City Council
Work Session

ATHA/Greenbelt
Bikeshare Feasibility Study

7:30 p.m.
Wednesday
September 21, 2016

July 2016

FINAL DRAFT

Executive Summary

Bike share is a flexible and convenient transportation and mobility option that allows users to have access to bicycles throughout a community. In the greater Washington region, there are currently two systems in operation. Capital Bikeshare (CaBi) is one of the largest regional systems in the U.S. and has been in service for six years. The system has grown from an original 110 bicycles in downtown Washington, DC and Arlington County to over 3,500 bicycles throughout Washington, DC and in to Alexandria, VA; Montgomery County, MD and soon Fairfax County, VA. In Prince George's County, bike share has been implemented in the City of College Park within the last year. mBike, as the system is known, provides bike share service to residents of the City of College Park and students at the University of Maryland.

It is within this context that the Maryland-National Capital Park and Planning Commission (M-NCPPC) along with the City of Greenbelt, and the Prince George's County Department of Public Works and Transportation is exploring the feasibility of implementing bike share within the Anacostia Trails Heritage Area (ATHA) and National Harbor. A key element of the study has been determining the most appropriate course for implementation – implement a new bike share system, or join an existing system in the region.

A number of stakeholders from local and regional agencies as well as representatives from the different communities within the study areas were engaged throughout the course of this study. Feedback received during the public engagement process was generally very constructive, emphasizing many of the opportunities and challenges described in this report.

Based on the analysis of existing conditions, feedback received from stakeholder input, and, conversations with county officials and agencies, the implementation of a bike share program in the Study Areas was found to be **feasible**.

Study Areas

The project study areas were selected by M-NCPPC, the City of Greenbelt, and Prince George's County Department of Public Works and Transportation (DPW&T). The study covers two separate regions in Prince George's County with a combined geography of over 36 square miles.

- The northern study area, referred to in this study as the ATHA Study Area, included unincorporated parts of Prince George's County and the cities/towns of Berwyn Heights, Bladensburg, Brentwood, College Park, Colmar Manor, Cottage City, Edmonston, Greenbelt, Hyattsville, Mount Rainer, New Carrollton, North Brentwood, and Riverdale Park.
- The southern study area, referred to as the National Harbor Study Area, includes the National Harbor development in southern Prince George's County. This area was identified due to its connections with the City of Alexandria using the Wilson Bridge Trail.

FINAL DRAFT

Bike Share Technologies

This study only looks at automated bike share programs automated that do not require on-site staff to check out bicycles. The two major types of bike share technologies included in this study are "smart dock" (or station based) systems such as Capital Bikeshare, and "smart bike" systems such as mBike. The primary difference between the technologies is where the user interface and the locking technology are housed.

Electric-assist bicycles are an emerging technology and were also considered. These bicycles have the same characteristics as smart dock and smart bike systems but include a battery and a small motor on each bicycle which provides a boost for users.

Comparable Jurisdictions

Because of their proximity, and similar demographic and land use characteristics, Alexandria, VA, Arlington County, VA and Montgomery County, MD were used as peer communities. Bike share data from these jurisdictions was used to inform projections for potential ridership as well as estimated costs and revenues related to the implementation of a program.

Opportunities and Challenges

The findings of the existing conditions analysis showed that there are several aspects of the study areas which make them suitable for a potential bike share system:

1. Relatively high bicycle mode share in certain areas - particularly within the ATHA Study Area
2. Proximity to an existing regional bike share system which increases awareness of bike share (some county residents already are members of a bike share system)
3. A number of regional transit nodes within biking distance of neighborhoods
4. Significant population densities in some parts of the study areas
5. An extensive trail network providing low-stress connections between home, work, and play
6. A significant number of annual visitors

However, there are also challenges to bike share implementation, including:

1. A street network with relatively few on-street bicycle facilities, and difficult connections to some parts of the study areas
2. Limited complimentary transportation options in parts of the study areas, in particular within the National Harbor Area
3. Incompatibility between the mBike and Capital Bikeshare systems

Proposed Operating Model and Managing Agency

Based on the County's current funding environment, local transportation needs, proximity to an existing regional bike share system, and internal conversations with agency staff, an agency owned and privately operated governance structure is recommended. Furthermore, based on a proven history of cooperation, a clear and sustained interest in overseeing a bike share program, an active presence throughout the county, staff capacity to administer the program, and direct access to funding for capital and operating expenditures, this report recommends that the Prince George's County Department of Public Works and Transportation manage the program.

Finally, this report advises the County join the Capital Bikeshare system and promote its expansion into the study areas. This will enable county residents to access an integrated transportation system that is available throughout the region. This will also make use of the existing economies of scale as well as existing contract agreements with vendors and regional partners.

