DRAFT April 9, 2020

New Castle County Bicycle Plan

Wilmington Area Planning Council

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DRAFT

RESOLUTION

BY THE WILMINGTON AREA PLANNING COUNCIL (WILMAPCO) TO ENDORSE THE NEW CASTLE COUNTY BICYCLE PLAN

WHEREAS, the Wilmington Area Planning Council (WILMAPCO) has been designated the Metropolitan Planning Organization (MPO) for Cecil County, Maryland and New Castle County, Delaware by the Governors of Maryland and Delaware, respectively; and

WHEREAS, the WILMAPCO Council recognizes that encouraging nonmotorized transportation is consistent with the strategies of the 2050 Regional Transportation Plan (RTP); and

WHEREAS, a countywide bicycle plan to make bicycling a more safe and convenient choice for transportation and recreation for people of all ages and abilities; and

WHEREAS, the New Castle County Bicycle Plan was developed with public input from residents, agency staff, and other stakeholders;

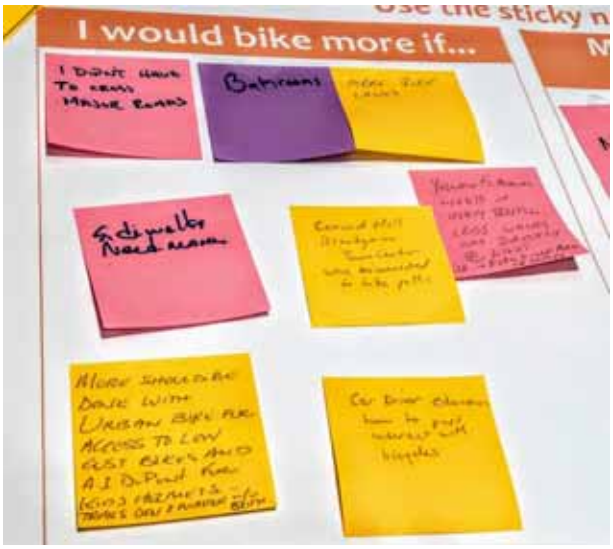
NOW, THEREFORE, BE IT RESOLVED that the Wilmington Area Planning Council does hereby endorse the final report and recommendations of the 2020 New Castle County Bicycle Plan.

Date: _____

_____
John Sisson, Chairperson
Wilmington Area Planning Council

Contents

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**	• 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

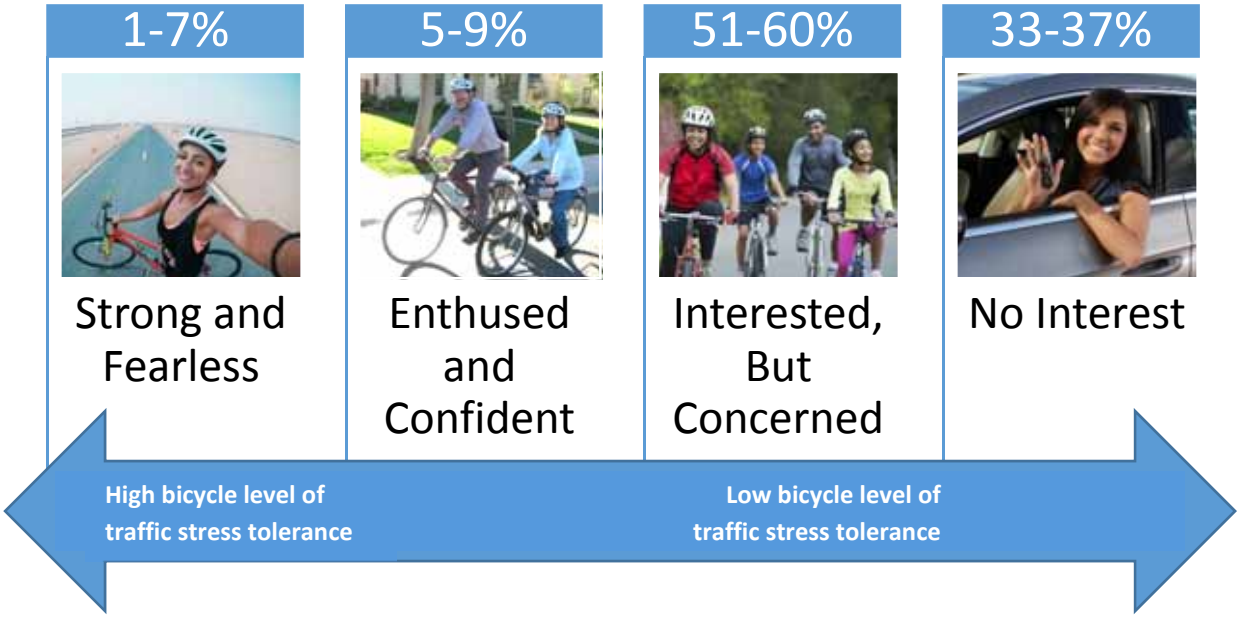
Riding a bicycle should not require bravery.

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.

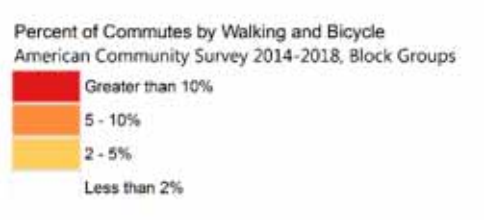
New Castle County average share of commute trips by bicycle

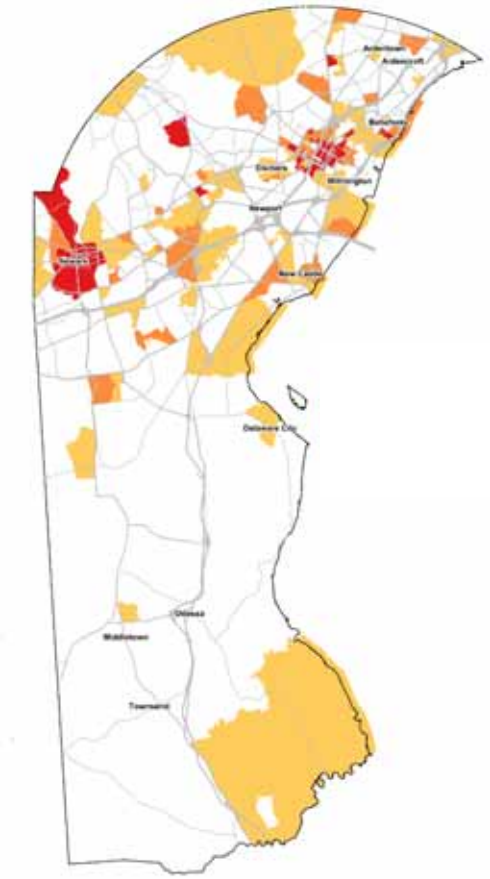
0.3%

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

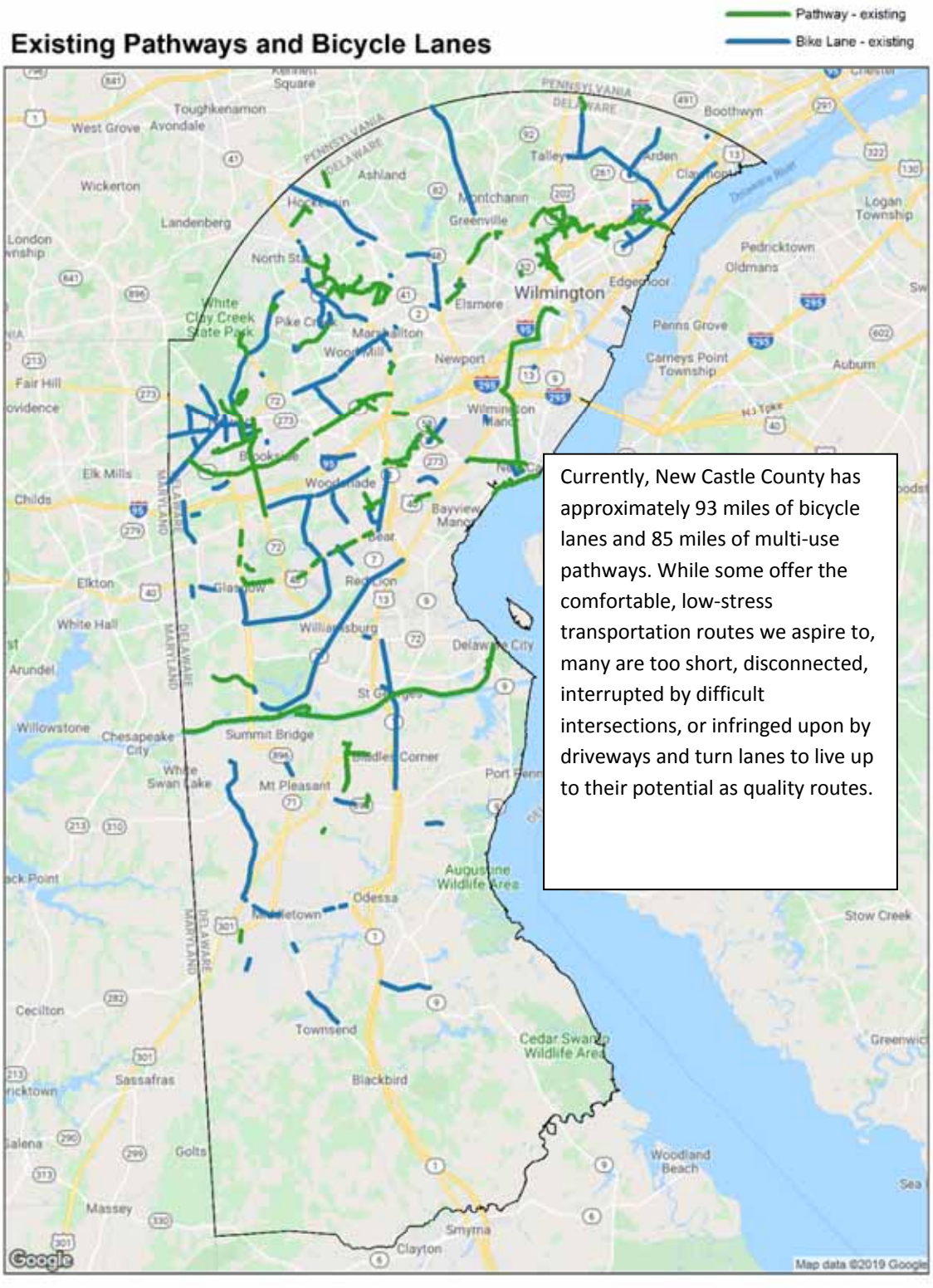
Identify bicycle transportation network

- 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.

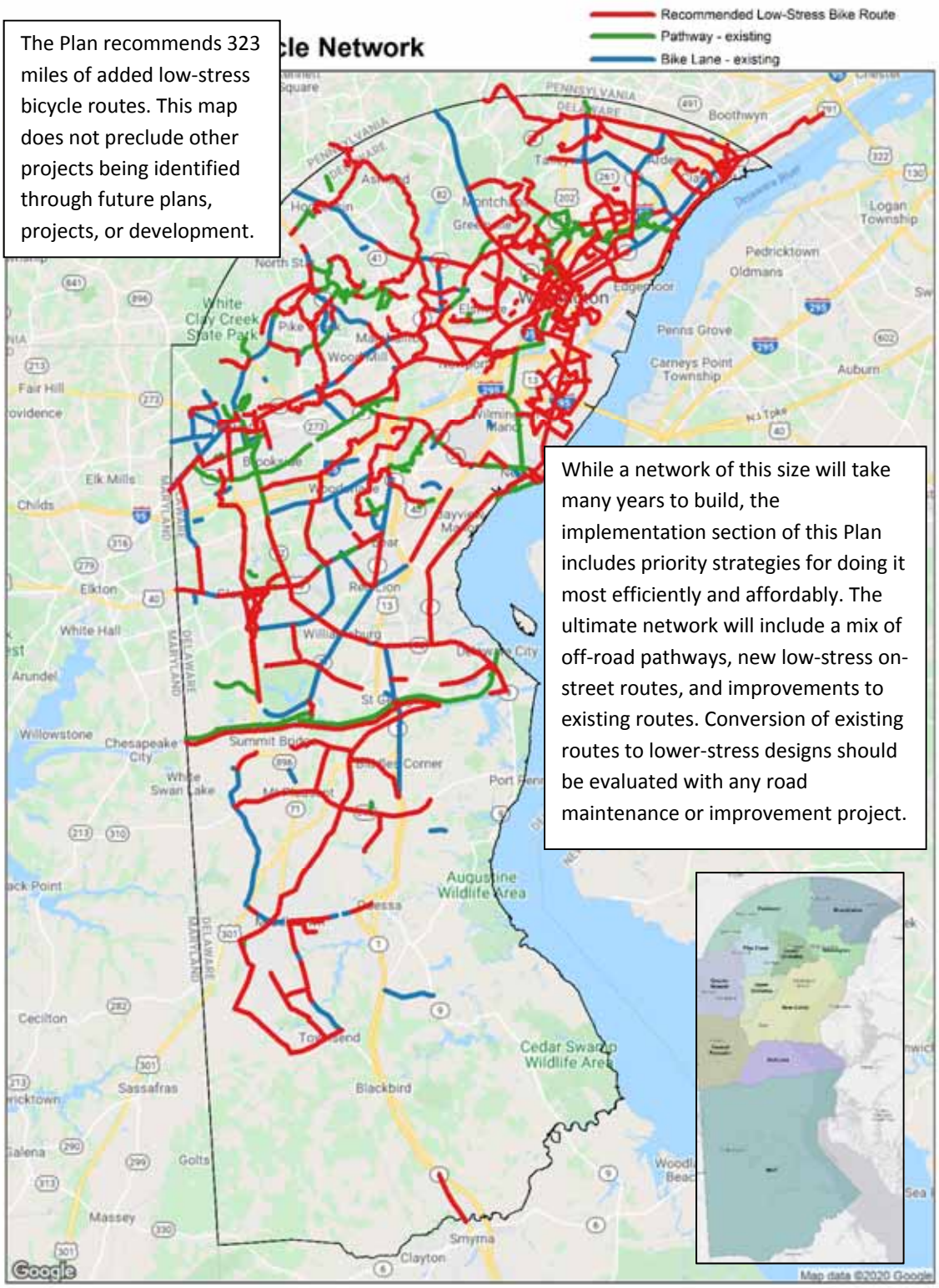
Existing Bicycle Routes



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.

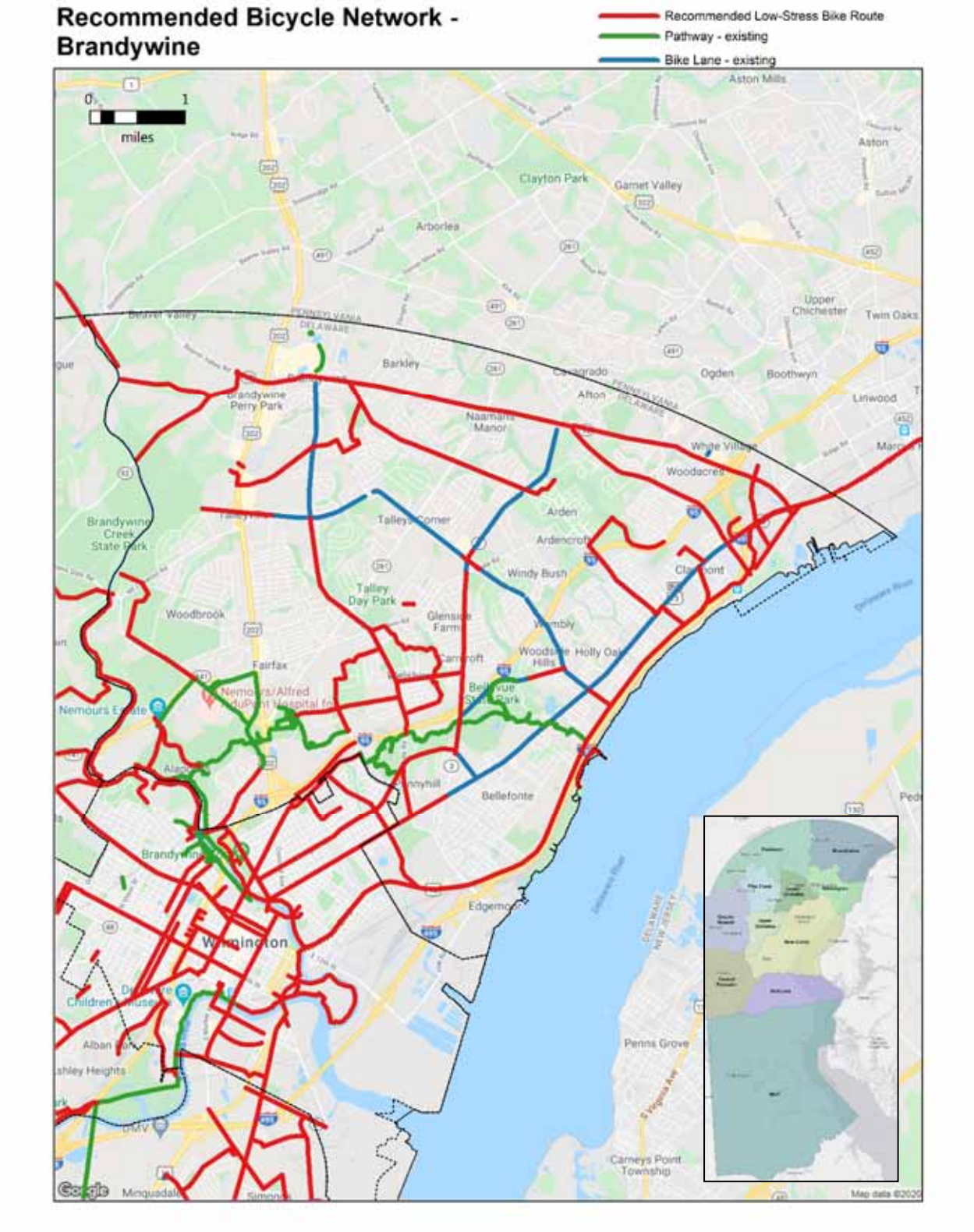
Recommended Bicycle Network

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.

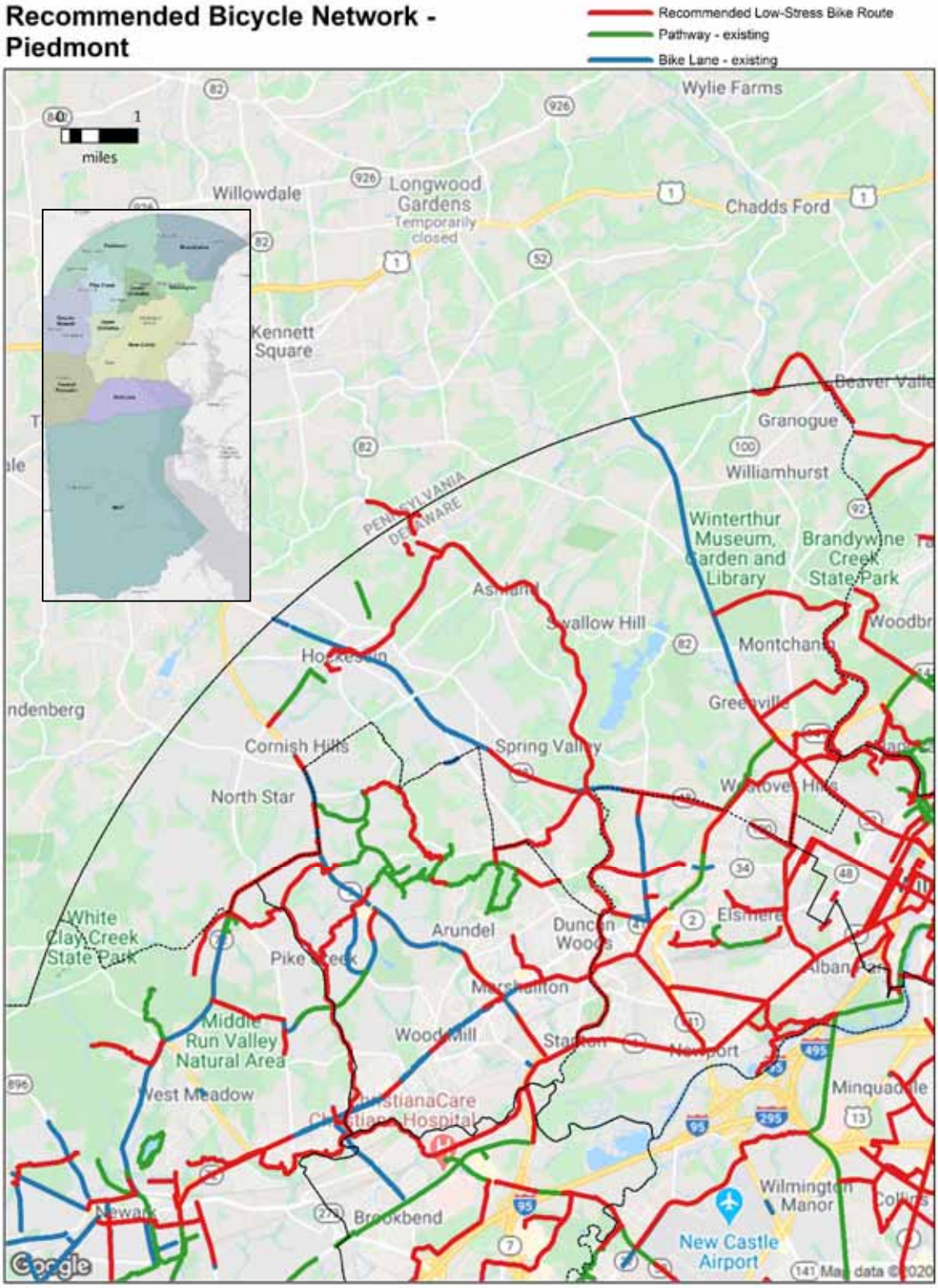


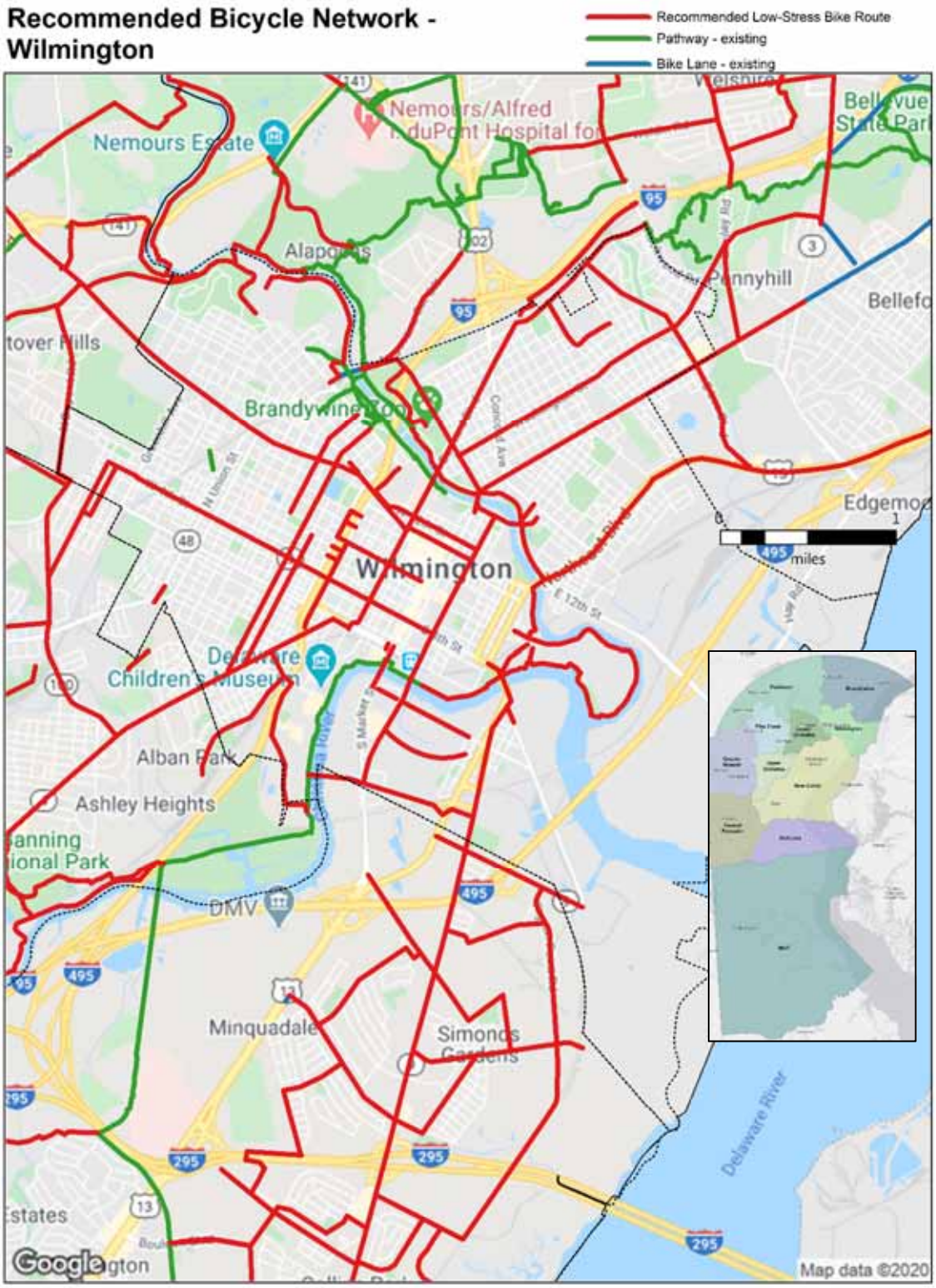
While a network of this size will take many years to build, the implementation section of this Plan includes priority strategies for doing it most efficiently and affordably. The ultimate network will include a mix of off-road pathways, new low-stress on-street routes, and improvements to existing routes. 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 - Piedmont




