travel lane widths alone will not allow enough space to provide for bike facilities
- Provide adequate lane width for large trucks while allocating space for bike facilities
- Potential for bicyclist and transit user conflicts between Market Street and western edge of study area
- Connect bicycle facility at the intersection of Delaware Avenue and Adams Street - traffic/congestion; cemetery sight lines on Adams Street and space contraints for northbound I-95 entrance
- Obstructions (e.g. fire hydrant, traffic light poles, etc.) within the ROW between Jefferson Street and Adams Street
- Connection from Adams to 11th Street / Eastbound travel

SEGMENTS

A WALNUT STREET TO BASSETT STREET
45' roadway width; three travel lanes; one flex park/dropoff

B BASSETT STREET TO ORANGE STREET
45' roadway width; three travel lanes; one flex park/dropoff; bus stop

C ORANGE STREET TO WASHINGTON STREET
45' roadway width; three travel lanes; one flex park/dropoff

D WASHINGTON STREET TO JEFFERSON STREET
45' roadway width; four travel lanes; bus stop

E JEFFERSON STREET TO ADAMS STREET
45' roadway width; four travel lanes

LEGEND

	EXISTING	PLANNED	PROPOSED
BIKE LANE			
PROTECTED/BUFFERED LANE	*None*		
BIKE-FRIENDLY STREET			
OFF-ROAD TRAIL			