System Phasing and Costs

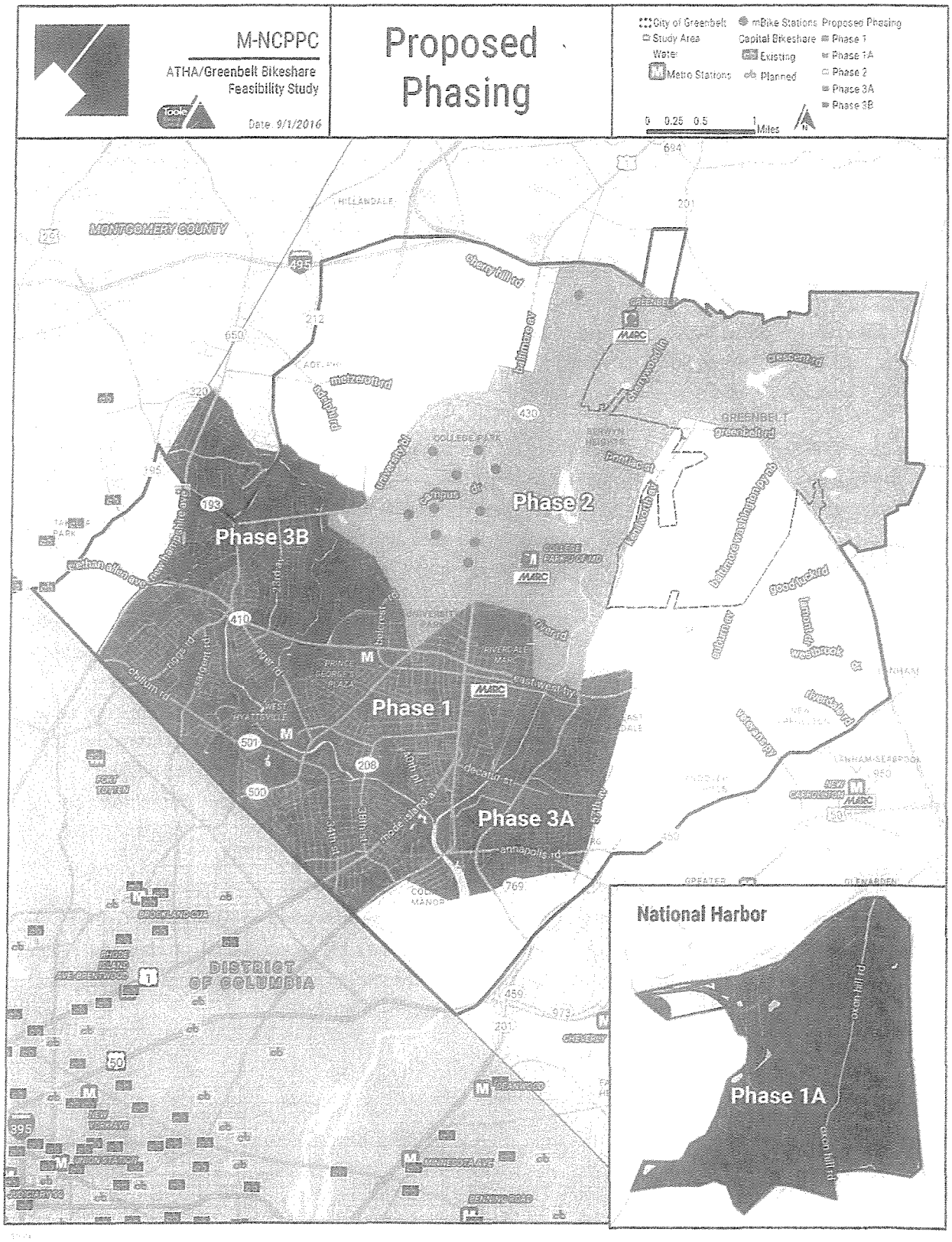
Following the feasibility determination, a bike share demand analysis was performed to identify areas with the highest potential demand for bike share ridership in the Study Areas. The analysis indicated that the highest potential for bike share is in parts of Mount Rainier, West Hyattsville, Prince George's Plaza, Riverdale Park, East Riverdale, College Park, and Greenbelt. The National Harbor area also presents a good opportunity for bike share expansion due to its connections to the City of Alexandria.

After determining a proposed service area, a business plan was developed that establishes an implementation approach and identifies costs. The study areas have the potential to support an initial system of 67 stations and 670 bicycles, added over three phases (see map in the following page for more details). Based on the performance of systems in nearby jurisdictions, the proposed size and phasing, and the assumed user fee structure, the total capital cost for implementation is projected at approximately $4.0 M. Furthermore, a farebox recovery rate of approximately 50 percent has been projected. This is comparable to nearby jurisdictions. More details on the phasing and costs of the proposed system can be found in the Costs section of this report.

Conclusion

Bike share is more than just an amenity appreciated by residents, businesses and visitors. Prince George's County has a unique opportunity to improve regional mobility by providing an additional, on-demand, reliable, low-cost transportation option. Furthermore, a regional bike share system would provide access to bicycles for recreation, allowing more people to enjoy the County's extensive trail network.