Recommended Bicycle Network - Wilmington
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
Nemours Estate
Nemours/Alfred I. duPont Hospital for
Alapocas
Brandywine Zoo
Wilmington
Children's Museum
Alban Park
Ashley Heights
DMV
Minquadale
Simonds Gardens
Pennyhill
Edgemoor
Delaware River
0
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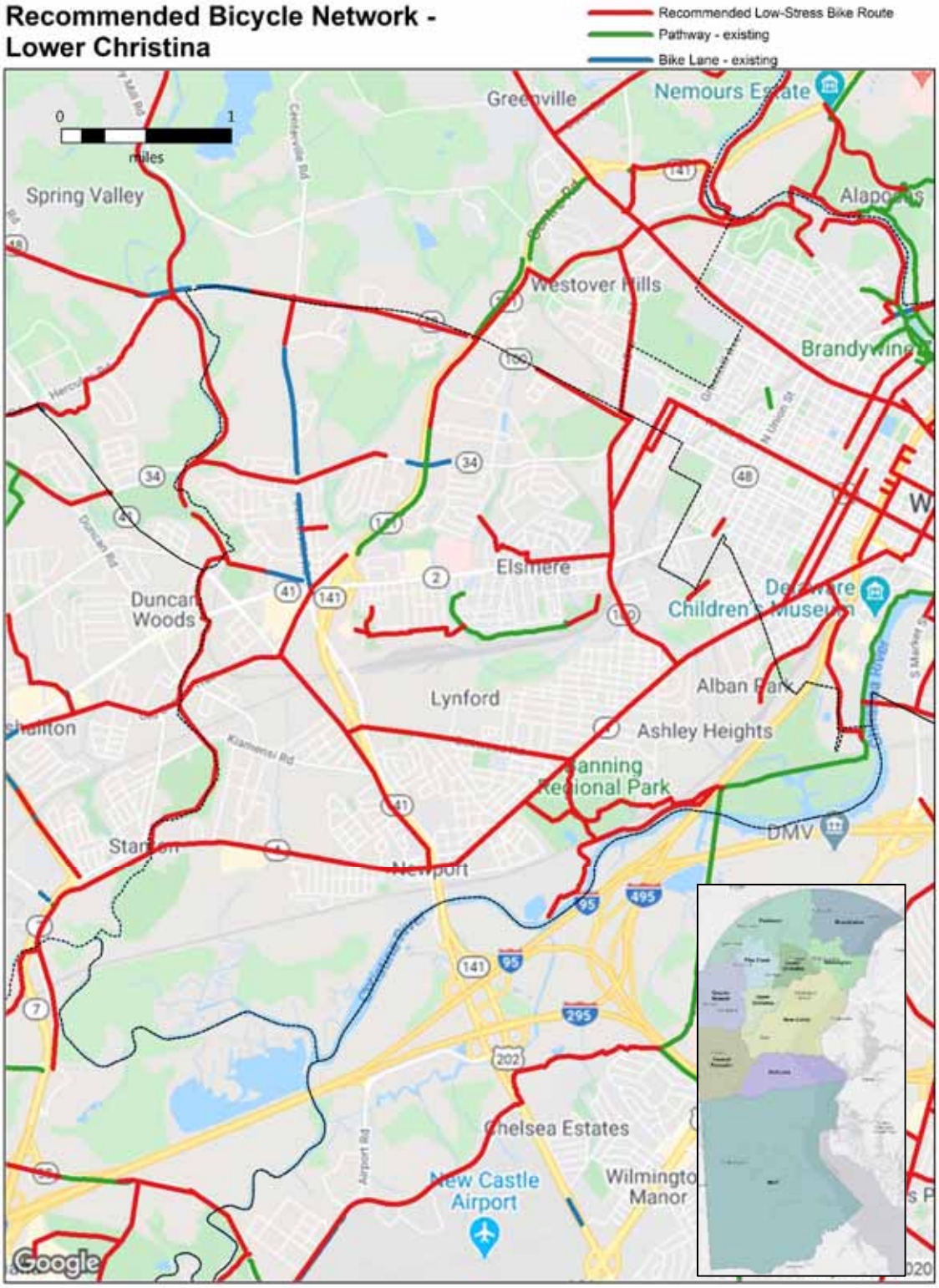
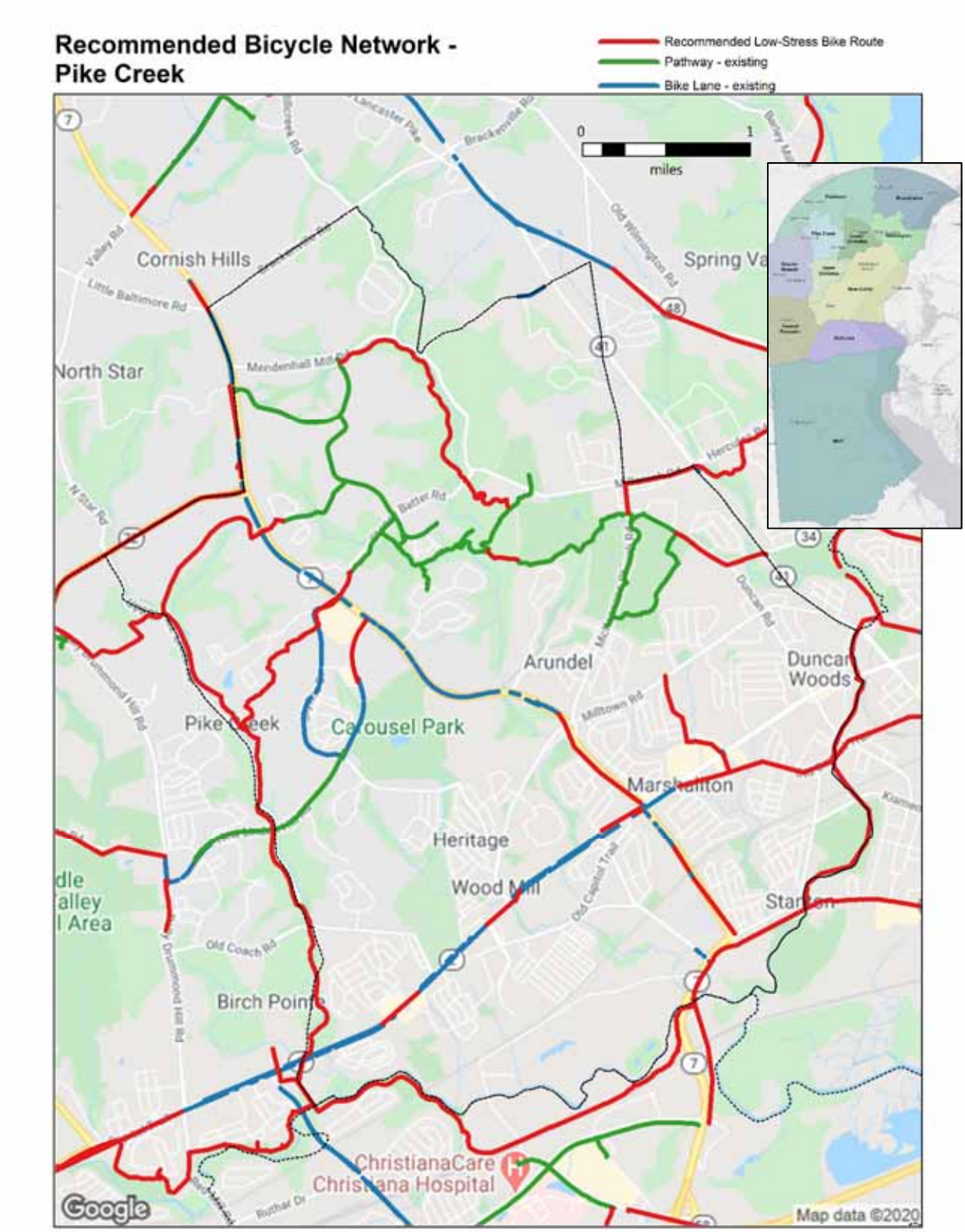
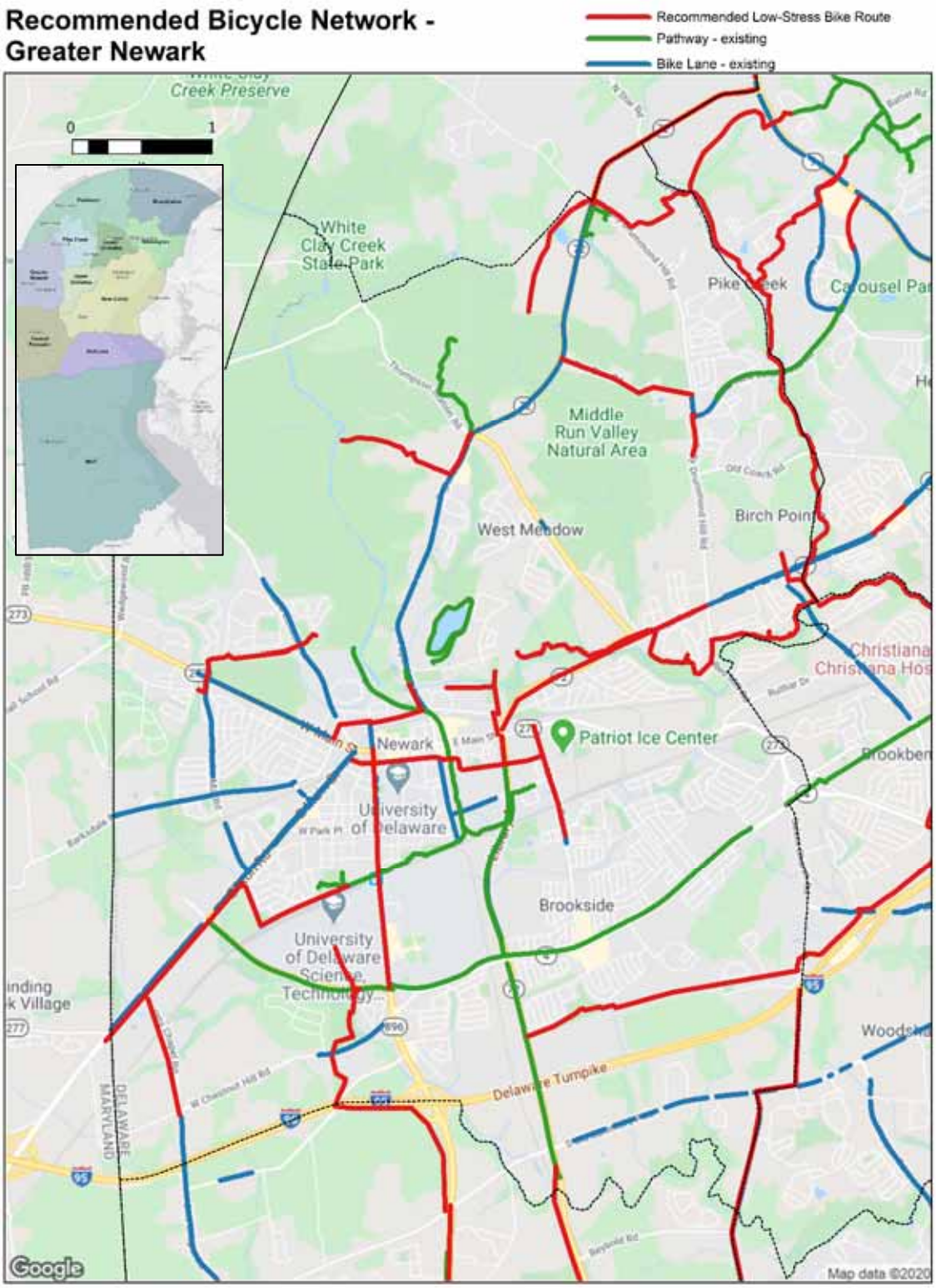
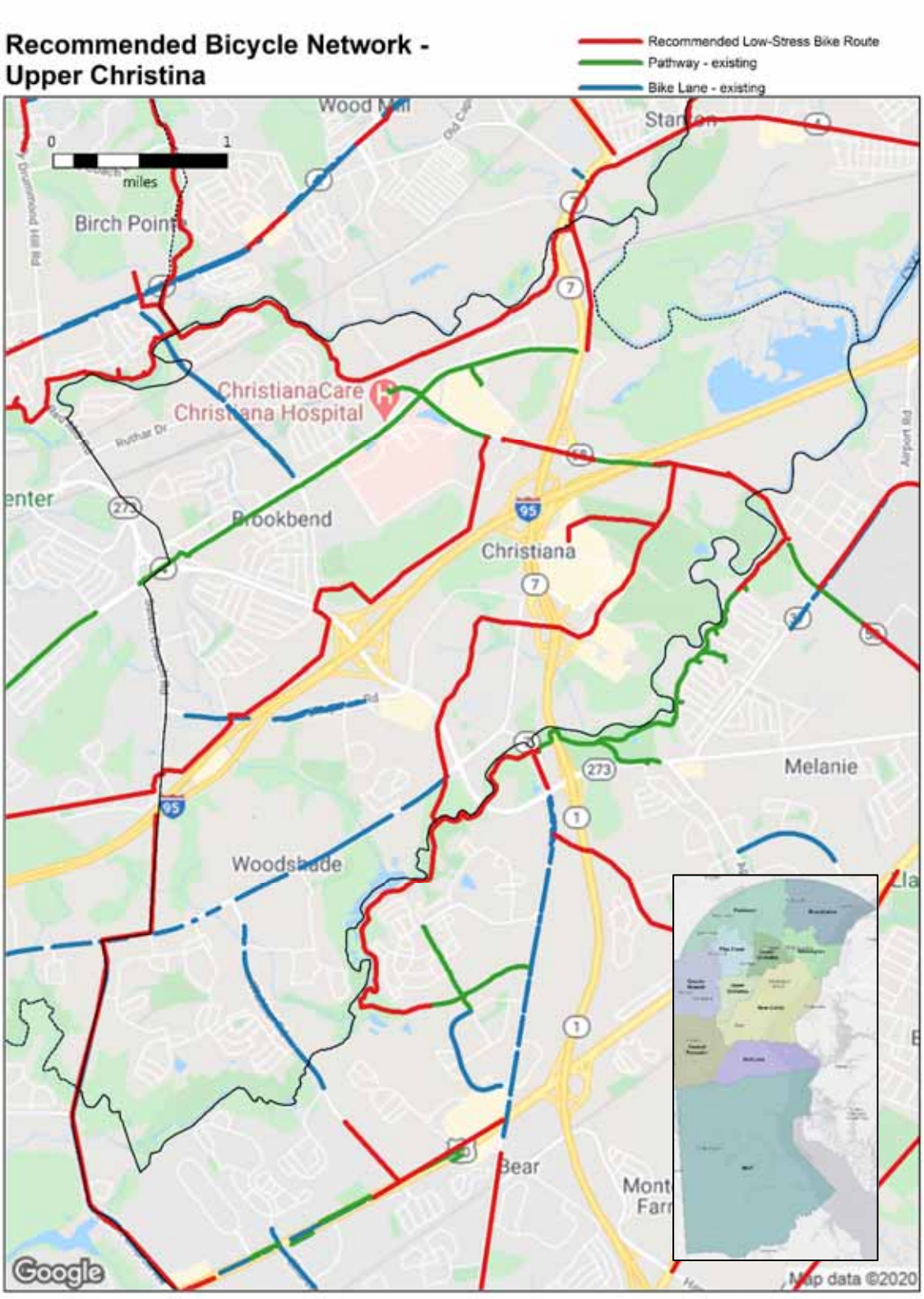
miles
Google
Map data ©2020

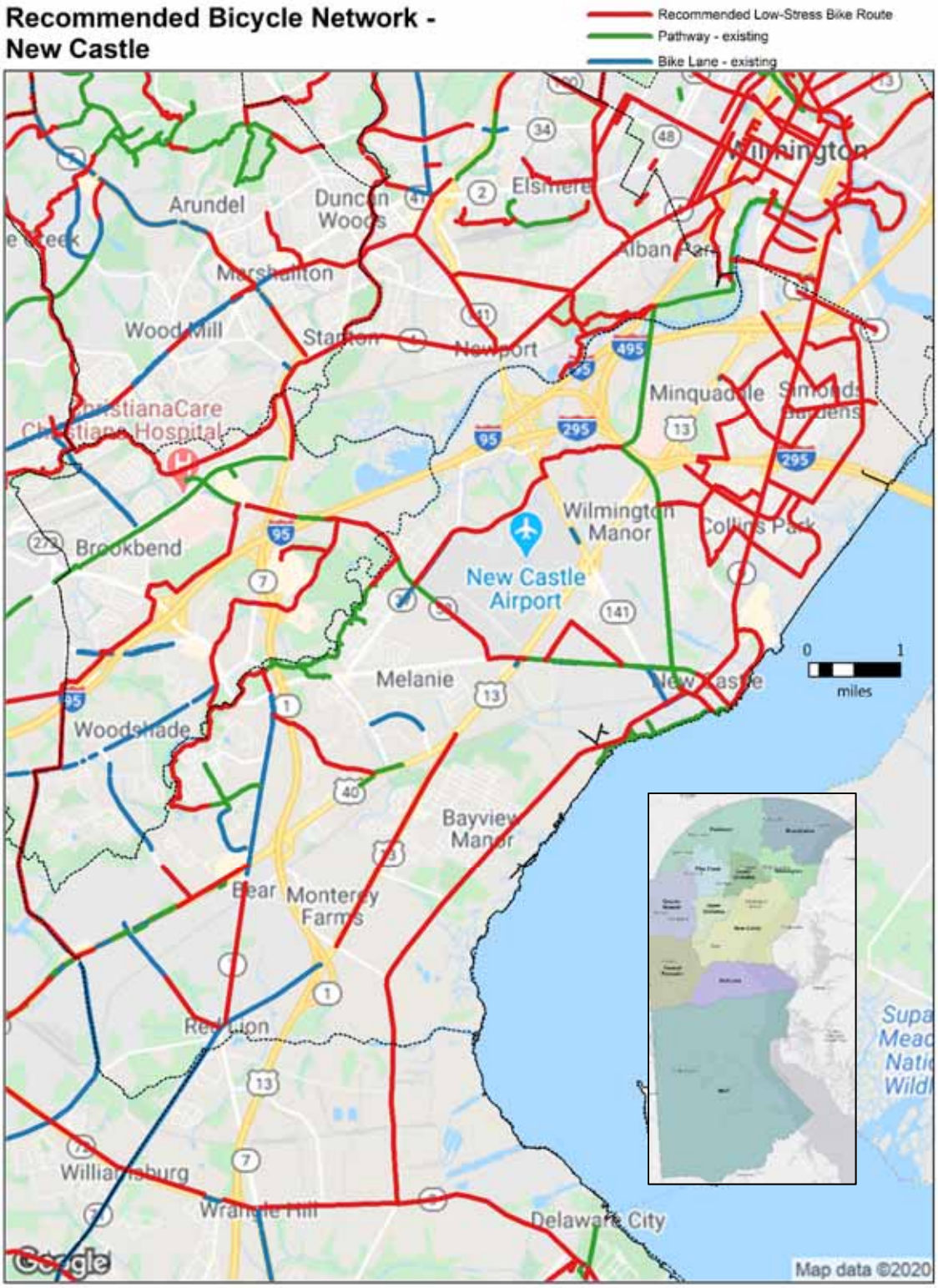
Recommended Bicycle Network - Lower Christina




Recommended Bicycle Network -
Pike Creek
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
0
1
miles
Cornish Hills
North Star
Spring Va
Arundel
Duncan
Woods
Pike Creek
Carousel Park
Marshallton
Heritage
Wood Mill
Birch Point
ChristianaCare
Christiana Hospital
Google
Map data ©2020


Recommended Bicycle Network -
Greater Newark
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
0
1
White Clay Creek State Park
Middle Run Valley Natural Area
West Meadow
Birch Point
Patriot Ice Center
Newark
University of Delaware
Brookside
Delaware Turnpike
DELAWARE
MARYLAND
Google
Map data ©2020