FINAL DRAFT


M-NCPPC
ATHA/Greenbelt Bikeshare Feasibility Study
Date: 9/1/2016
Proposed Phasing
City of Greenbelt
Study Area
Water
Metro Stations
mBike Stations
Capital Bikeshare
Existing
Planned
Proposed Phasing
Phase 1
Phase 1A
Phase 2
Phase 3A
Phase 3B
0 0.25 0.5 1 Miles
MONTGOMERY COUNTY
DISTRICT OF COLUMBIA
Phase 3B
Phase 2
Phase 1
Phase 3A
National Harbor
Phase 1A

ATHA/Greenbelt Bike Share Feasibility Study

July 2016

FINAL DRAFT

Photo Credits: Indego, Capital Bikeshare, GRID Bikeshare, Divvy Bikeshare

Toole Design Group

PRR

July 2016

FINAL DRAFT

ACKNOWLEDGEMENTS

Maryland-National Capital Park and Planning Commission, Prince George's County Planning Department

- **Fred Shaffer**, Planner Coordinator
- **Bryan Barnett-Woods**, Senior Planner, Planner Coordinator
- **Eileen Nivera**, Planner-Coordinator

Prince George's County, Department of Public Works and Transportation

- **Karyn McAlister,** Bicycle and Pedestrian Program Manager
- **Victor Weissberg**, Special Assistant to the Director

City of Greenbelt

- **Terri Hruby**, Assistant Director of Planning, City of Greenbelt
- **Michael P. McLaughlin**, City Manager

Stakeholders

- **Alex Hirtle**, Prince George's County Council
- **Aaron Marcovitch**, Anacostia Trails Heritage Area
- **Cynthia Jachles**, Washington Metropolitan Area Transit Authority
- **Dan Baden**, Colmar Manor
- **Dan Hayes**, University of Maryland
- **Dannielle Glaros,** Councilmember, Prince George's County Council – District 3
- **Deborah Topcik**, Peterson Corporation
- **Garrett Hennigan**, Washington Area Bicyclists Association
- **James Chandler**, City of Hyattsville
- **Jane Hudnall**, Oxon Hill Bicycle Trail Club
- **Janubi Devendra**, Quantum Companies
- **Jim Hudnall**, Oxon Hill Bicycle Trail Club
- **Katie Gerbes**, City of Hyattsville
- **Kerstin Harper**, Berwyn Heights
- **Lesley Riddle**, City of Hyattsville
- **Patrick Schmitt**, Washington Metropolitan Area Transit Authority
- **Reggie Bagley**, Town of Brentwood
- **Tierney Caputo**, Peterson Corporation
- **Timothy Muldoon**, Prince George's County Police Department
- **Veronica Owens**, City of Mount Rainier
- **Vern Haefele**, Town of Forest Heights

Consultants

Toole Design Group

- **RJ Eldridge,** Principal
- **Mauricio Hernandez,** Project Manager
- **Eli Glazier,** Transportation Planner
- **Wendy Phelps,** Transportation Planner
- **Galen Omerso,** GIS Specialist

PRR

- **Kerri Shoemaker**
- **Tracee Strum-Gilliam**

FINAL DRAFT

Contents

FINAL DRAFT

FINAL DRAFT

Executive Summary

Bike share is a flexible and convenient transportation and mobility option that allows users to have access to bicycles throughout a community. In the greater Washington region, there are currently two systems in operation. Capital Bikeshare (CaBi) is one of the largest regional systems in the U.S. and has been in service for six years. The system has grown from an original 110 bicycles in downtown Washington, DC and Arlington County to over 3,500 bicycles throughout Washington, DC and in to Alexandria, VA; Montgomery County, MD and soon Fairfax County, VA. In Prince George's County, bike share has been implemented in the City of College Park within the last year. mBike, as the system is known, provides bike share service to residents of the City of College Park and students at the University of Maryland.

It is within this context that the Maryland-National Capital Park and Planning Commission (M-NCPPC) along with the City of Greenbelt, and the Prince George's County Department of Public Works and Transportation is exploring the feasibility of implementing bike share within the Anacostia Trails Heritage Area (ATHA) and National Harbor. A key element of the study has been determining the most appropriate course for implementation – implement a new bike share system, or join an existing system in the region.

A number of stakeholders from local and regional agencies as well as representatives from the different communities within the study areas were engaged throughout the course of this study. Feedback received during the public engagement process was generally very constructive, emphasizing many of the opportunities and challenges described in this report.

Based on the analysis of existing conditions, feedback received from stakeholder input, and, conversations with county officials and agencies, the implementation of a bike share program in the Study Areas was found to be **feasible**.

Study Areas

The project study areas were selected by M-NCPPC, the City of Greenbelt, and Prince George's County Department of Public Works and Transportation (DPW&T). The study covers two separate regions in Prince George's County with a combined geography of over 36 square miles.

- The northern study area, referred to in this study as the ATHA Study Area, included unincorporated parts of Prince George's County and the cities/towns of Berwyn Heights, Bladensburg, Brentwood, College Park, Colmar Manor, Cottage City, Edmonston, Greenbelt, Hyattsville, Mount Rainer, New Carrollton, North Brentwood, and Riverdale Park.
- The southern study area, referred to as the National Harbor Study Area, includes the National Harbor development in southern Prince George's County. This area was identified due to its connections with the City of Alexandria using the Wilson Bridge Trail.