Recommended Bicycle Network -
Upper Christina
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
0
1
miles
Wood Mill
Birch Point
ChristianaCare
Christiana Hospital
Brookbend
Christiana
Melanie
Woodshade
Bear
Google
Map data ©2020


Recommended Bicycle Network -
New Castle
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
Wilmington
Arundel
Duncan Woods
Elsmere
Marshallton
Wood Mill
Stanton
Newport
Minquadale
ChristianaCare
Christiana Hospital
Brookbend
Wilmington Manor
Collins Park
New Castle Airport
Melanie
New Castle
Woodshade
Bayview Manor
Bear
Monterey Farms
Red Lion
Williamsburg
Wrangle Hill
Delaware City
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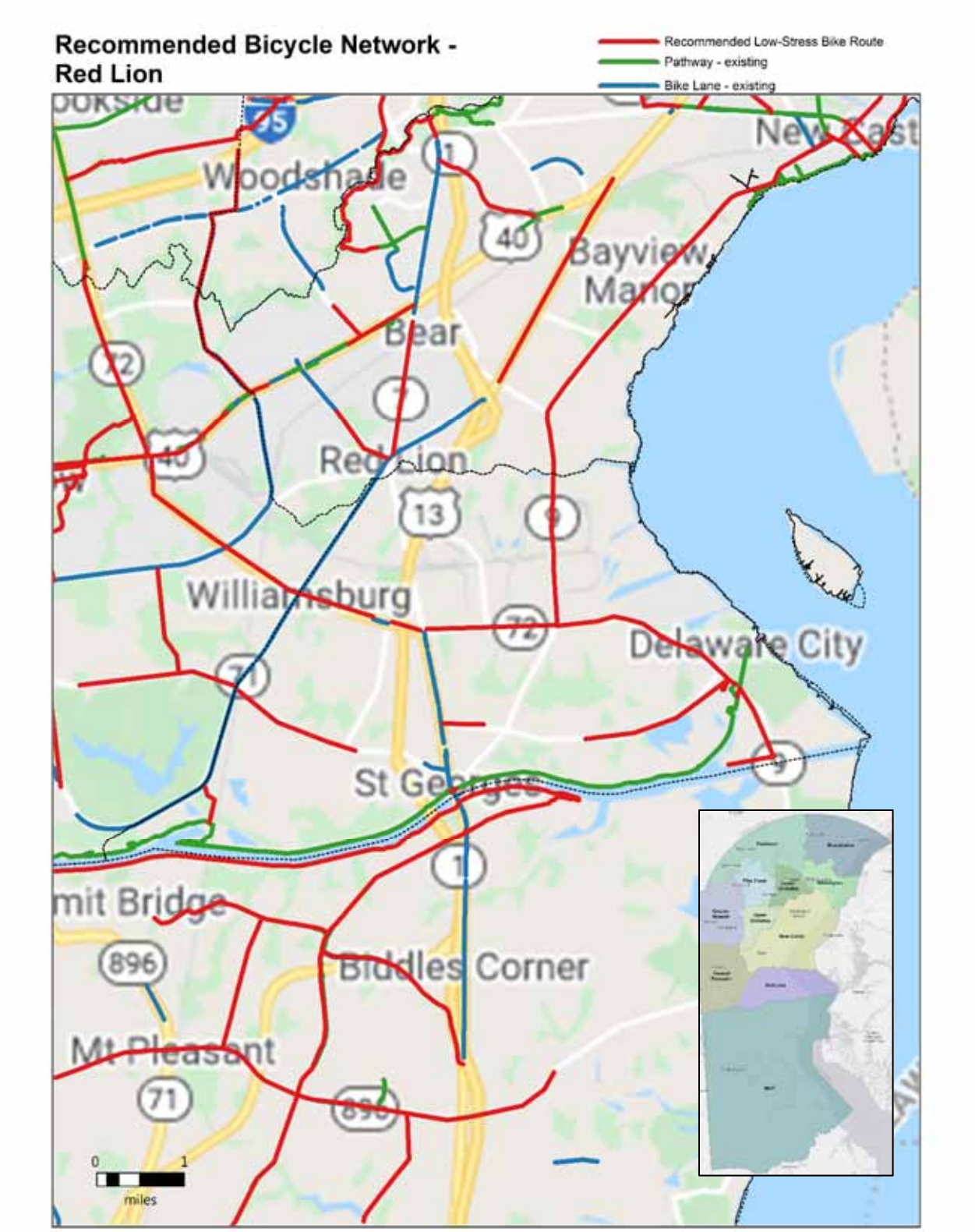
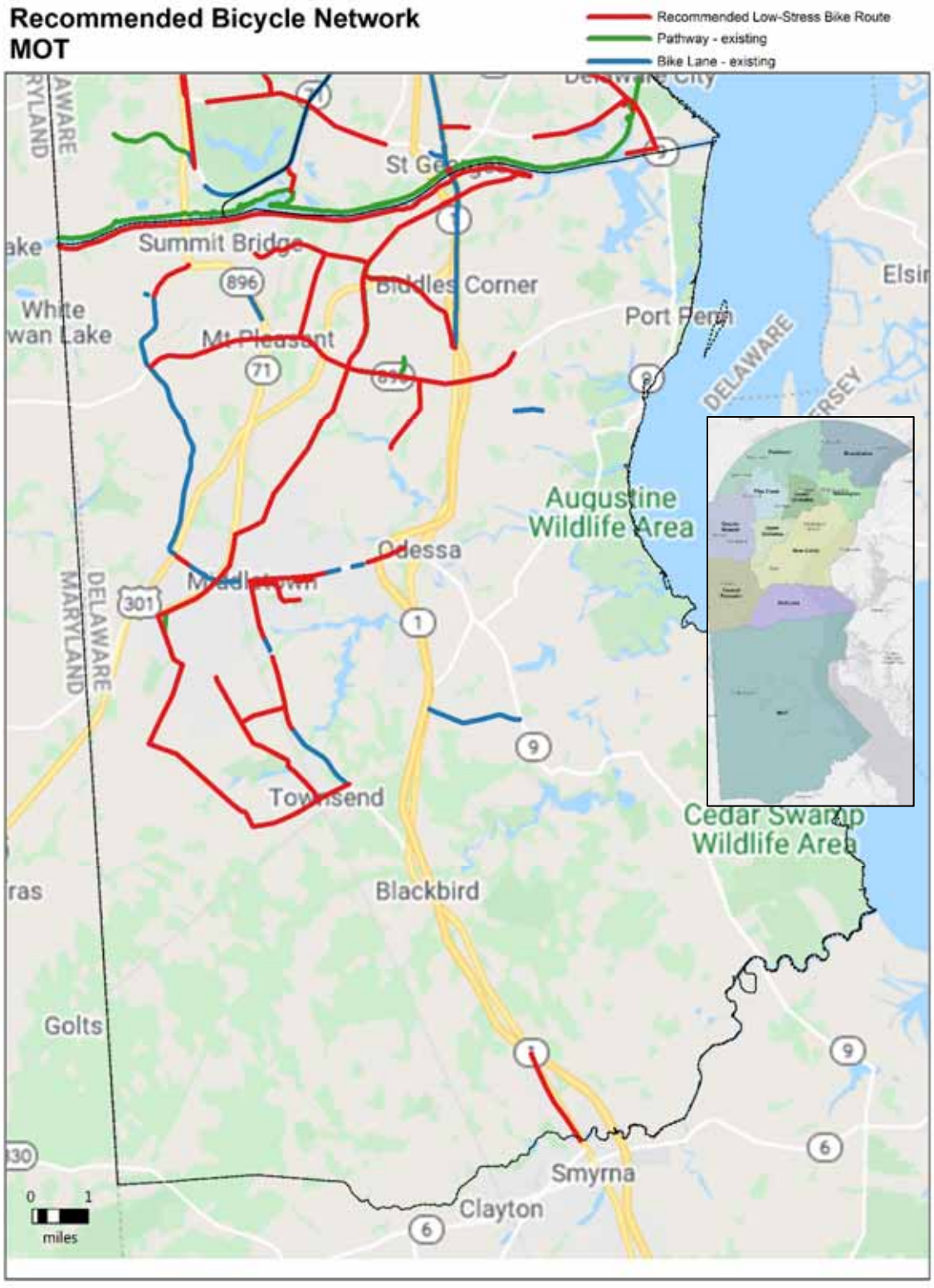

Recommended Bicycle Network -
Red Lion
Recommended Low-Stress Bike Route
Pathway - existing
Bike Lane - existing
Woodshade
Bayview
Manor
Bear
Williamsburg
Delaware City
Biddles Corner
Mt Pleasant
896
71
72
40
13
1
0
1
miles

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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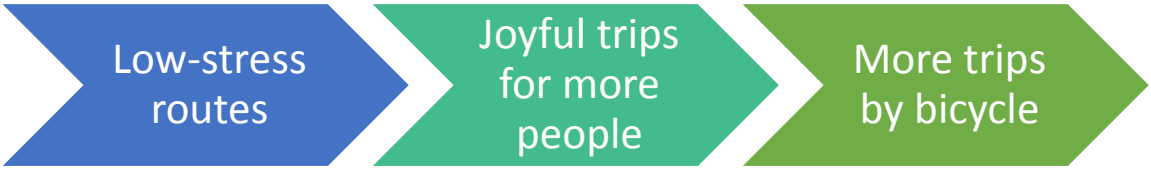
miles

Bicycle Level of Traffic Stress



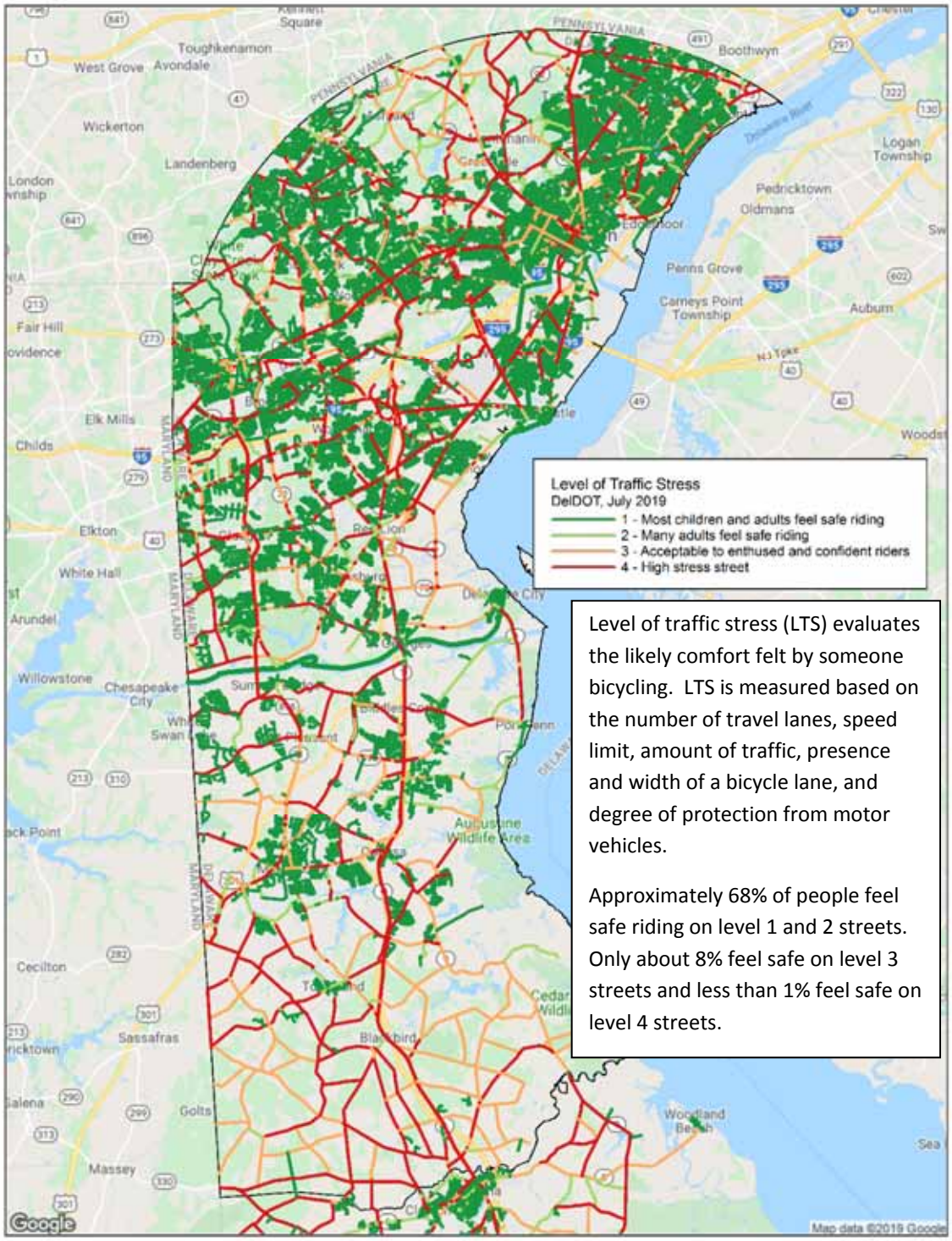
This plan proposes a network of interconnected bicycle routes and street crossings that make bicycling practical and appealing to a broader range of people who live, work, and play in New Castle County. New routes should be designed to provide a low-stress bike ride, and existing routes should be improved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

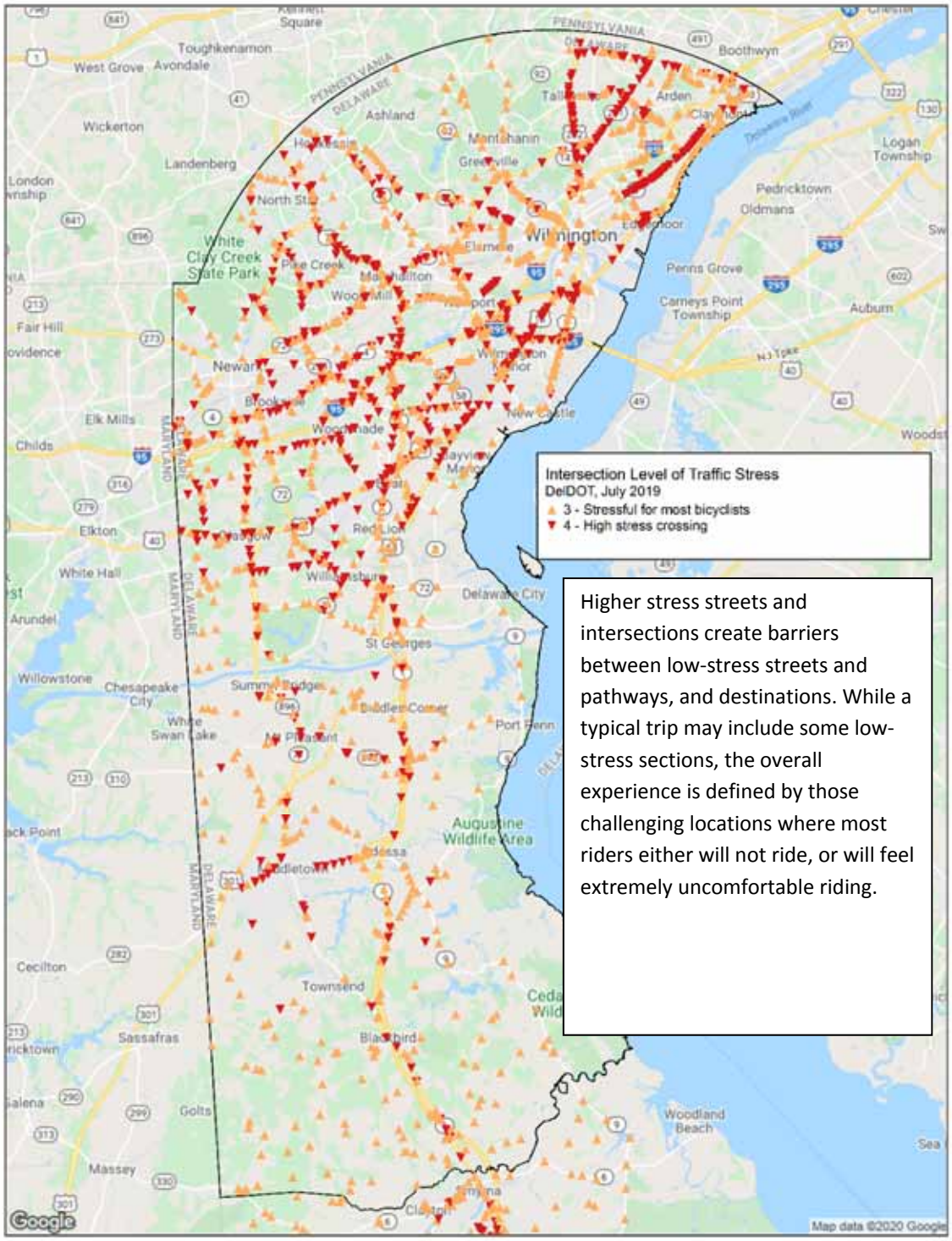
Bicycle Level of Traffic Stress



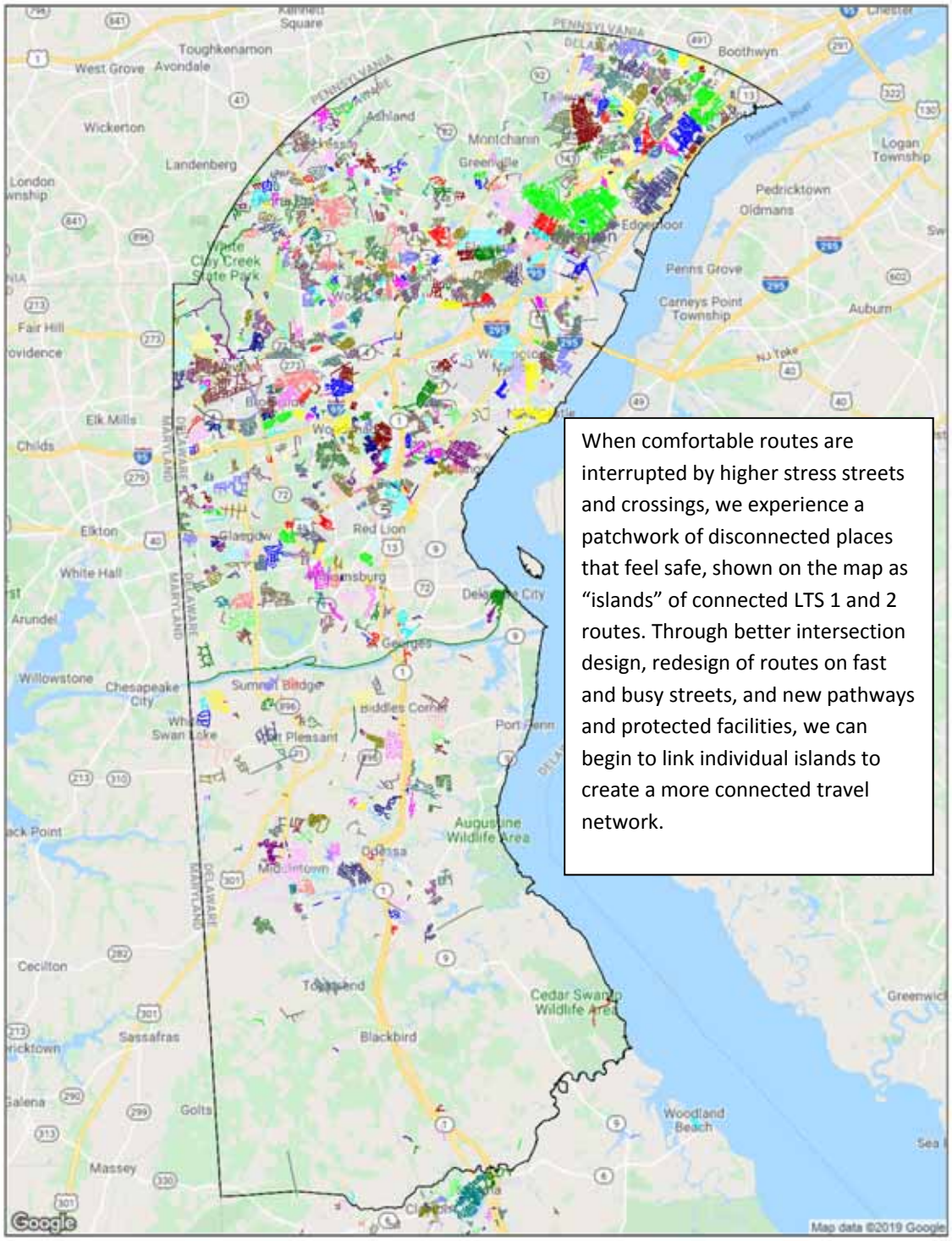
Level of traffic stress (LTS) evaluates the likely comfort felt by someone bicycling. LTS is measured based on the number of travel lanes, speed limit, amount of traffic, presence and width of a bicycle lane, and degree of protection from motor vehicles.

Approximately 68% of people feel safe riding on level 1 and 2 streets. Only about 8% feel safe on level 3 streets and less than 1% feel safe on level 4 streets.

Intersection Level of Traffic Stress



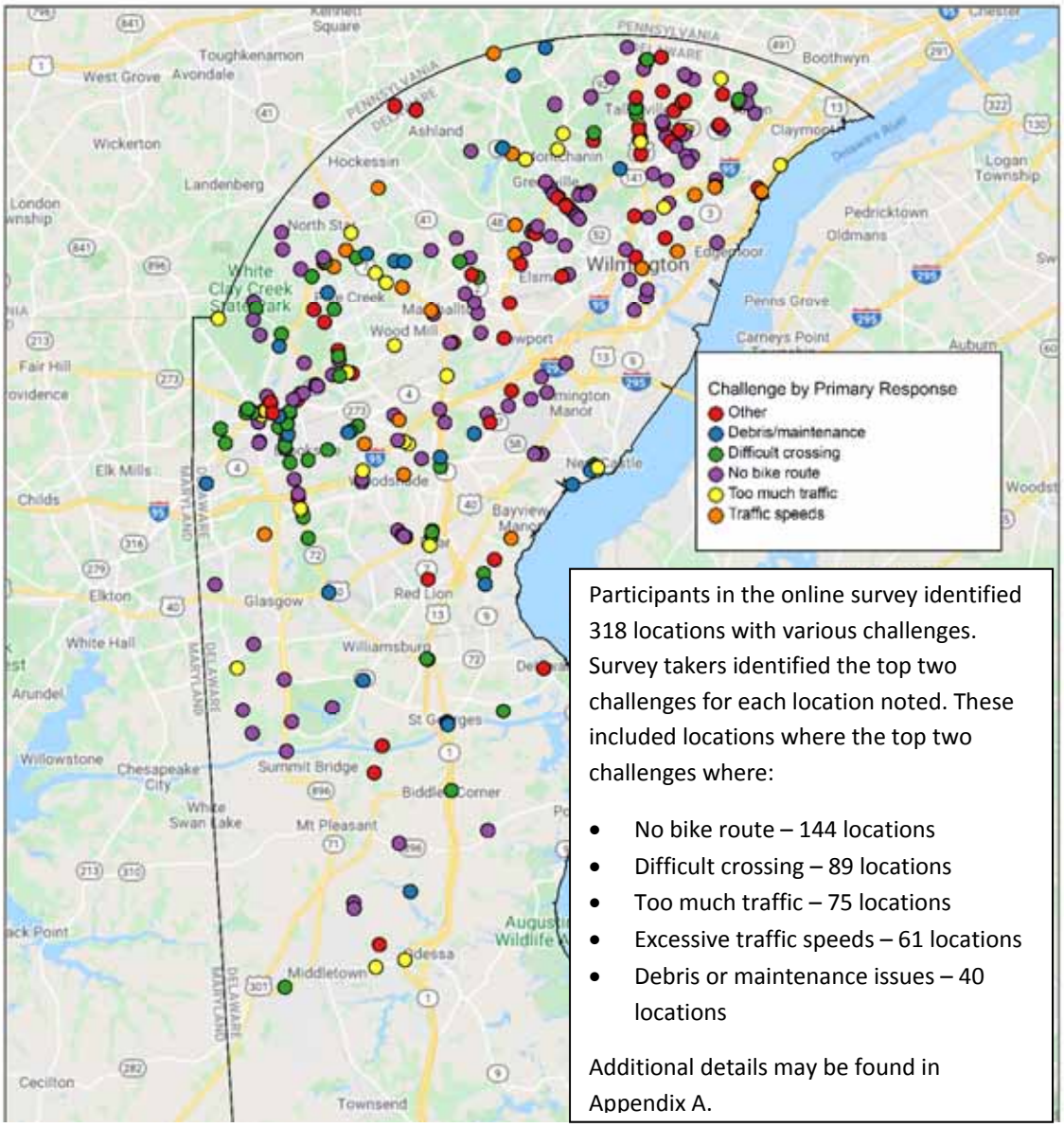
Low Level of Traffic Stress Islands



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.

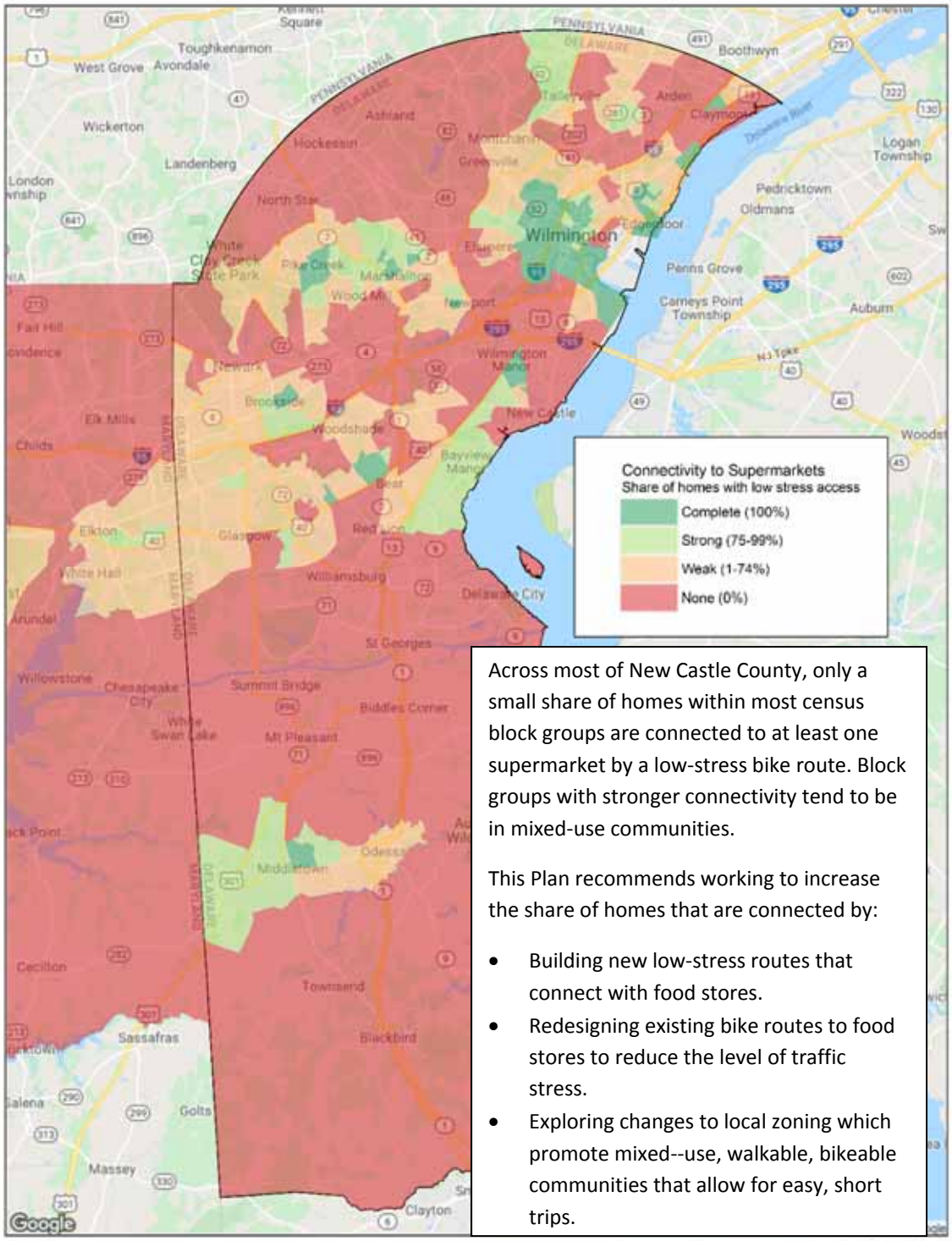
The overall percentage of homes within New Castle County that are connected by walking, biking, taking the bus, or driving to important destinations is as follows:

	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

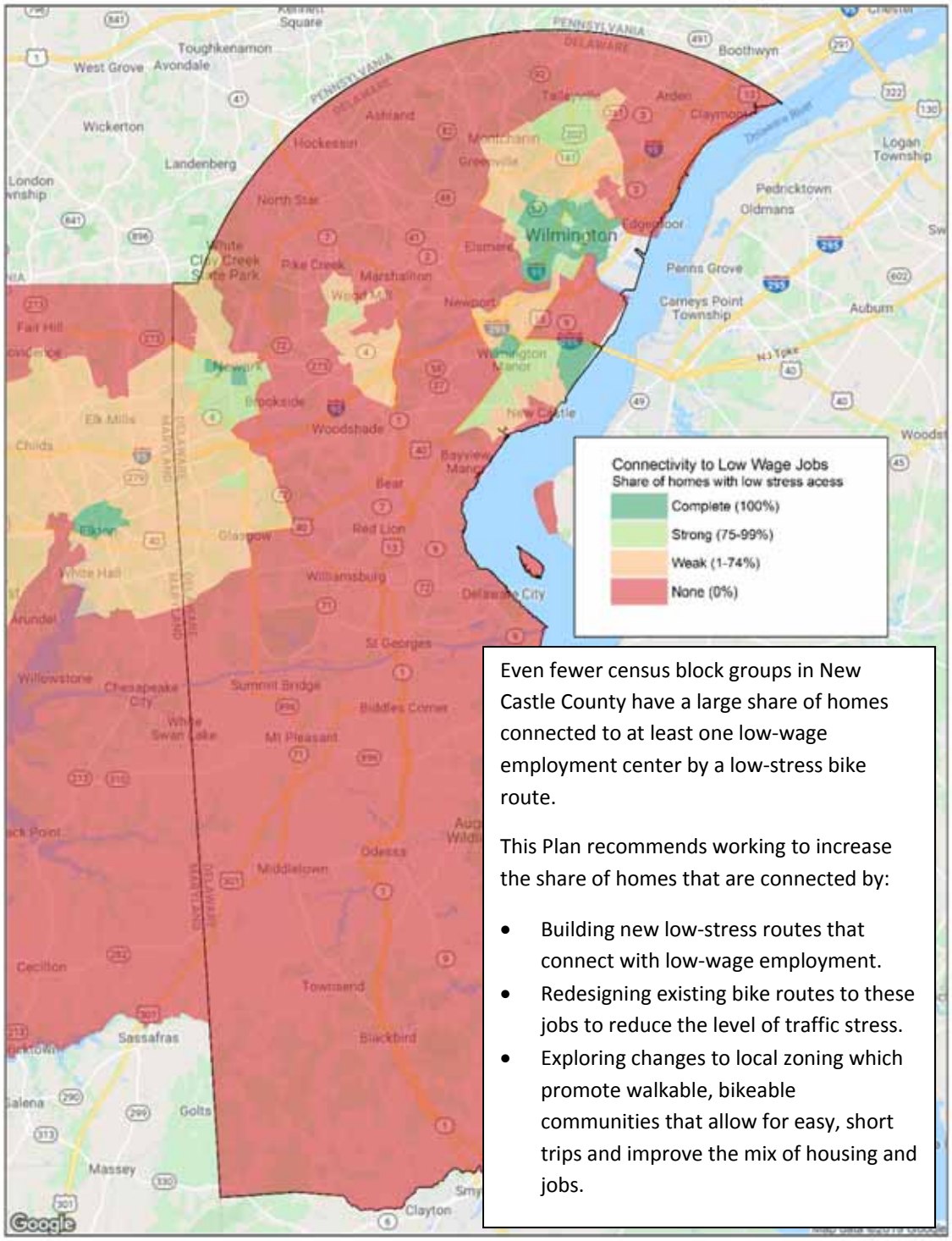


Across most of New Castle County, only a small share of homes within most census block groups are connected to at least one supermarket by a low-stress bike route. Block groups with stronger connectivity tend to be in mixed-use communities.

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.

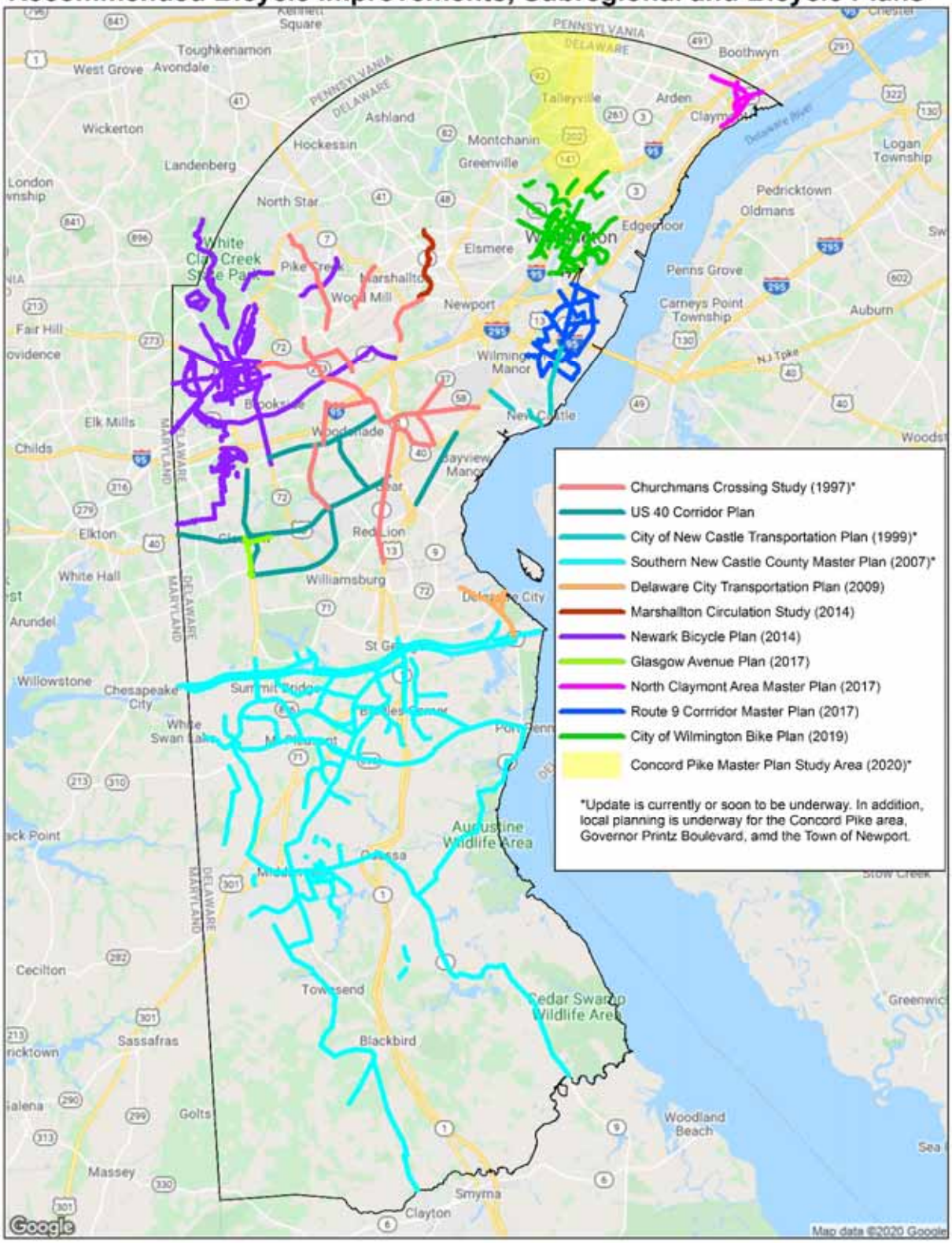
Implement Local Bicycle Plans. Two municipalities have adopted bicycle plans: the 2014 Newark Bicycle Plan and the 2019 City of Wilmington Bike Plan. Recommendations from each are included in their entirety in this Plan. Implementation of these plans should be evaluated, and the plans should be periodically 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.

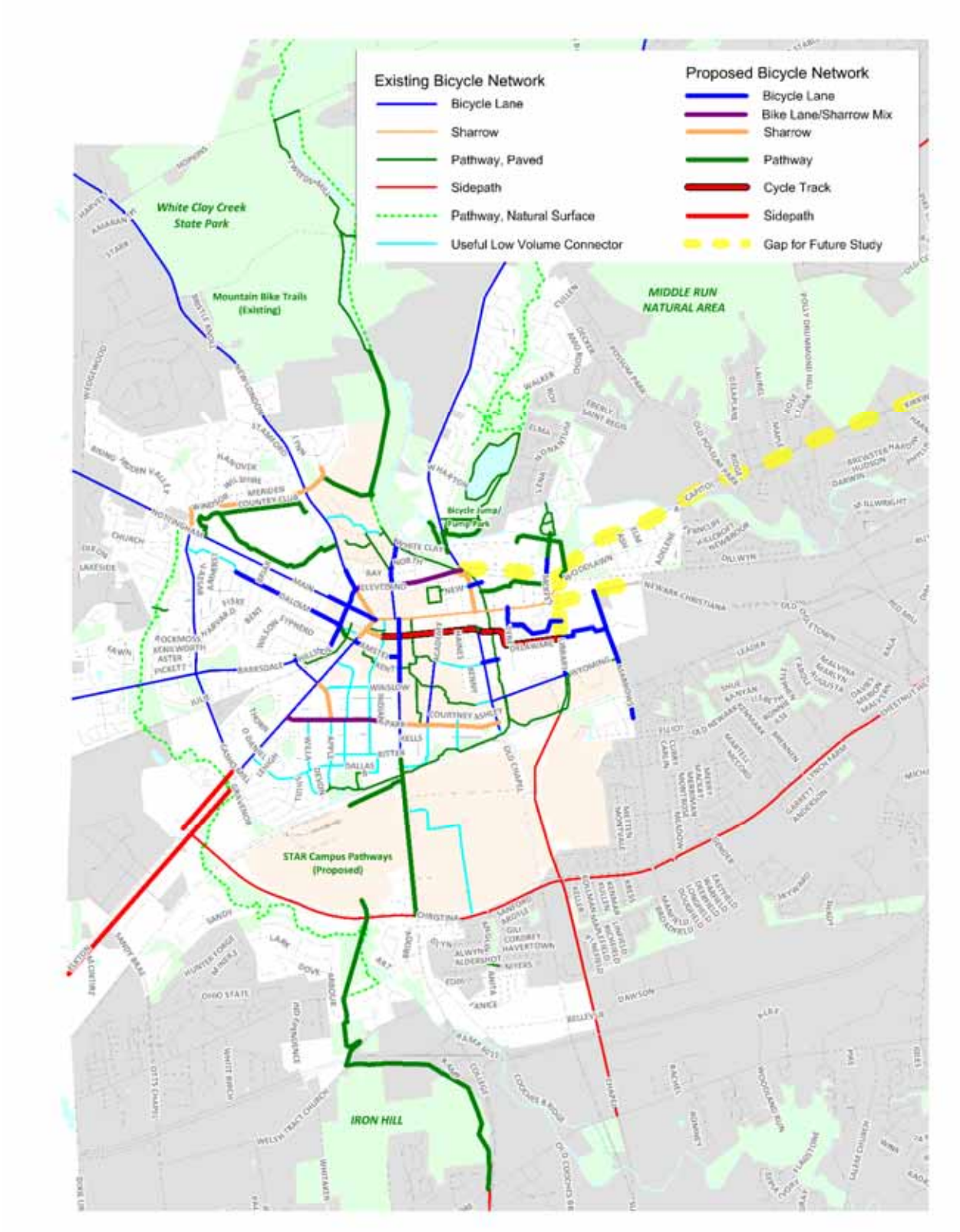
Implement Subregional Plans. WILMAPCO has worked in partnership with state and local agencies and the community to develop dozens of local subregional and corridor plans. These plans holistically evaluate an area's future needs and make recommendations for bicycle, pedestrian, transit, and motor vehicle 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

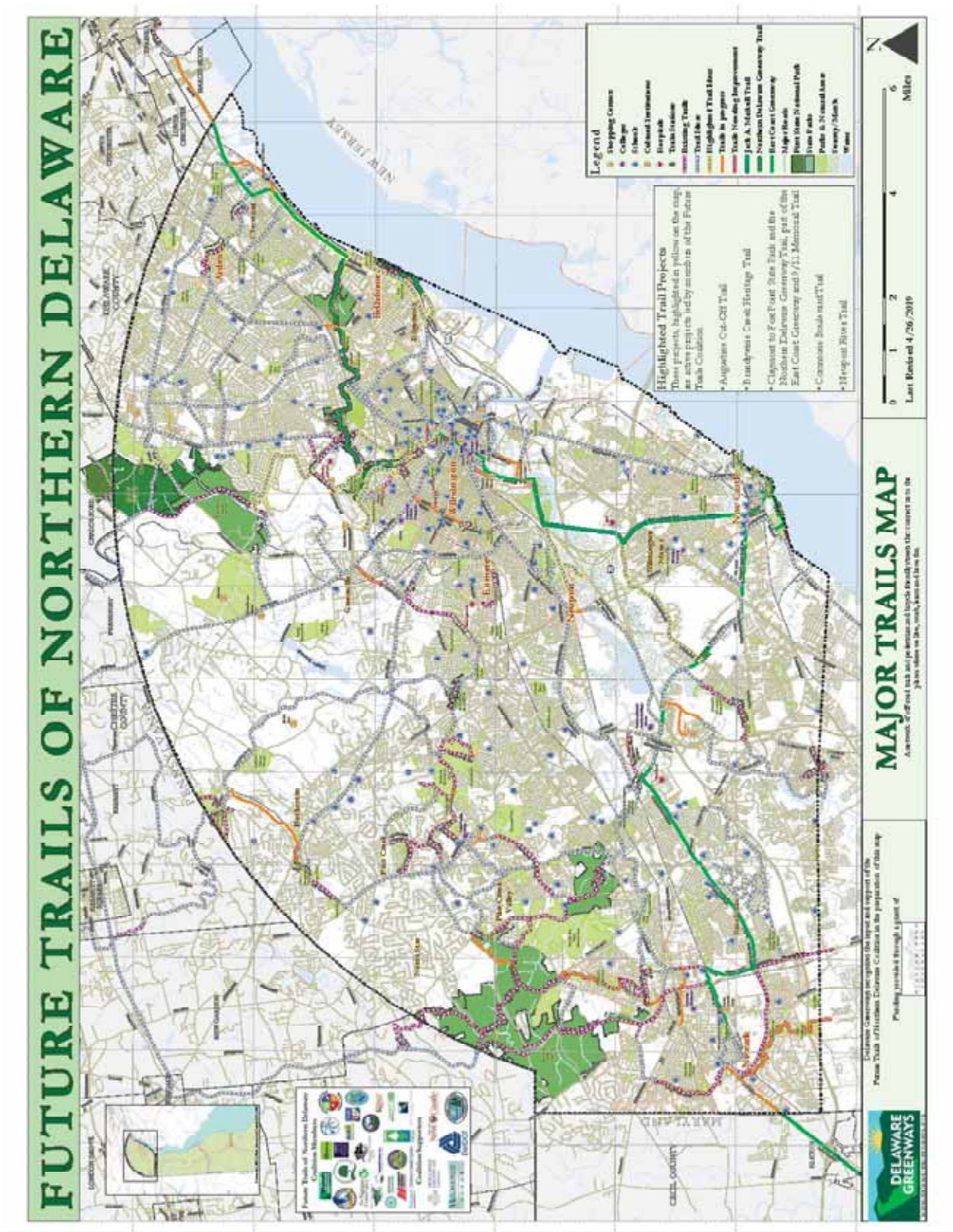


2014 Newark Bicycle Plan Recommended Network

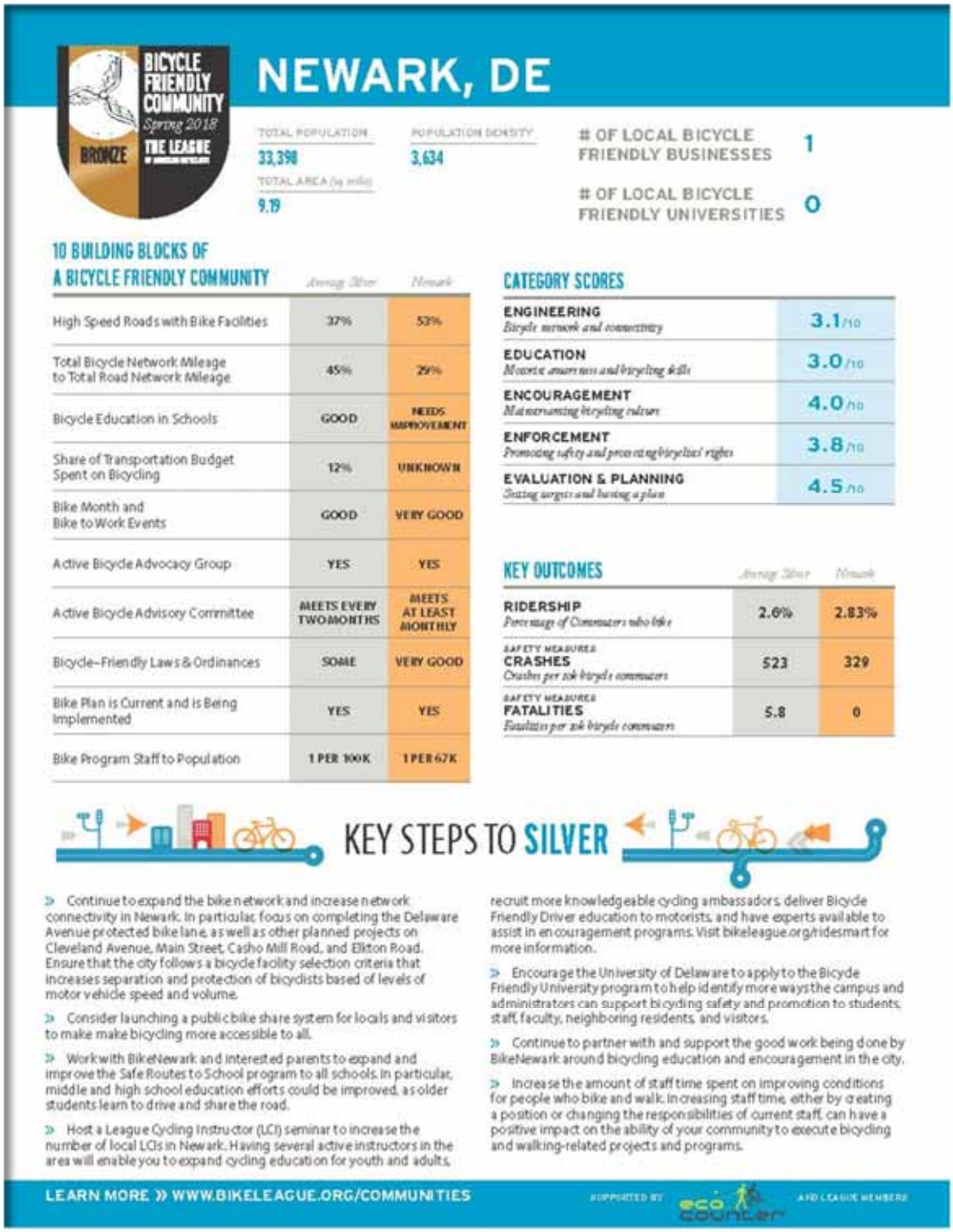


2019 City of Wilmington Bike Plan Recommended Network

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.