FINAL DRAFT

Bike Share Technologies

This study only looks at automated bike share programs automated that do not require on-site staff to check out bicycles. The two major types of bike share technologies included in this study are “smart dock” (or station based) systems such as Capital Bikeshare, and “smart bike” systems such as mBike. The primary difference between the technologies is where the user interface and the locking technology are housed.

Electric-assist bicycles are an emerging technology and were also considered. These bicycles have the same characteristics as smart dock and smart bike systems but include a battery and a small motor on each bicycle which provides a boost for users.

Comparable Jurisdictions

Because of their proximity, and similar demographic and land use characteristics, Alexandria, VA, Arlington County, VA and Montgomery County, MD were used as peer communities. Bike share data from these jurisdictions was used to inform projections for potential ridership as well as estimated costs and revenues related to the implementation of a program.

Opportunities and Challenges

The findings of the existing conditions analysis showed that there are several aspects of the study areas which make them suitable for a potential bike share system:

1. Relatively high bicycle mode share in certain areas - particularly within the ATHA Study Area
2. Proximity to an existing regional bike share system which increases awareness of bike share (some county residents already are members of a bike share system)
3. A number of regional transit nodes within biking distance of neighborhoods
4. Significant population densities in some parts of the study areas
5. An extensive trail network providing low-stress connections between home, work, and play
6. A significant number of annual visitors

However, there are also challenges to bike share implementation, including:

1. A street network with relatively few on-street bicycle facilities, and difficult connections to some parts of the study areas
2. Limited complimentary transportation options in parts of the study areas, in particular within the National Harbor Area
3. Incompatibility between the mBike and Capital Bikeshare systems

FINAL DRAFT

Proposed Operating Model and Managing Agency

Based on the County's current funding environment, local transportation needs, proximity to an existing regional bike share system, and internal conversations with agency staff, an agency owned and privately operated governance structure is recommended. Furthermore, based on a proven history of cooperation, a clear and sustained interest in overseeing a bike share program, an active presence throughout the county, staff capacity to administer the program, and direct access to funding for capital and operating expenditures, this report recommends that the Prince George's County Department of Public Works and Transportation manage the program.

Finally, this report advises the County join the Capital Bikeshare system and promote its expansion into the study areas. This will enable county residents to access an integrated transportation system that is available throughout the region. This will also make use of the existing economies of scale as well as existing contract agreements with vendors and regional partners.

System Phasing and Costs

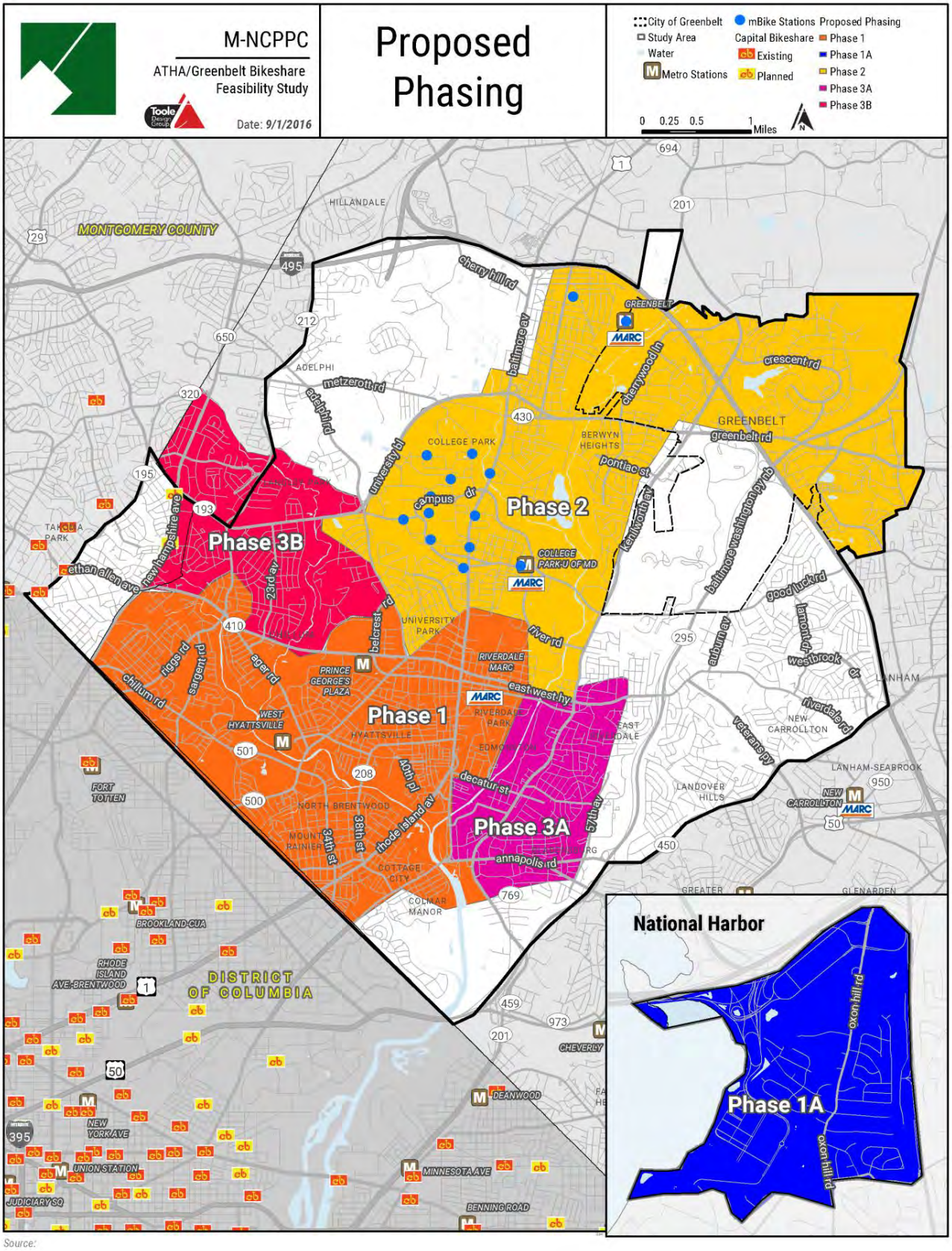
Following the feasibility determination, a bike share demand analysis was performed to identify areas with the highest potential demand for bike share ridership in the Study Areas. The analysis indicated that the highest potential for bike share is in parts of Mount Rainier, West Hyattsville, Prince George's Plaza, Riverdale Park, East Riverdale, College Park, and Greenbelt. The National Harbor area also presents a good opportunity for bike share expansion due to its connections to the City of Alexandria.