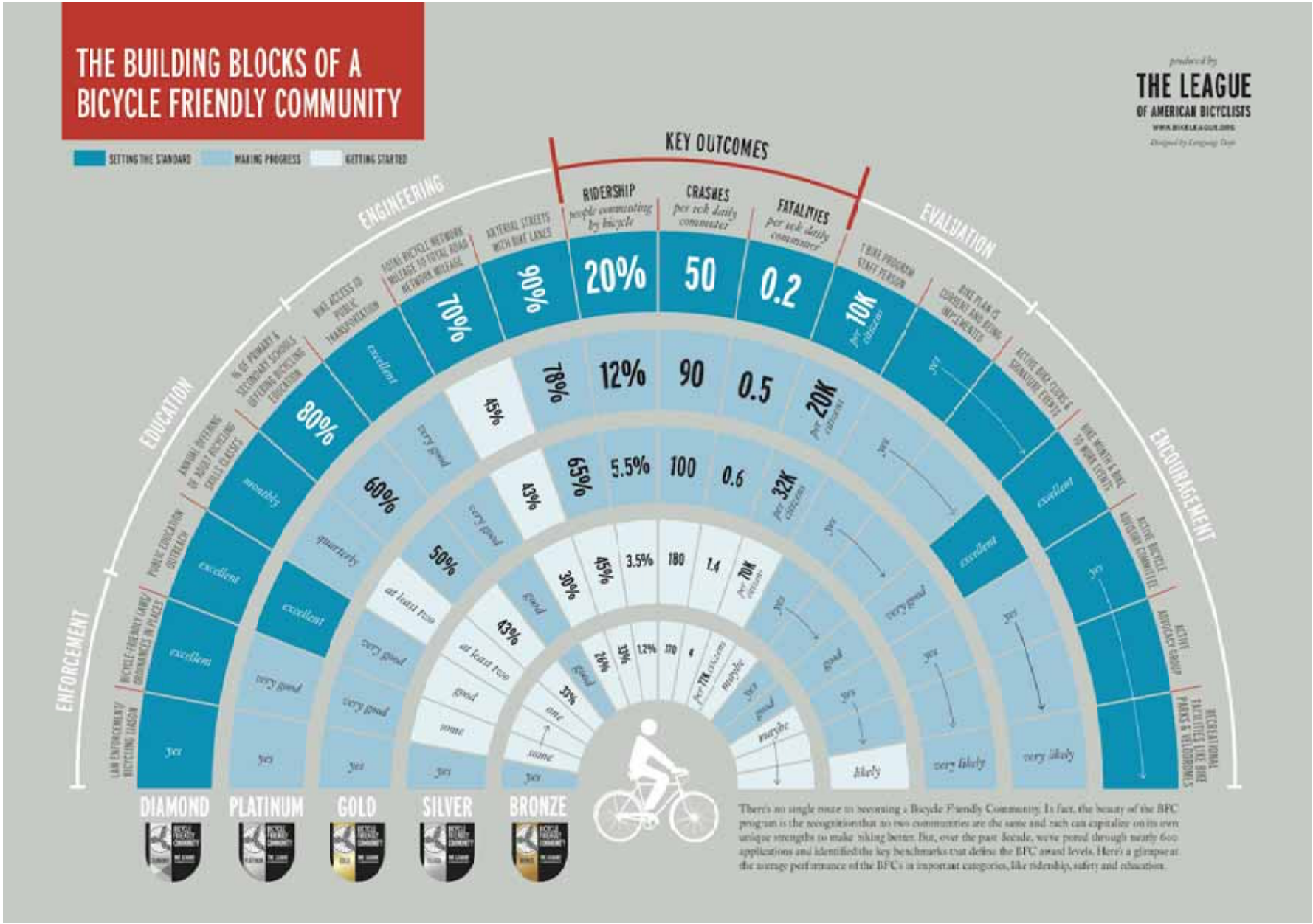
» Encourage the University of Delaware to apply to the Bicycle Friendly University program to help identify more ways the campus and administrators can support bicycling safety and promotion to students, staff, faculty, neighboring residents, and visitors.

» 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
SETTING THE STANDARD
MAKING PROGRESS
GETTING STARTED
KEY OUTCOMES
ENGINEERING
EDUCATION
ENFORCEMENT
EVALUATION
ENCOURAGEMENT
RIDERSHIP
people commuting by bicycle
CRASHES
per 10k daily commuter
FATALITIES
per 10k daily commuter
20%
50
0.2
90%
70%
80%
60%
50%
45%
78%
65%
30%
12%
5.5%
3.5%
90
100
180
0.5
0.6
1.4
20K
32K
70K
10K
DIAMOND
PLATINUM
GOLD
SILVER
BRONZE
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.

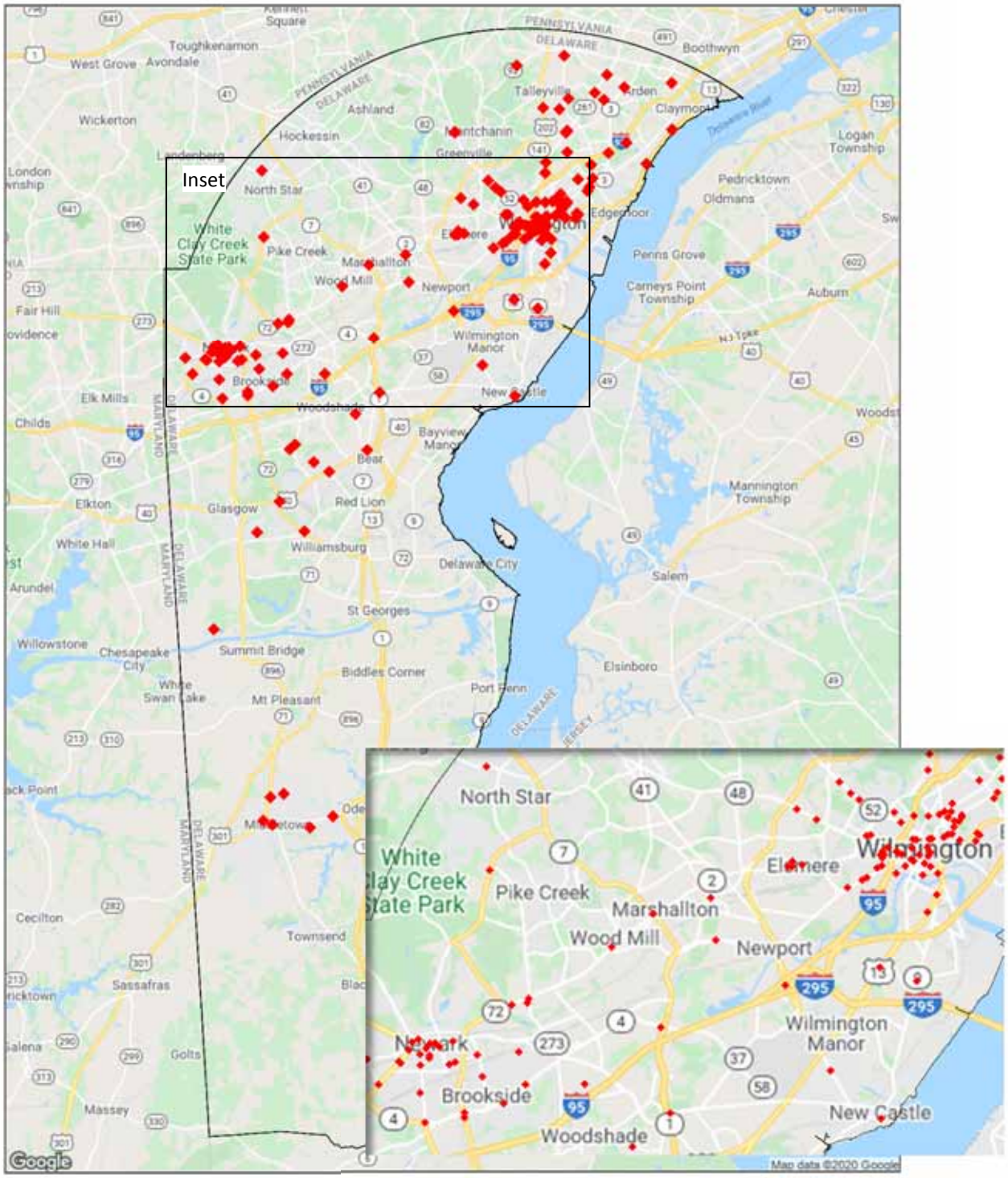
Safety in Numbers

"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

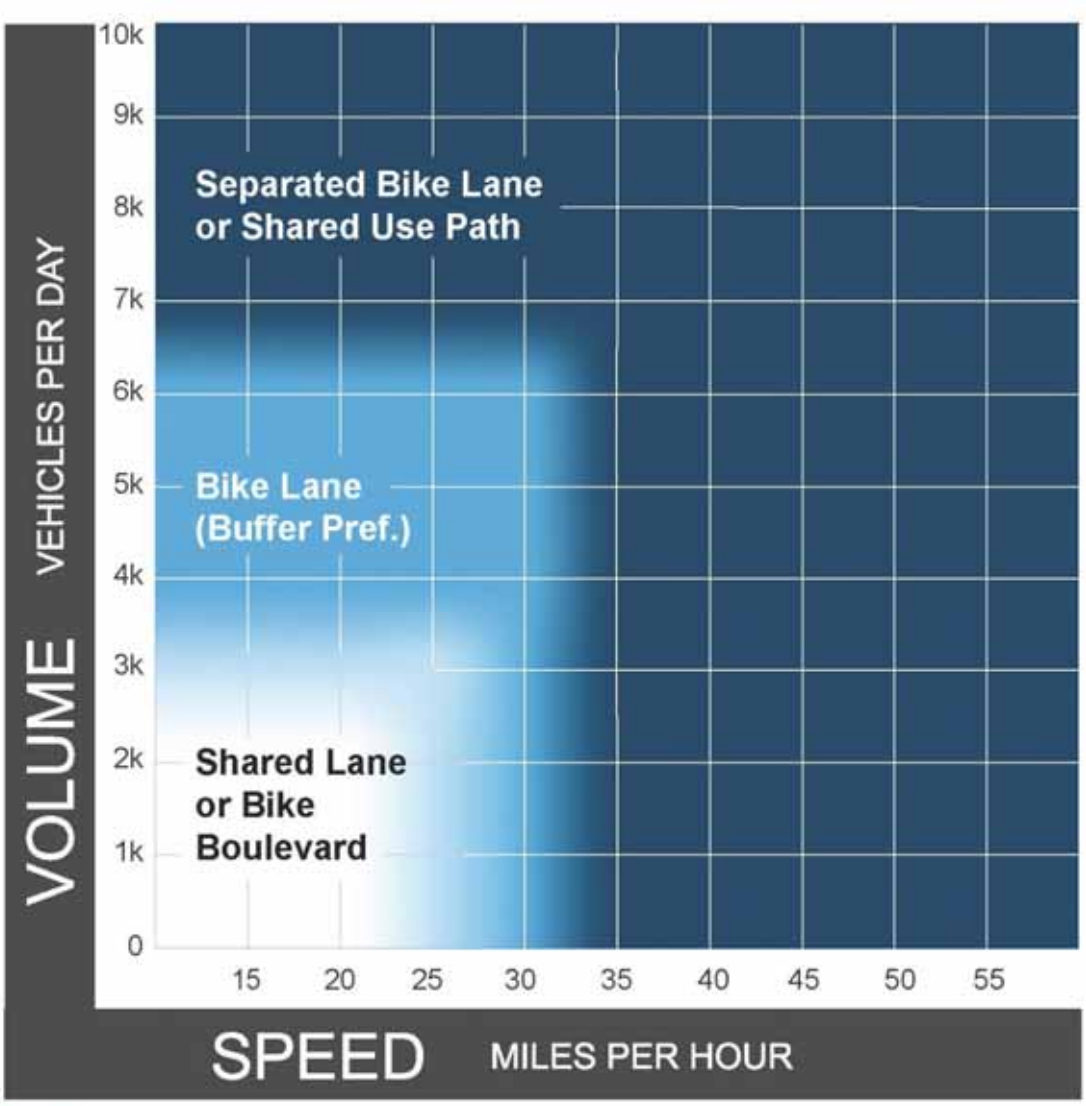


Design

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**
≤ 25 mph	≤ 500 – 1,500			
	≤ 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.[8]

‡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

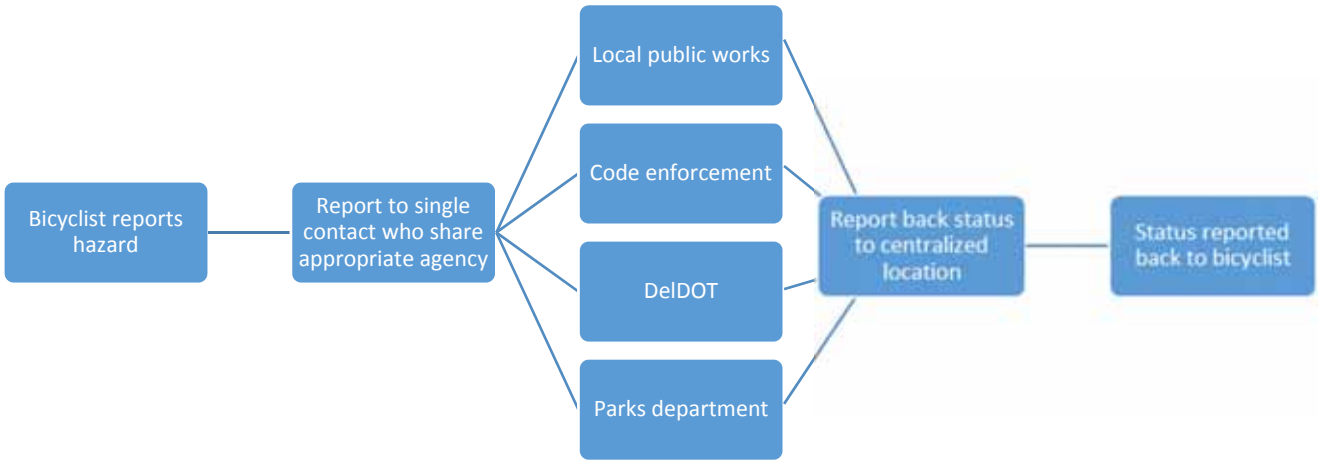
https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/chapt16.cfm

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

Incorporate bicycle elements into land use planning

- 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 policies 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

Bicycle facilities have helped communities thrive economically, supported by branding, wayfinding, public art and partnerships with businesses.

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

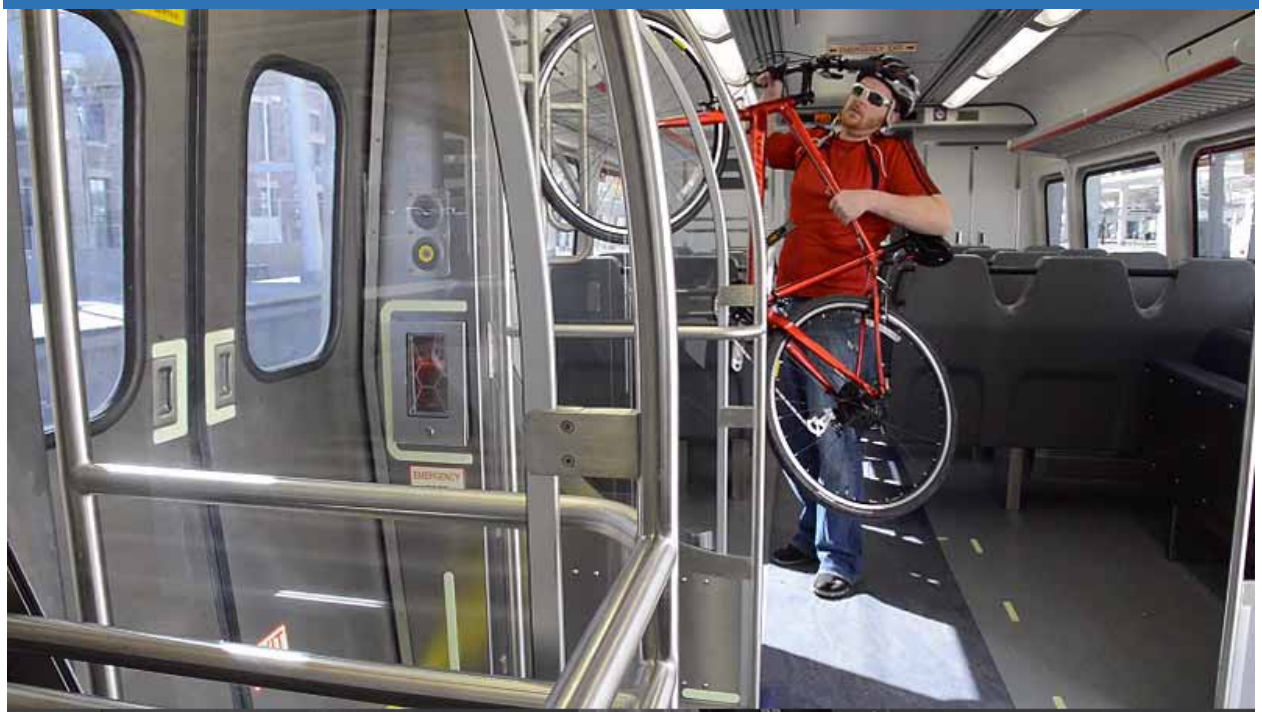
Provide Bicycle Access to Transit

	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.

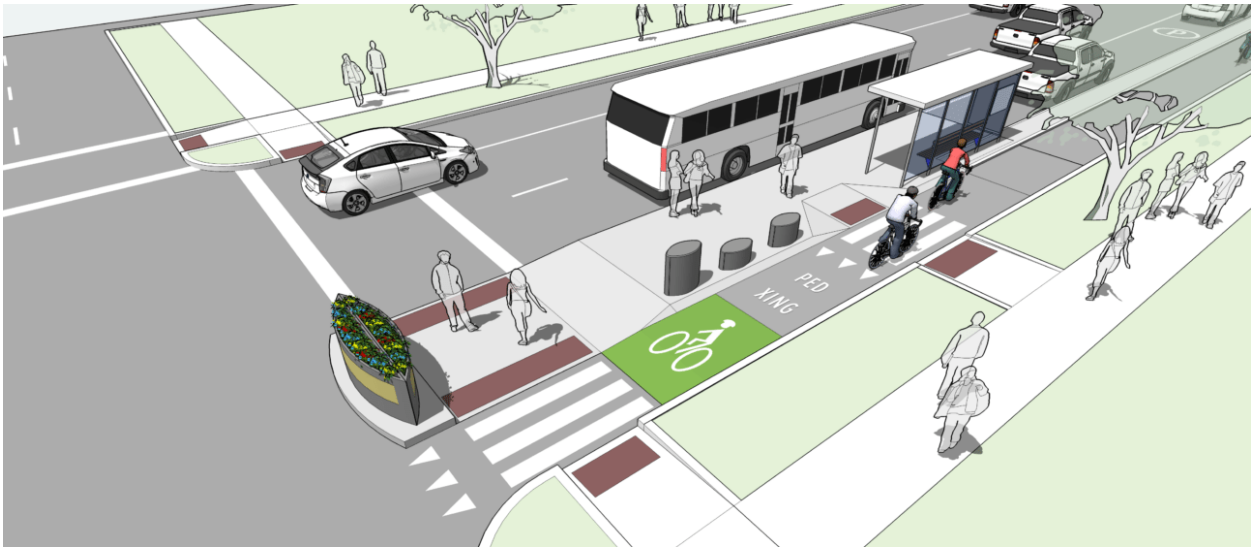
Future rail car purchases, particularly those for which Delaware contributes funding, should contain dedicated space for bicycles on all trips. In addition, DART should work with SEPTA towards allowing all-day bicycle access onboard commuter rail. The Bicycle Coalition of Greater Philadelphia has long 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.

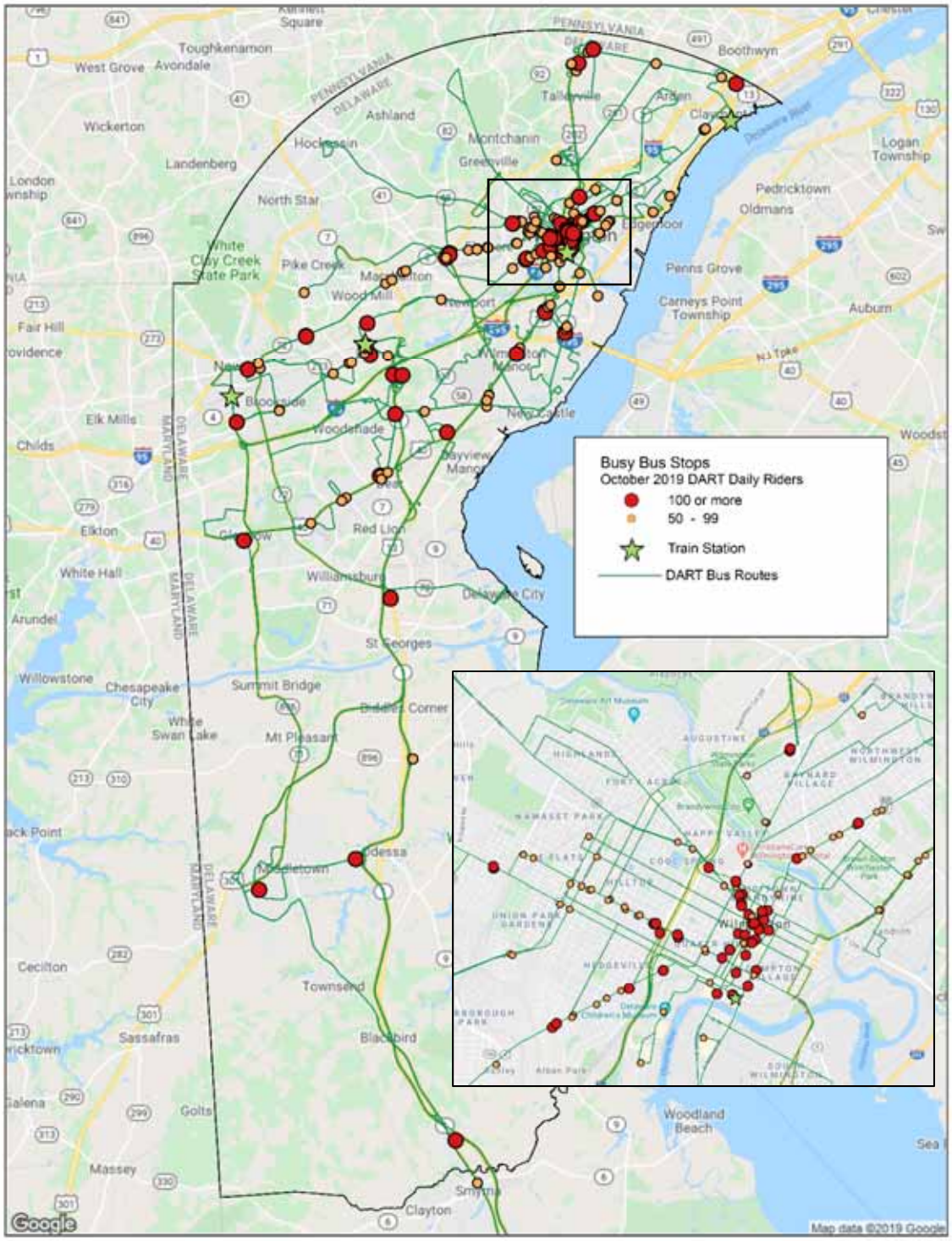


Source: Alta Planning

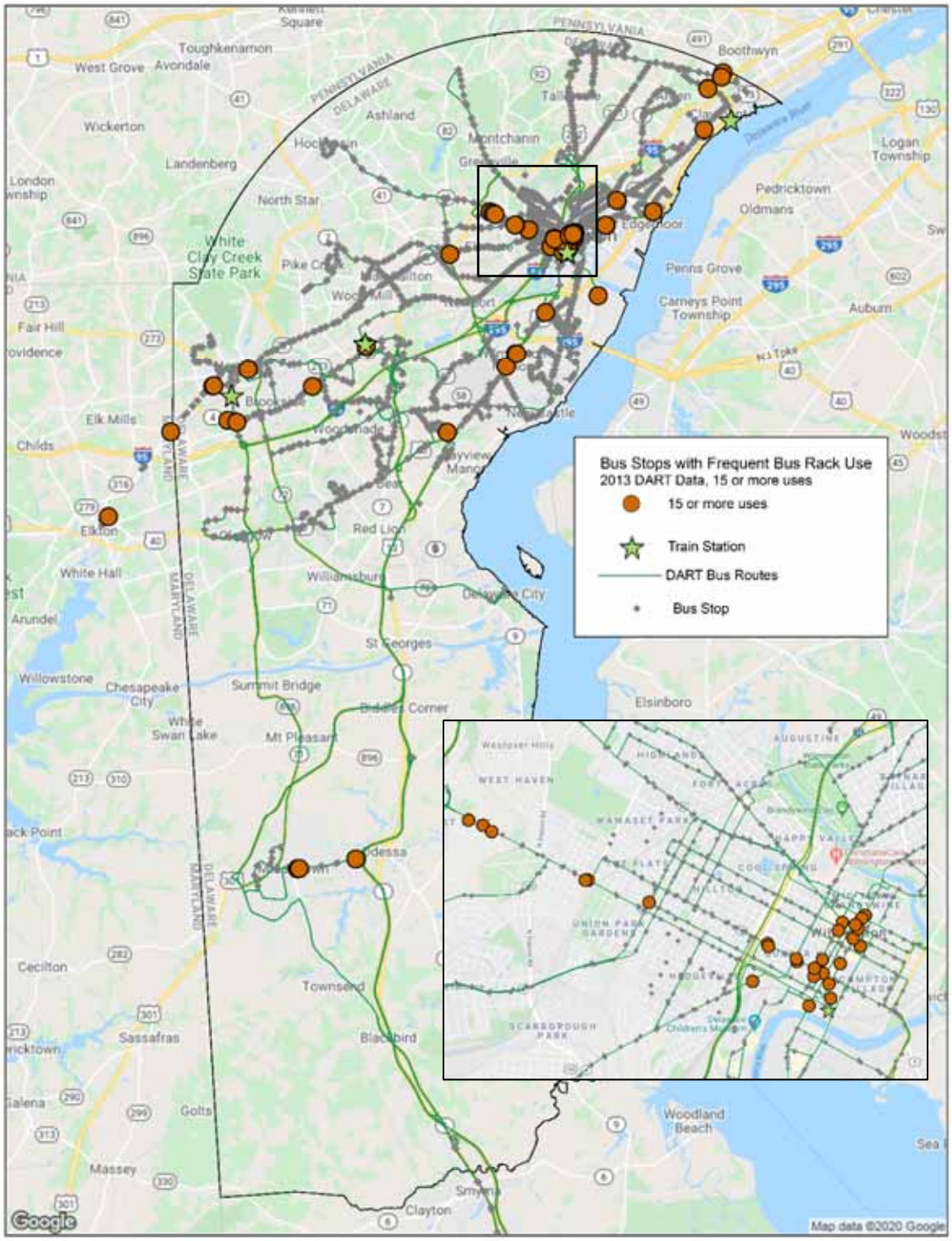
Source: NACTO

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.

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

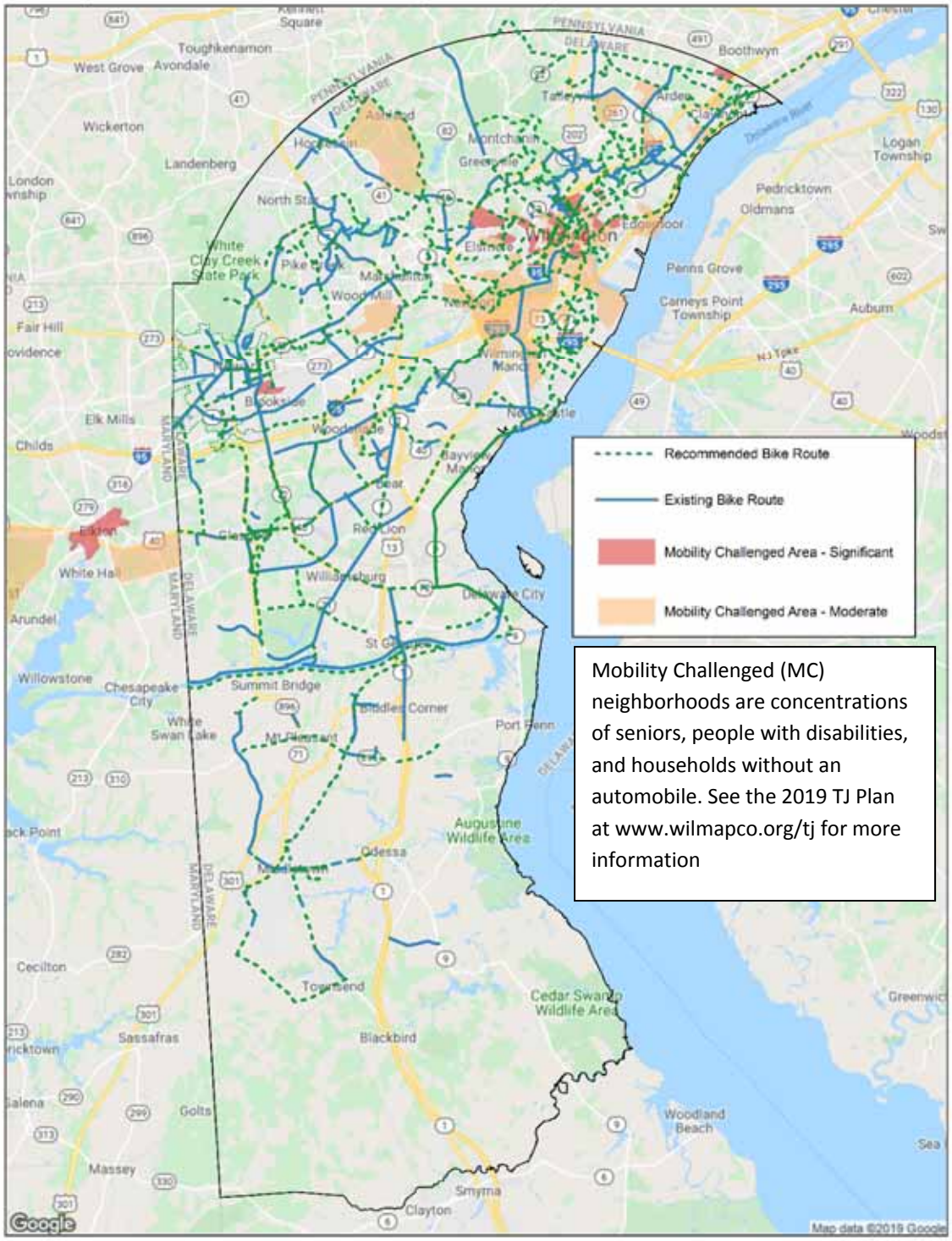
	Super-market	Pharmacy	Hospital	Library	Low-Wage Emp. Center	Medical Center	Community Center	Senior Center	State Service Center
Regional Average	28%	39%	12%	23%	17%	24%	25%	28%	15%
Seniors	31%	47%	14%	22%	20%	30%	21%	30%	14%
Disabled	80%	100%	22%	100%	0%	100%	100%	100%	100%
Zero-car HH	48%	70%	43%	56%	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.

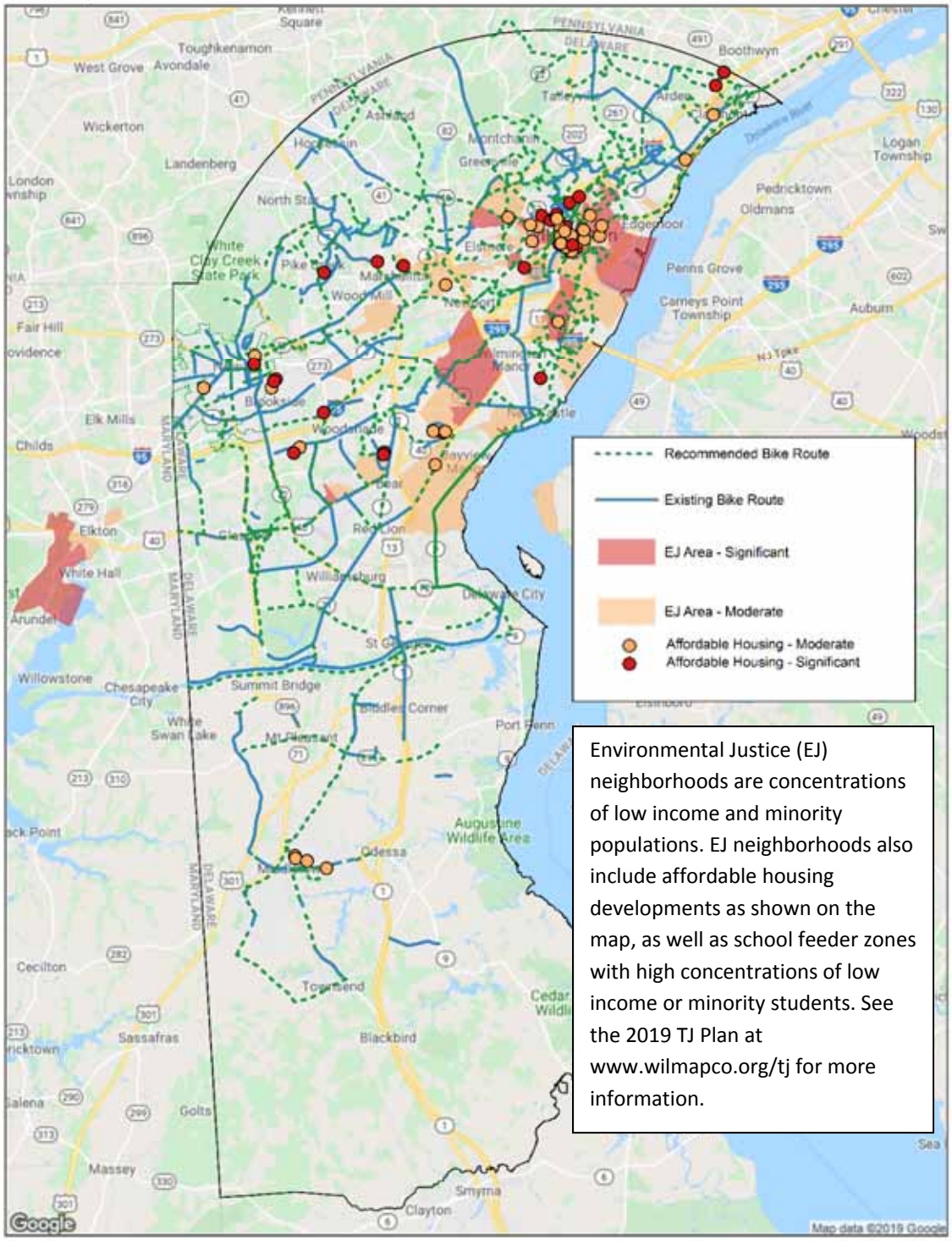
Affordable bike share programs should look for ways to offer equitable access. Integration with DART transit fairs is one way to offer affordable services.

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



- 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

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

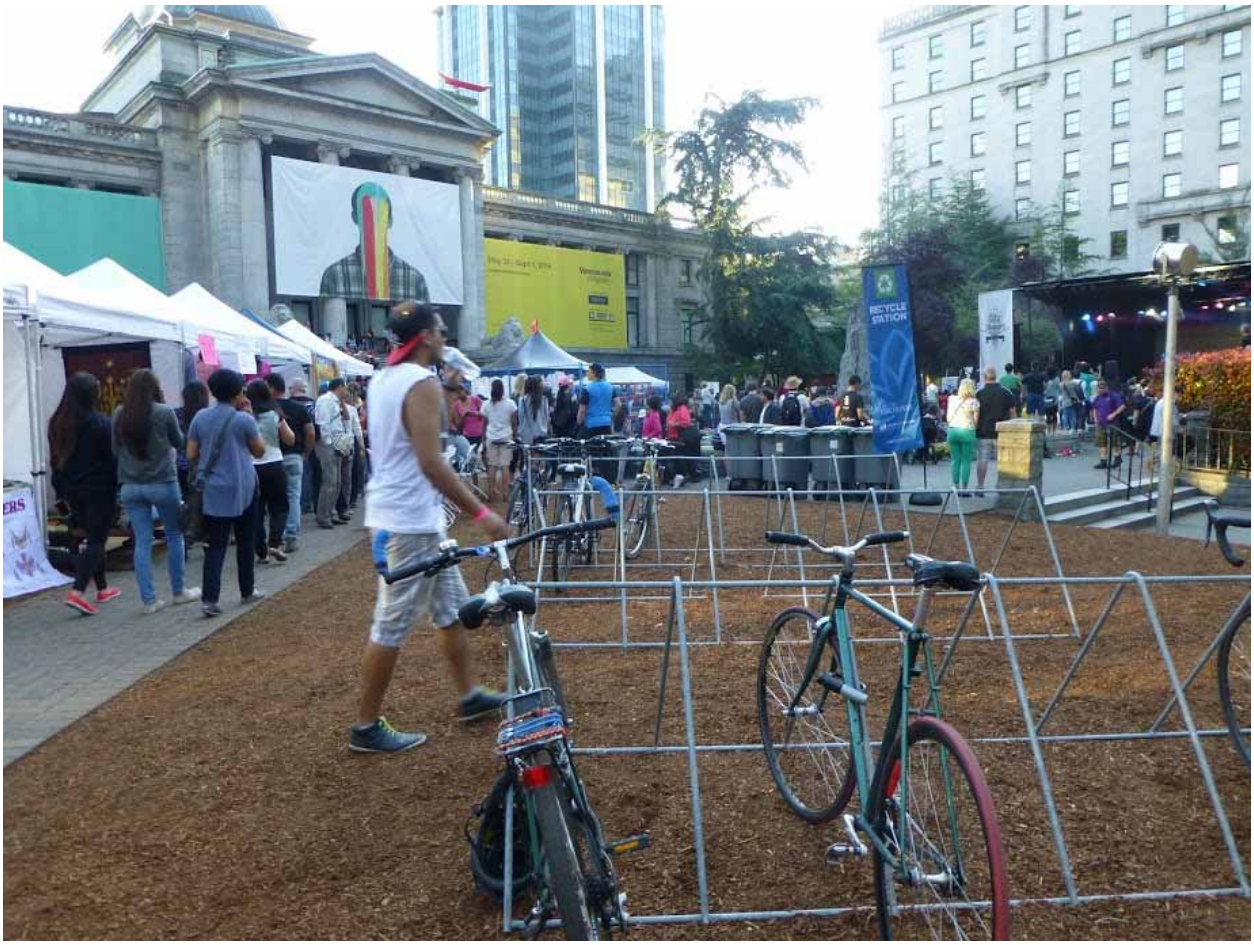
Bicycle parking and other support facilities send the message, “Bikes are welcome!” Local laws can ensure that bicycle parking is thoughtfully planned through the land development process. A model bicycle parking ordinance is included in Appendix B.

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

	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

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 provides additional details on existing 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 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:

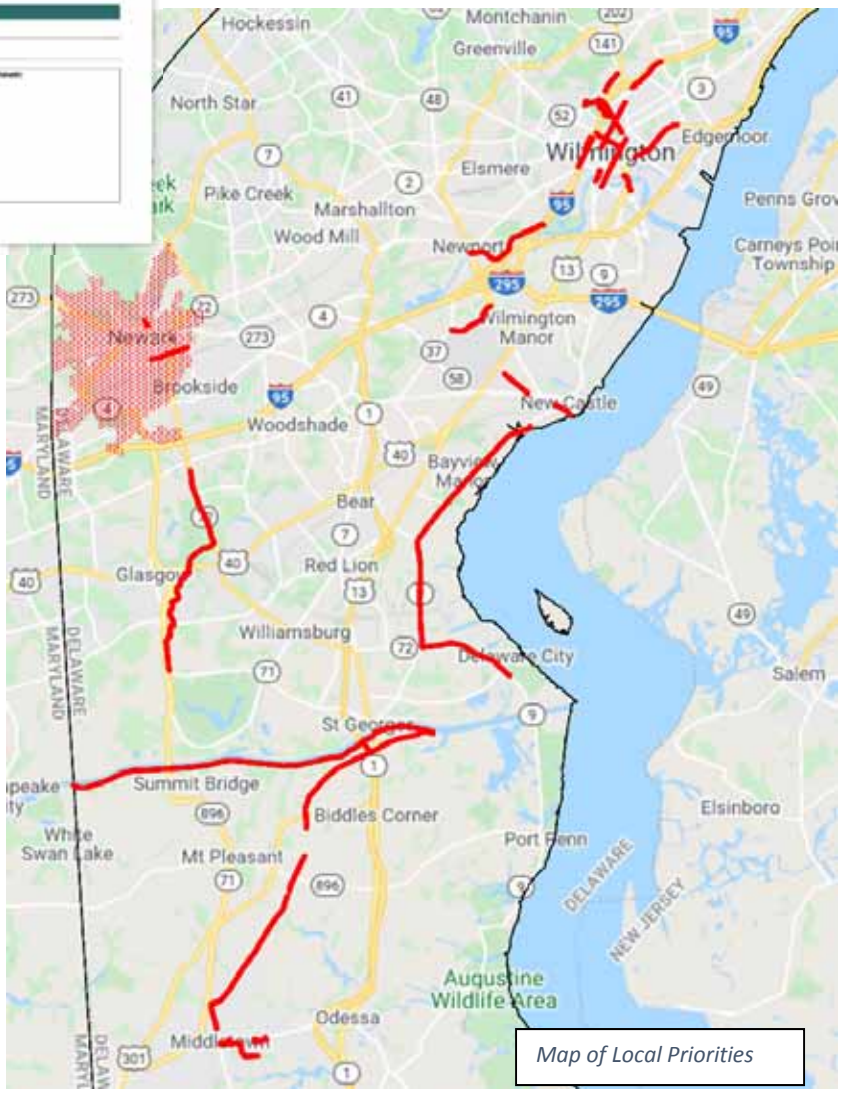
- Regional – ½ mile or longer
- Subregional – 1000 ft – ½ mile
- Spot improvements
- Bicycle parking
- Program for education, encouragement

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.