After determining a proposed service area, a business plan was developed that establishes an implementation approach and identifies costs. The study areas have the potential to support an initial system of 67 stations and 670 bicycles, added over three phases (see map in the following page for more details). Based on the performance of systems in nearby jurisdictions, the proposed size and phasing, and the assumed user fee structure, the total capital cost for implementation is projected at approximately $4.0 M. Furthermore, a farebox recovery rate of approximately 50 percent has been projected. This is comparable to nearby jurisdictions. More details on the phasing and costs of the proposed system can be found in the Costs section of this report.

Conclusion

Bike share is more than just an amenity appreciated by residents, businesses and visitors. Prince George's County has a unique opportunity to improve regional mobility by providing an additional, on-demand, reliable, low-cost transportation option. Furthermore, a regional bike share system would provide access to bicycles for recreation, allowing more people to enjoy the County's extensive trail network.

FINAL DRAFT


M-NCPPC
ATHA/Greenbelt Bikeshare Feasibility Study
Toole Design Group
Date: 9/1/2016
Proposed Phasing
City of Greenbelt
Study Area
Water
Metro Stations
mBike Stations
Capital Bikeshare
Existing
Planned
Proposed Phasing
Phase 1
Phase 1A
Phase 2
Phase 3A
Phase 3B
0 0.25 0.5 1 Miles
Phase 3B
Phase 2
Phase 1
Phase 3A
National Harbor
Phase 1A
MONTGOMERY COUNTY
DISTRICT OF COLUMBIA
HILLANDALE
ADELPHI
COLLEGE PARK
BERWYN HEIGHTS
GREENBELT
UNIVERSITY PARK
RIVERDALE MARC
PRINCE GEORGE'S PLAZA
WEST HYATTSVILLE
HYATTSVILLE
NORTH BRENTWOOD
MOUNT RAINIER
COTTAGE CITY
COLMAR MANOR
FORT TOTTEN
BROOKLAND-CUA
RHODE ISLAND AVE-BRENTWOOD
NEW CARROLLTON
LANDOVER HILLS
LANHAM-SEABROOK
CHEVERLY
DEANWOOD
UNION STATION
JUDICIARY SQ
MINNESOTA AVE
BENNING ROAD
GREENBELT
COLLEGE PARK-U OF MD
RIVERDALE PARK
EAST RIVERDALE
LANHAM
GLENARDEN
cherry hill rd
baltimore av
greenbelt metro dr
crescent rd
greenbelt rd
metzerott rd
adelphi rd
university blvd
campus dr
pontiac st
kenilworth av
baltimore washington pkwy nb
good luck rd
lamont dr
westbrook dr
riverdale rd
veterans pkwy
river rd
belcrest rd
23rd av
ager rd
sargent rd
riggs rd
chillum rd
ethan allen ave
new hampshire ave
eastwest hy
decatur st
40th pl
38th st
34th st
rhode island av
57th av
annapolis rd
oxon hill rd
Source:

FINAL DRAFT

Introduction

The Maryland-National Capital Park and Planning Commission (M-NCPPC) working with the City of Greenbelt retained Toole Design Group and PRR to study opportunities for bike share within the Anacostia Trails Heritage Area (the ATHA) and National Harbor. This report provides a roadmap for bike share implementation in the ATHA and National Harbor areas. However, the proposed phasing plan does not preclude future expansion into other areas or accelerated expansion into areas identified in later phases. More specifically the report:

- summarizes existing bike share technologies
- describes existing conditions in the Study Area and highlights opportunities and challenges for implementing a bike share system
- identifies locations within the ATHA / National Harbor Study Areas that are most conducive to bike share
- provides a summary and methodology for the feasibility assessment process
- presents a proposed phasing plan
- summarizes the projected capital, startup, installation, and implementation costs
- provides a short description of the responsibilities of an agency program manager position that would be needed to provide oversight of the bike share program and the operations contractor

It is important to note that the recommended phasing and station locations are generalized areas where bike share stations may be installed. Final station placements will require additional public outreach and fieldwork to confirm the availability of space, identify right of way, property ownership, and meeting the specific needs of the equipment vendor (such as solar exposure requirements). Finally, ridership information from the initial phases should be used to inform station locations and adjustments to phase boundaries for later phases.