New Castle County Bicycle Plan
Priority Project Information

Project Summary



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

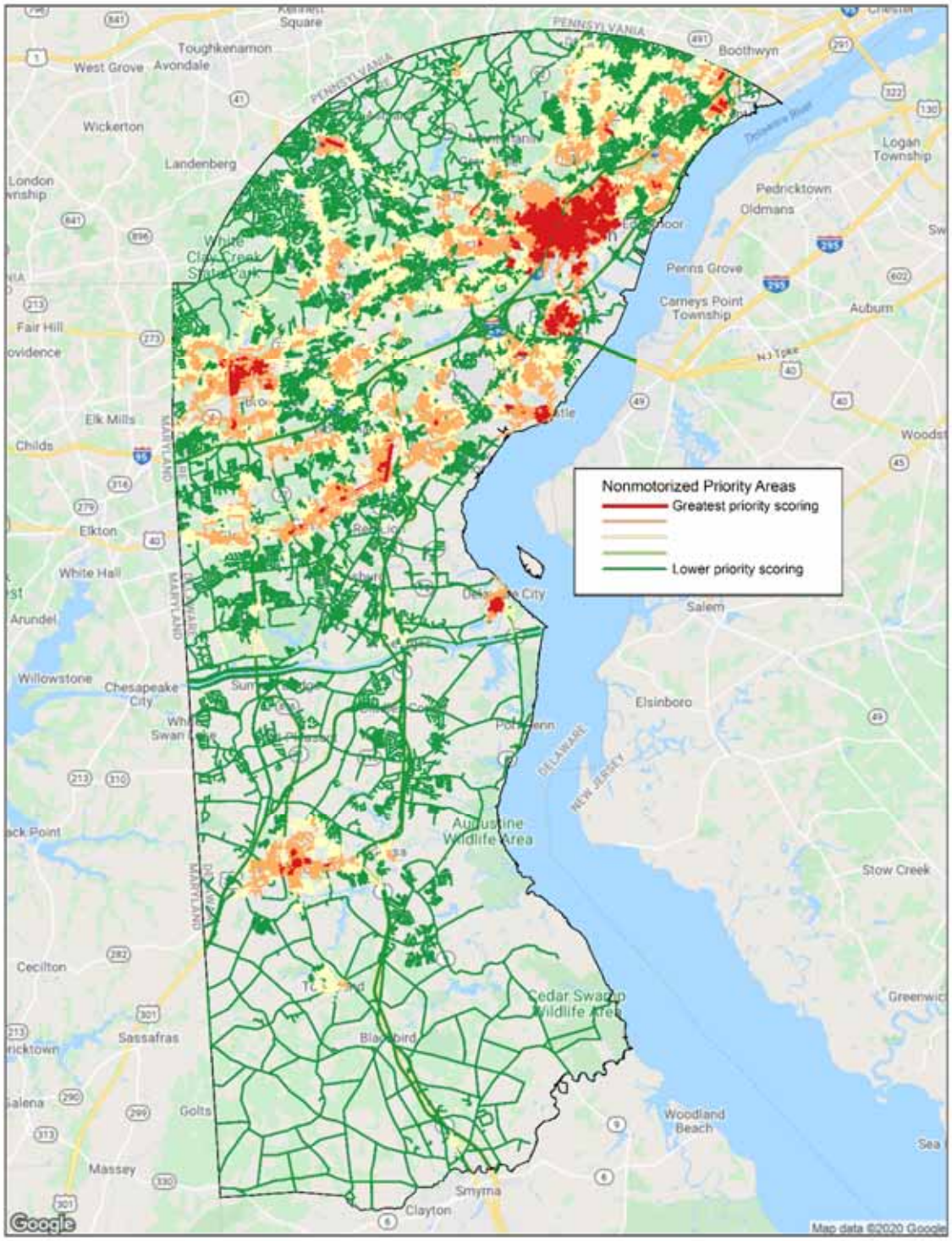
Prioritization Process

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

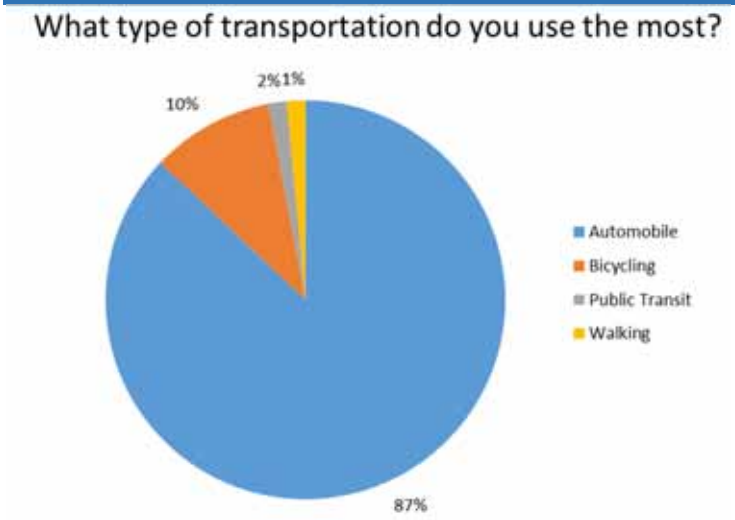
	GOAL	PERFORMANCE MEASURE
	Identify bicycle transportation network	• Completed low-stress network miles • Share of households within ¼ mile of the network
	Improve safety through design, maintenance, and enforcement	• Bicycle crashes, total, injury, fatal • Bicycle satisfaction, public opinion survey
	Incorporate bicycle elements into land use planning	• 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

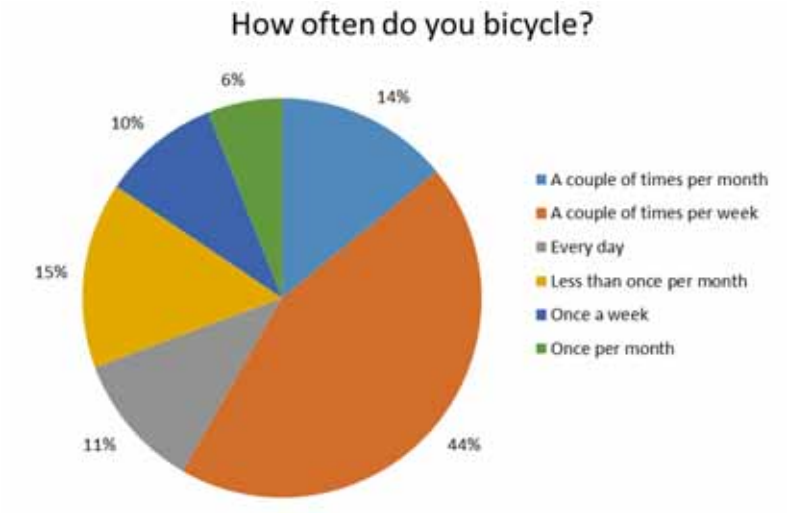
Appendix A – Public Outreach

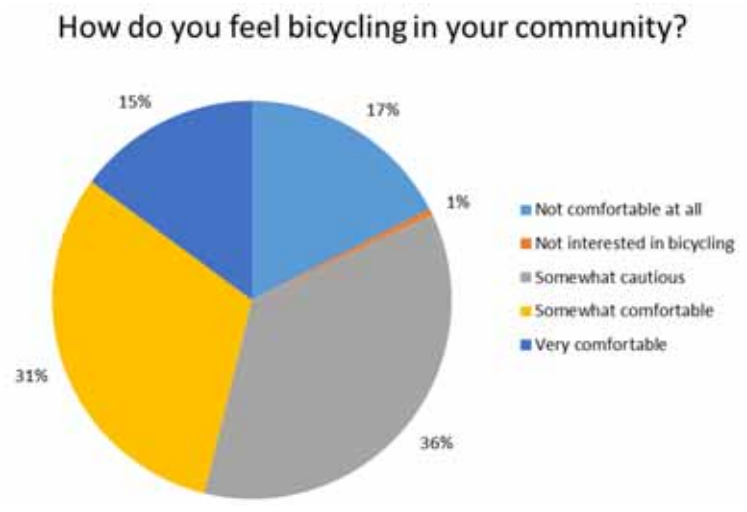
Public outreach included:

- 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







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WILMAPCO

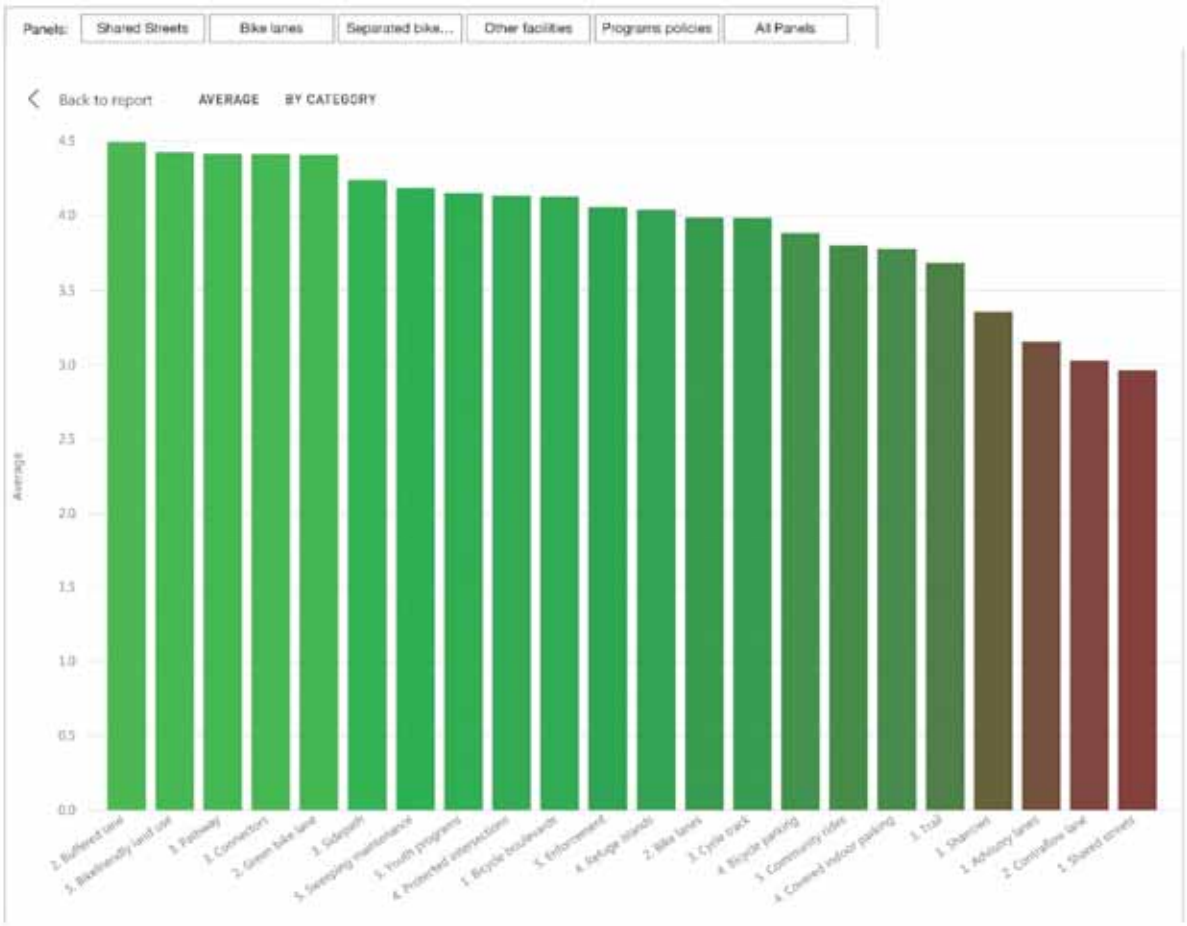
New Castle County Bicycle Plan

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**

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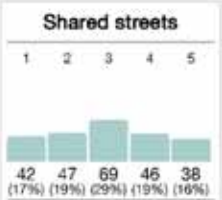
WILMAPCO | **New Castle County Bicycle Plan**

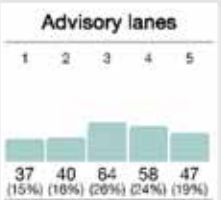
Jan 30, 19 - May 01, 19 | Screen 2

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

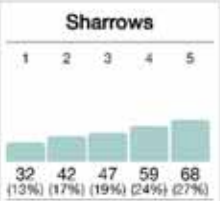
Shared Streets



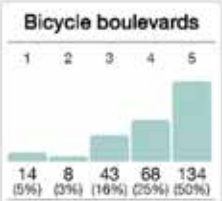
Times rated: 242
Average rating: 2.963



Times rated: 246
Average rating: 3.154

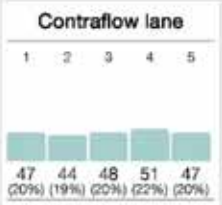


Times rated: 248
Average rating: 3.359



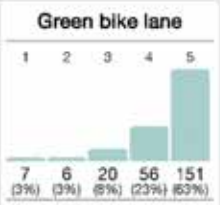
Times rated: 267
Average rating: 4.124

Bike lanes



Times rated: 237
Average rating: 3.030

Times rated: 258
Average rating: 3.984



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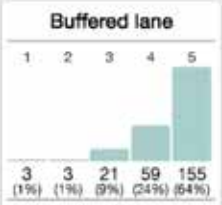

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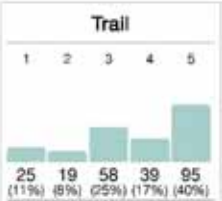
Average rating: 4.494

Separated bikeways



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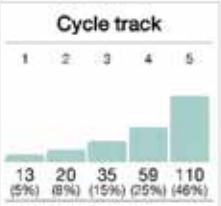

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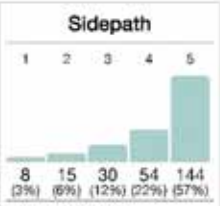
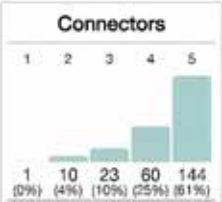
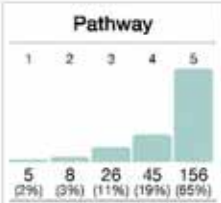


Times rated: 251
Average rating: 4.239

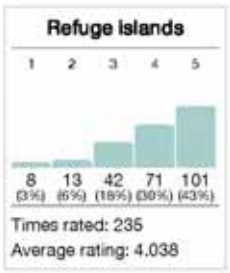


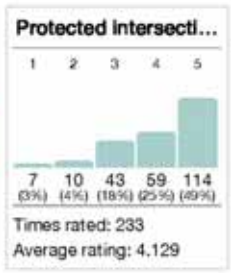
Times rated: 238
Average rating: 4.412



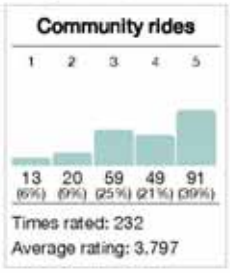
Times rated: 240
Average rating: 4.413

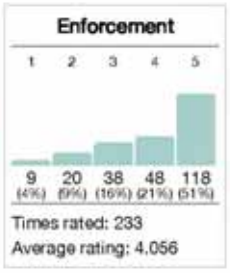
Other facilities

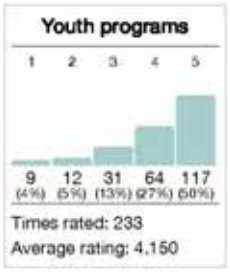


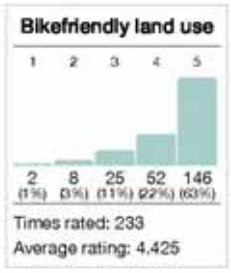


Programs policies









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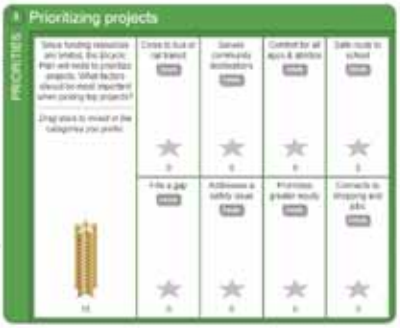
New Castle County Bicycle Plan

Jan 30, 19 - May 01, 19

Screen 3



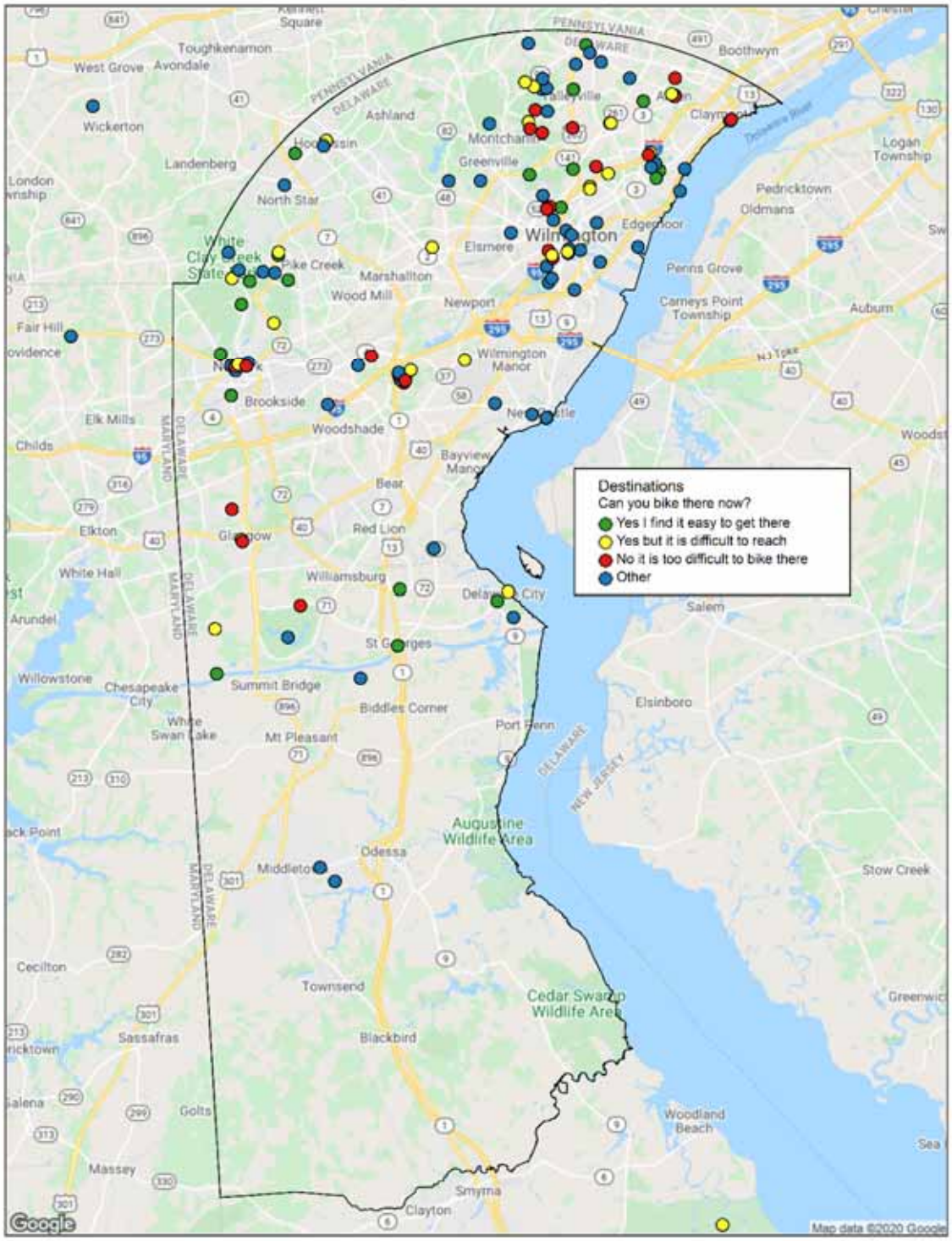
→ **BUDGET ALLOCATED** → AVERAGES → DISTRIBUTIONS → ALL

The total budget allocated to each category for all participants.

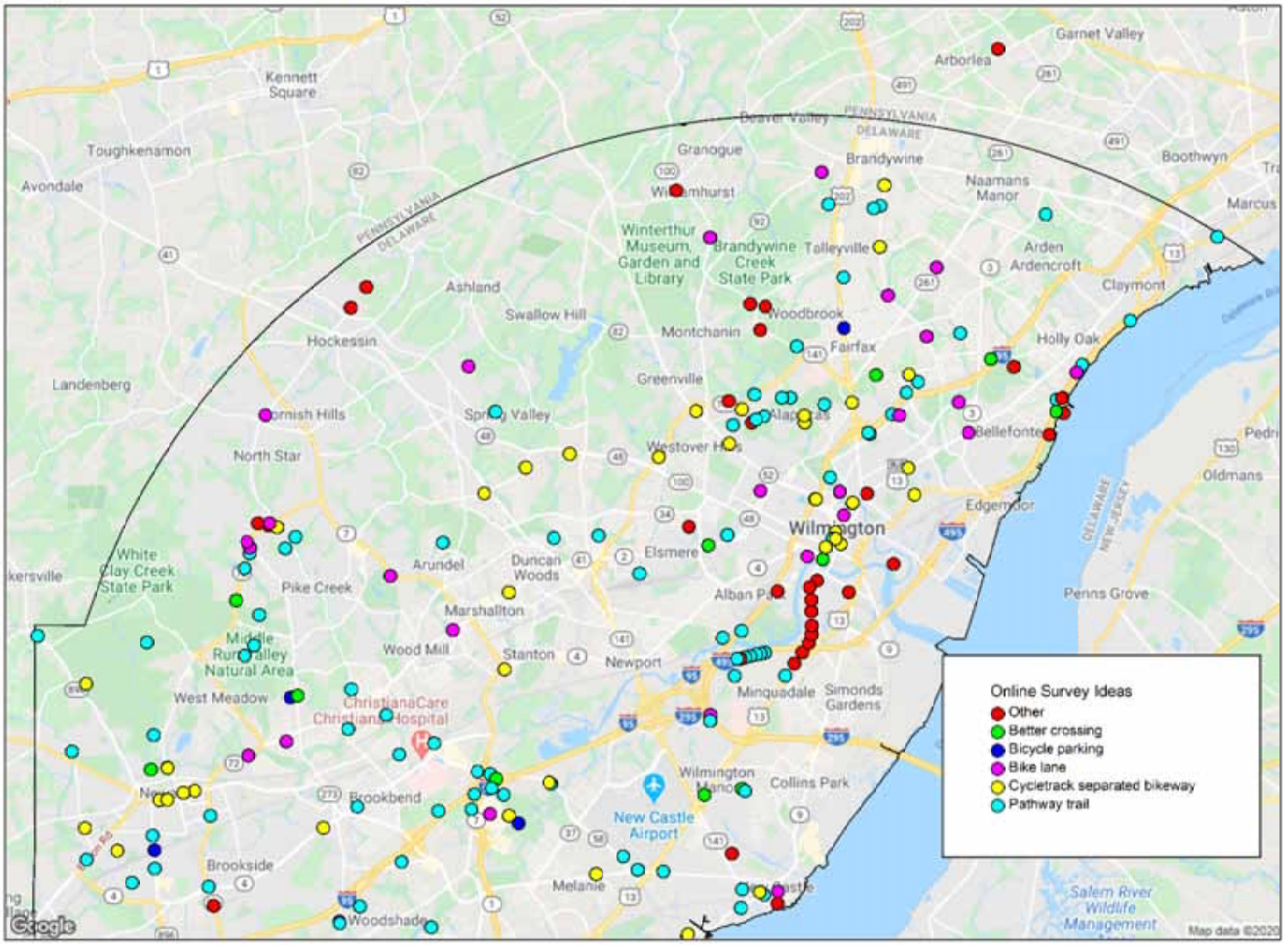
Data points for this Screen:

Data points: **2071**

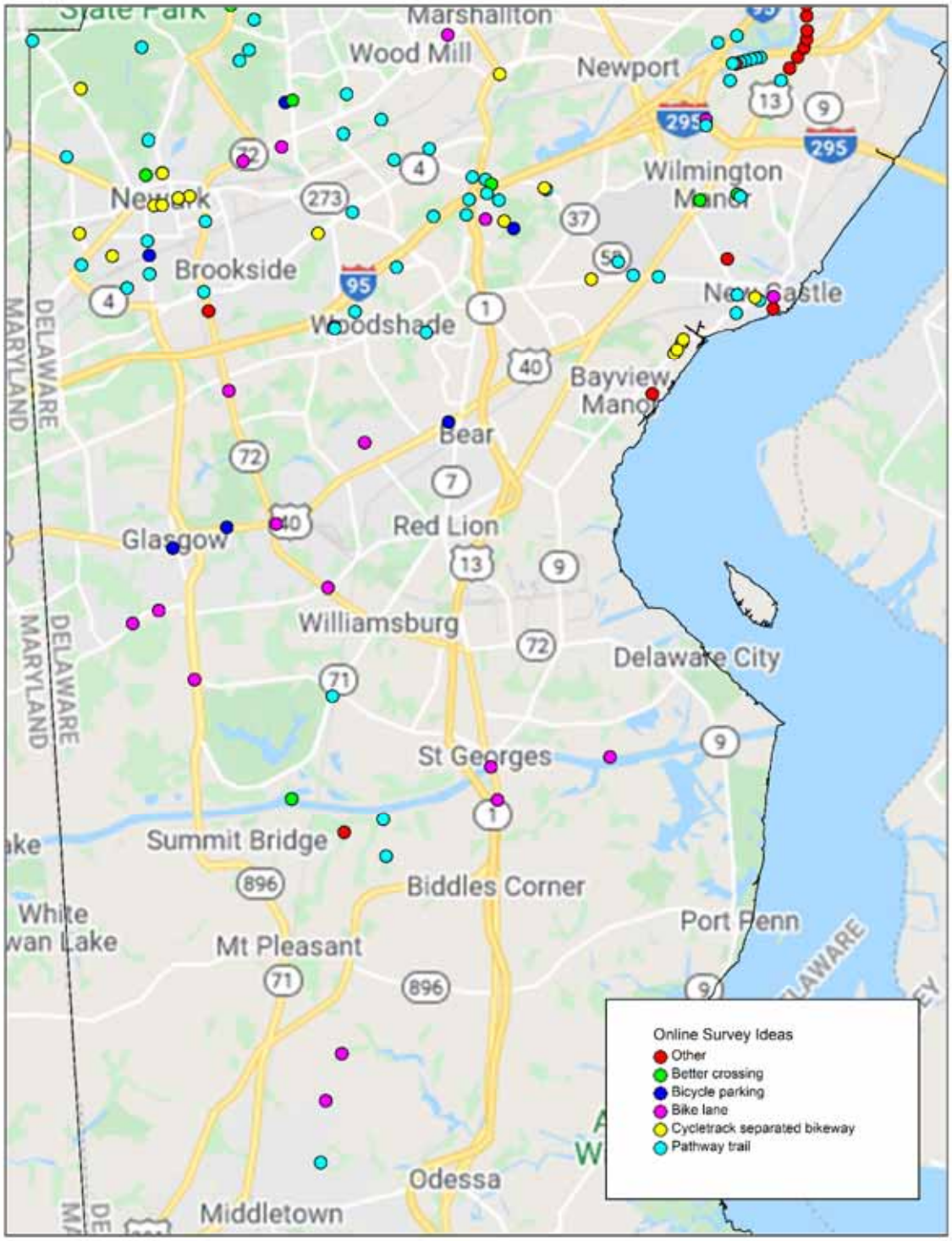
Destinations Submitted through Online Survey



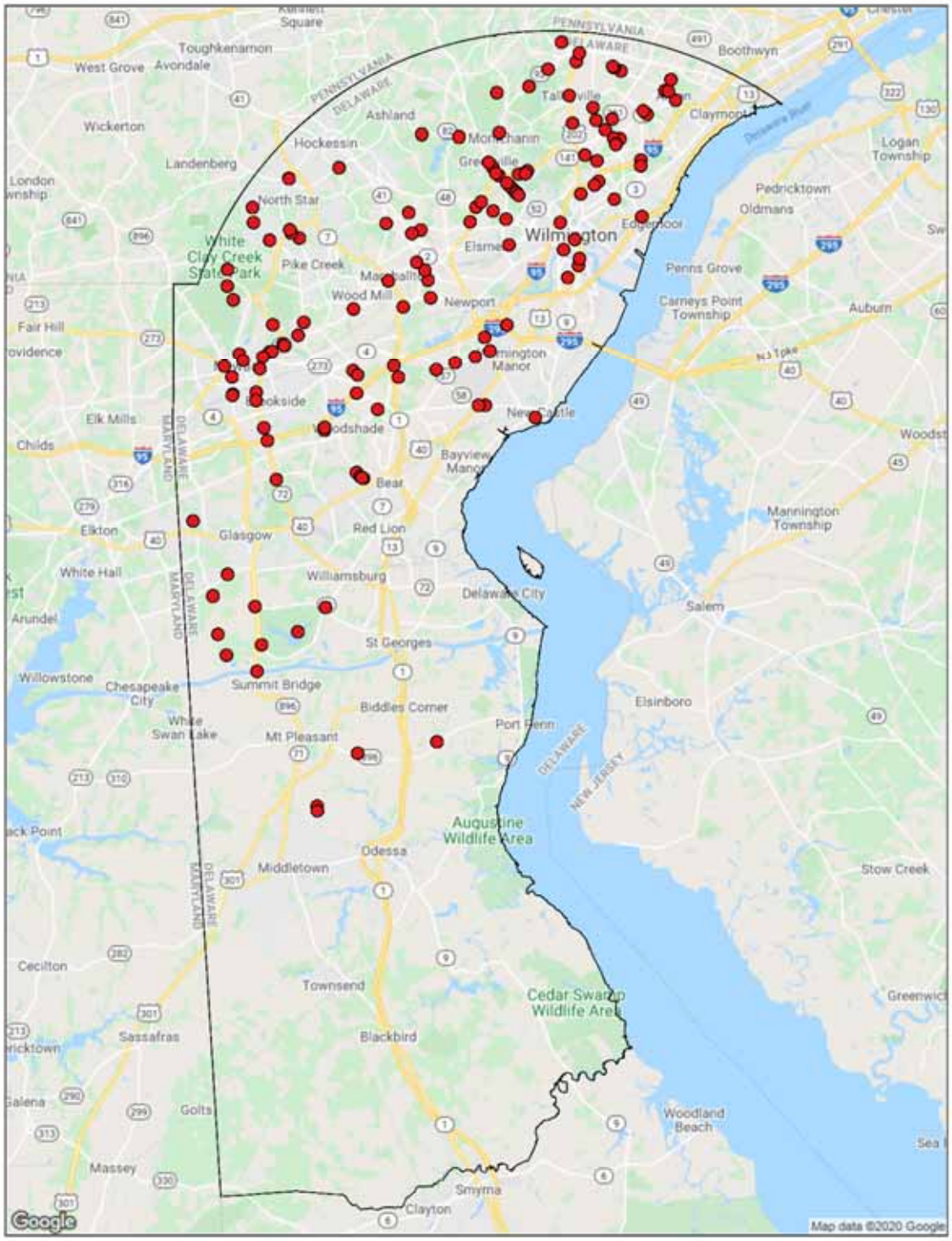
Project Ideas Submitted through Online Survey



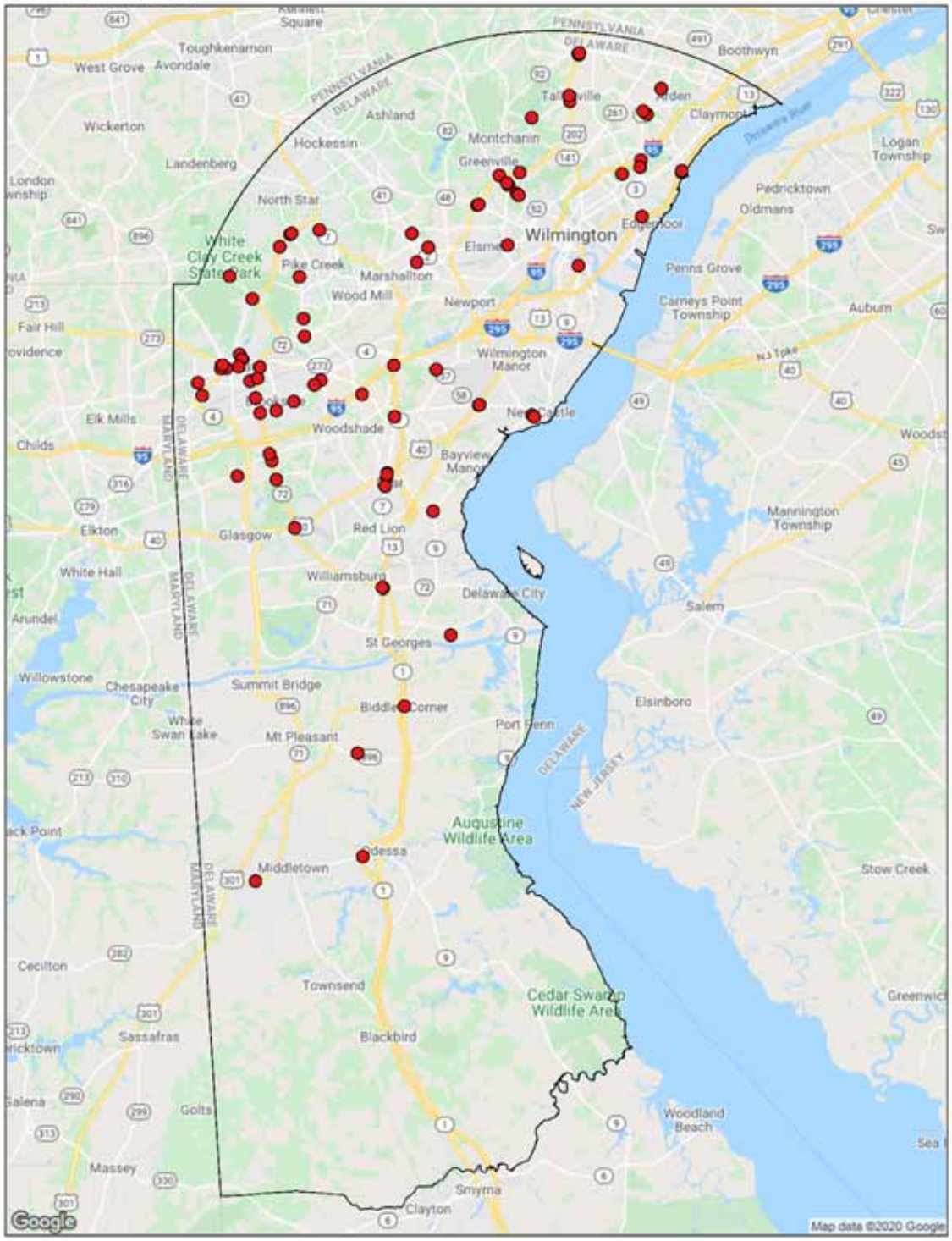
Project Ideas Submitted through Online Survey



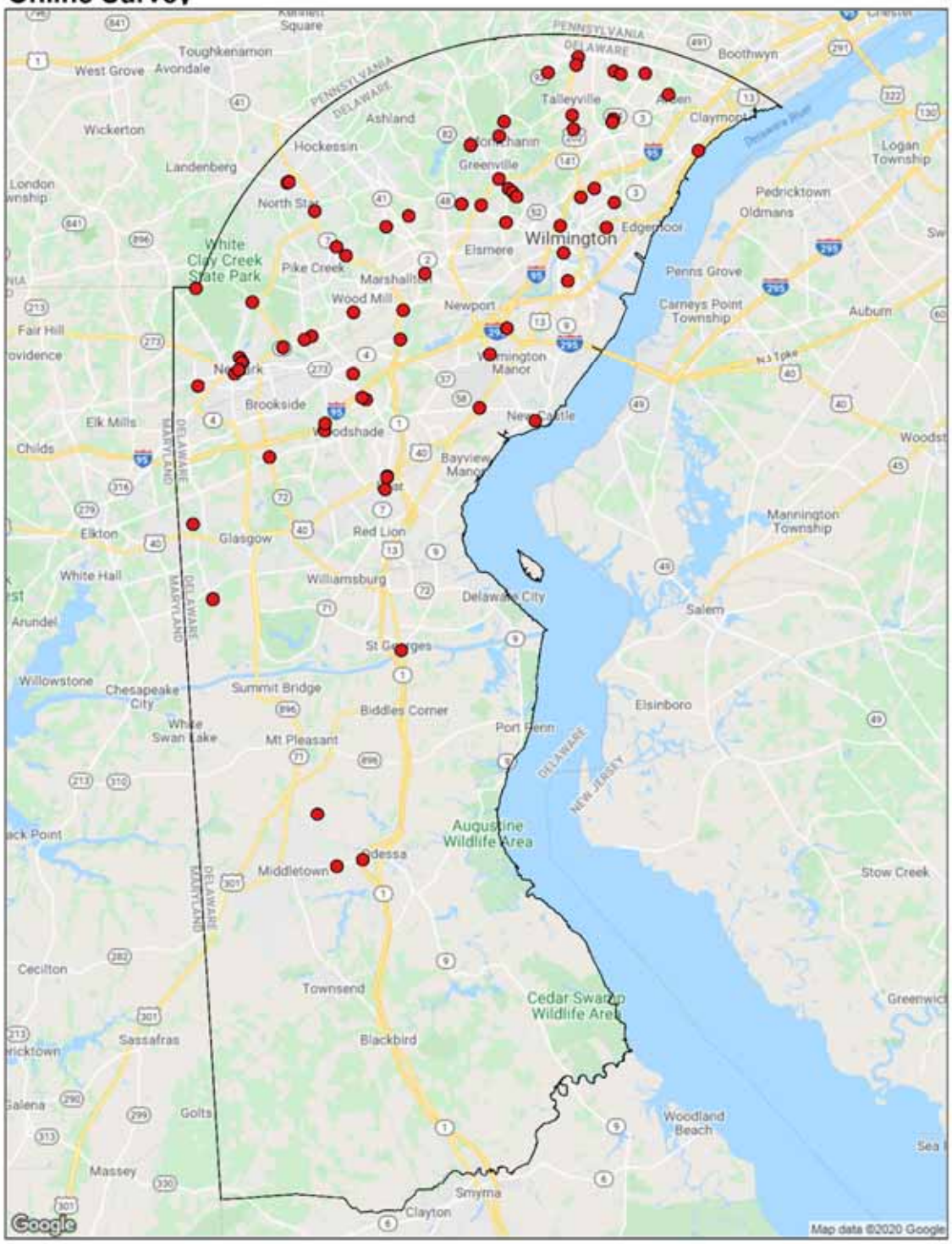
Locations with No Bike Route Submitted through Online Survey



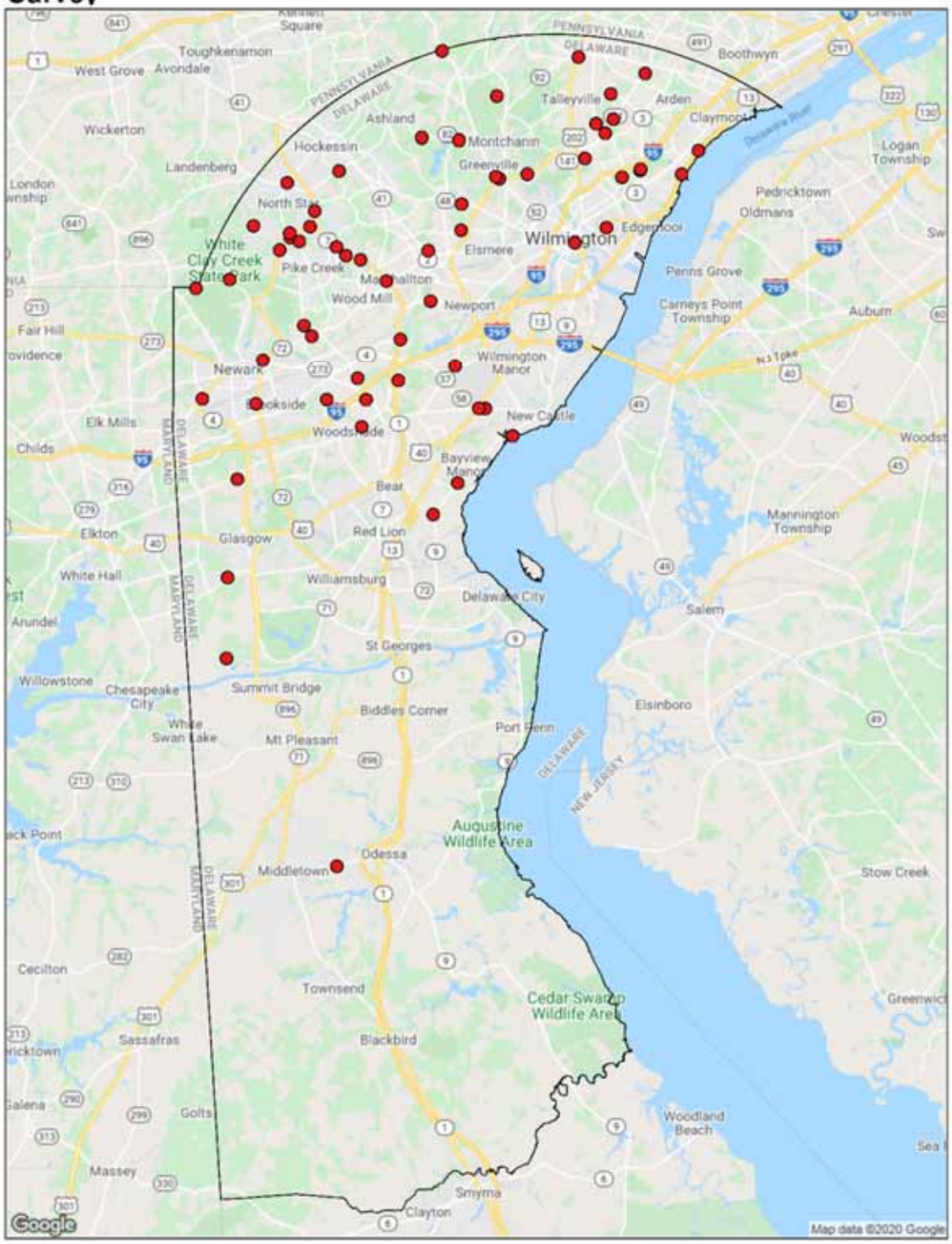
Locations with Difficult Crossing Challenges Submitted through Online Survey



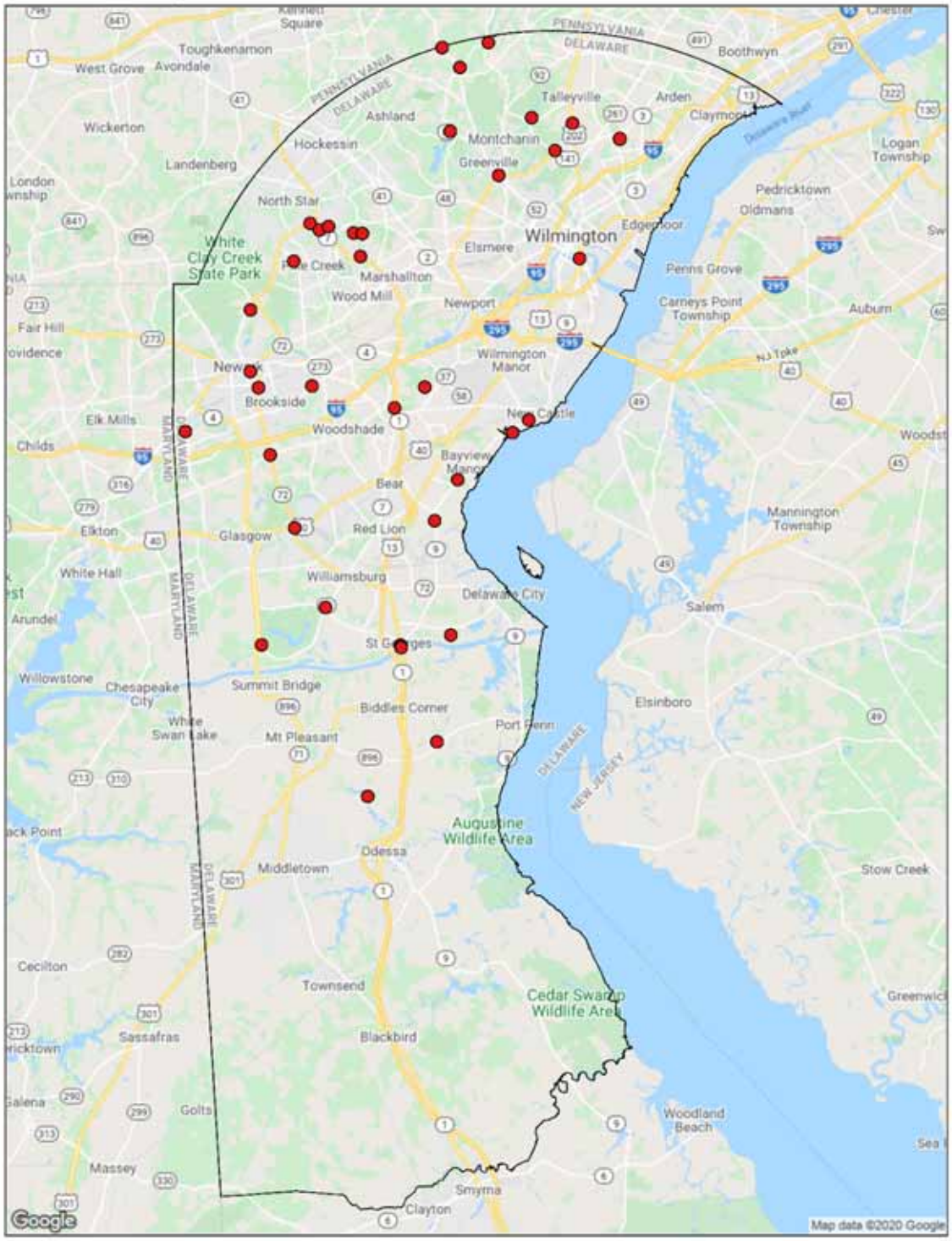
Locations with Too Much Traffic Challenges Submitted through Online Survey



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. <u>REPORTING</u>: 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 [<u>upon passage</u> (*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: <u>www.cdc.gov/obesity/causes/health.html</u>.

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

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

[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

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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.