FINAL DRAFT

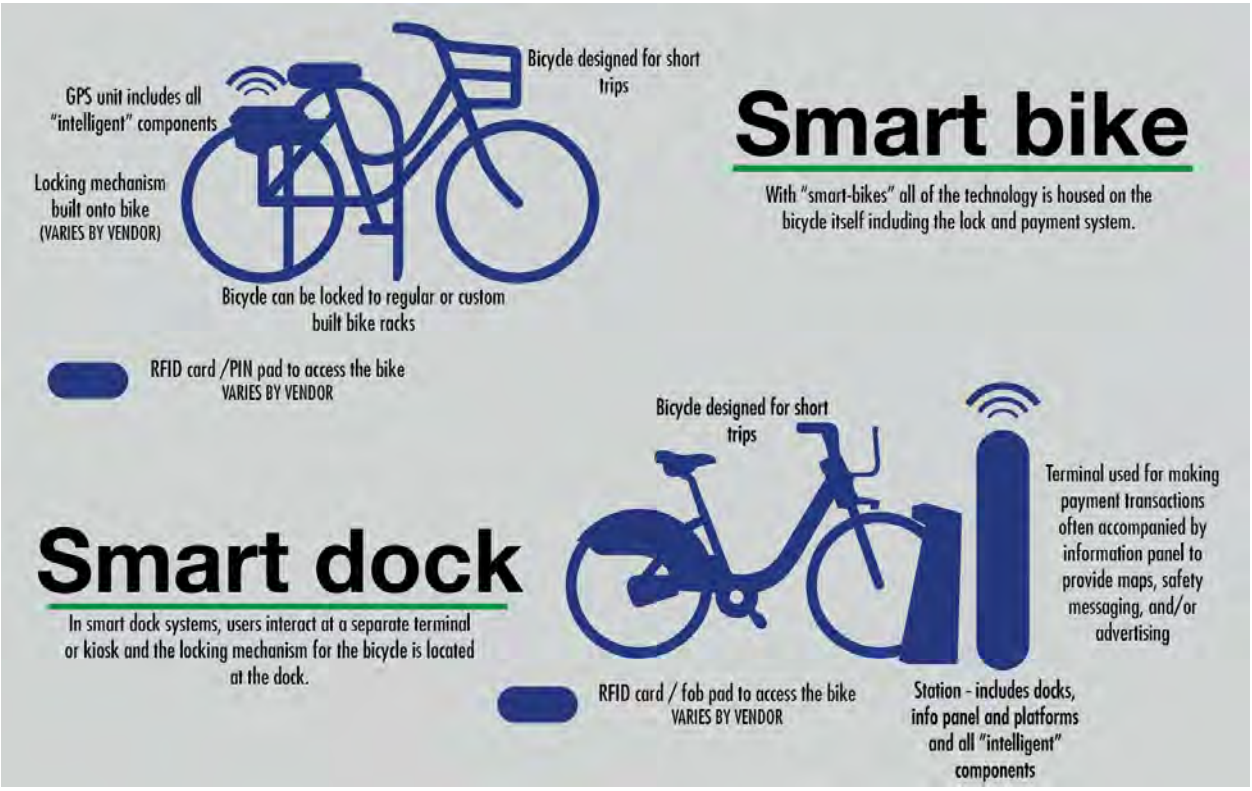
Available Bike Share Technologies

For the purposes of this study, the only bike share programs being considered are automated and do not require on-site staff to check out bicycles. To provide easy access and security, automated systems use credit cards, Global Positioning System (GPS), and radio frequency identification (RFID) technology in the stations and bicycles. Some newer systems are also starting to use Near Field Communications (NFC) technology found in many smart phones.

There are currently two major types of bike share technologies being operated in existing U.S. systems: "smart dock" (or station based) systems, and "smart bike" systems. The primary difference between the technologies is where the user interface and the locking technology is housed.

In smart dock systems, users interact at a separate terminal or kiosk and the locking mechanism for the bicycle is located at the dock. In smart-bike systems, users interact through a separate interface (either mobile phone or internet) and a key pad on the bicycle and the lock is housed on the bicycle itself. See **Figure 1** for more information about the components of smart bike and smart dock systems.

Figure 1: Smart Dock and Smart Bike Features



FINAL DRAFT

Most smart dock systems use wireless technology to communicate as well as solar technology to charge the station. The elements of a smart dock system include:

- **Station**: includes the following components
  - **Kiosk**: electronic unit where rental transactions are made.
  - **Informational Panel**: display panel which is regularly used to provide system maps, information about the system, and advertising.
  - **Dock**: mechanism that holds the bicycles. Each dock is individually controlled and has a mechanized system that locks and releases the bicycles.
  - **Platform**: structure that holds the kiosk, information panel, and docks together.
- **Bicycle**: specifically designed for short trips and constructed of customized components to limit theft and vandalism. Bicycles may have fender panels, baskets, and other components where advertising may be placed. Bicycles have headlights, taillights, and bells. Bicycles may also have integrated GPS to track bicycle travel.
- **RFID Card or fob**: Radio Frequency Identification technology, usually in the form of a card or fob, allows users to check out a bicycle.

The majority of existing municipal bike share programs in the U.S. use smart dock technologies. To date, more than 40 smart dock systems have been implemented in cities of all sizes.

Smart bike systems include:

- **Bicycle:** specifically designed for short trips and constructed of customized components to limit theft and vandalism. Bicycles may have fender panels, baskets, and other components where advertising may be placed. Bicycles have headlights, taillights and bells.
- **Lock:** varies based on the vendor. The electronic aspect of the lock is housed on the bicycle.
- **GPS Unit:** unit with the electronics, fastened to the bicycle. Location on the bicycle varies with the vendor. The unit includes a place to use a RFID pass or enter a pin code to lock and unlock the bicycle.
- **RFID Card:** Radio Frequency Identification technology, usually in the form of a card or fob, allows users to check out a bicycle. Some systems do not require RFID card to unlock the bicycle.
- **Dock:** either a standardized or branded bicycle rack (ex. u-rack) with no technology that accepts the locking mechanism, or may be any structure, such as a sign post or traditional bike rack, depending on the technology.

Smart bike systems are more typical in smaller communities and areas including colleges and university campuses. Smart bike systems typically have lower capital costs as the technology is all housed in the bicycle and therefore do not require docking stations. However, smart bike vendors do offer the option of branded stations, customized bike racks, electronic kiosks, and informational panels. These can be added a-la-carte, but do increase the overall capital costs.[1]

1 For comparative purposes smart bike costs are calculated to be around $40,000 and include the following a-la-carte options: 17 docks/racks, 10 bicycles, interactive kiosks, information panels, a solar panel to charge station/information panel, and expansion platforms.

As bike share has grown into a worldwide industry, the use of electric-assist or pedelec has emerged as an additional technology that may help broaden bike share's appeal and reduce barriers to entry. Electric-assist bicycles are equipped with a battery and small motor. Electric-assist bicycles allow users to start smoothly after a stop, ride farther, and up steeper inclines with less physical exertion. These benefits can make bike share more appealing to people with varying levels of physical fitness, and potentially enable bike share systems to expand into areas previously thought too sparsely developed too hilly.

Unlike a scooter or motorcycle with a throttle, the assistive motor is triggered by the pedaling motion and shuts off when not in use. At this time, the maximum speed and level of assistance provided are preset by the local jurisdiction and bike share operator based on safe operating speeds. Manufacturers are developing next generation systems that will give users more control over the level of assistance based on their physical capabilities or the terrain. Manufacturers of both smart bike and smart dock systems are exploring electric-assist technology. Furthermore, some cities are exploring opportunities to retrofit their fleet with electric-assist bicycles.

Electric-assist bicycles require charged batteries to run the motor. Batteries need to be charged and replaced on the bicycles by the operator, or charged by connecting the station to the power grid. Solar panels at the station (for smart dock) or on the bicycle itself (for smart bike) help to maintain the charge of the battery. Batteries used in existing electric-assist systems have a range of 30 to 45 miles in optimal conditions.[2] This translates to several rides per-bike-per-day, as the average bike share trip is only a few miles in length.[3] Fully recharging the batteries can take a few hours depending on the power source and the number of bicycles being charged.[4]

There are several examples of electric-assist bike share programs in Europe and China. The bicycle fleets of Copenhagen's Bycyklen and Madrid's BiciMAD are comprised entirely of electric-assist bicycles.[5,6] The largest electric-assist program is in Jincheng, China with 3,000 electric-assist bicycles and another 5,000 standard bicycles.[7]

Birmingham, AL is the first municipal U.S. program with electric-assist bicycles making up one-quarter of its fleet. Usage data shows that these bicycles are used more frequently than the standard bicycles.[8]As of the writing of this report the City of Baltimore, MD and the City of Richmond, VA have selected electric-assist technology to implement their respective bike share systems.

2 Average range compiled from research on pedelec bicycles in use in Copenhagen (GoBike), Madrid (Bonopark) and Birmingham (Bewegen); April 2016.
3 Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012.
4 Conversations with Bewegen and PBSC representatives; April 2016.
5 http://bycyklen.dk/en/
6 http://www.bicimad.com/
7 DeMaio, Paul. "The Bike-sharing World the Last Week of December 2015," The Bike Sharing Blog. December 25, 2015. http://bike-sharing.blogspot.com/2015/12/the-bike-sharing-world-last-week-of.html
8 Conversations with Bewegen representatives; April 2016.

Figure 2: Bike share station in Birmingham, AL

According to electric-assist bike share vendors, costs are 15- to 20-percent higher than regular smart dock systems with standard bicycles. Since the batteries charge when the bicycles are docked at a station, the station costs are higher as well: 10-percent more for a system connected to the power grid, and up to 20-percent more for a system with full solar power. This is due to the larger solar panels needed to charge multiple bicycles at the same time.[9]

9 Conversations with Bewegen and PBSC representatives; April 2016.

FINAL DRAFT

Study Area

Figure 3 is a map of the project study areas. The study areas were selected by M-NCPPC, the City of Greenbelt, and Prince George's County Department of Public Works and Transportation (DPW&T). The Study Areas cover two separate regions in Prince George's County:

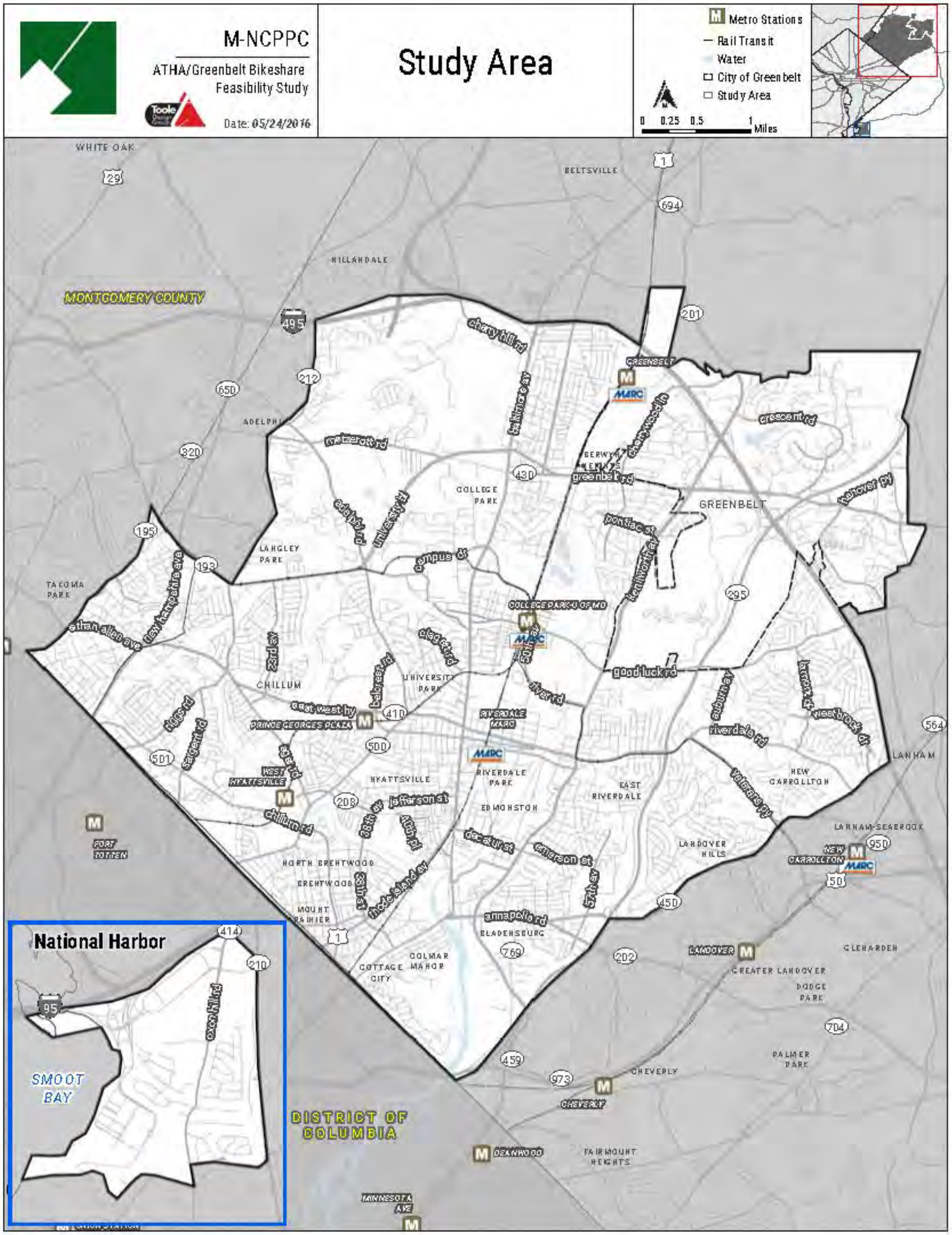
- The northern study area is approximately 35.5 square miles and includes unincorporated parts of Prince Georges County and the cities/towns of Berwyn Heights, Bladensburg, Brentwood, College Park, Colmar Manor, Cottage City, Edmonston, Greenbelt, Hyattsville, Mount Rainer, New Carrollton, North Brentwood, and Riverdale Park. For the purposes of this study this region will be referred to as the ATHA.
- The southern study area is approximately 1.4 square miles located just outside the Capital Beltway in the southwestern portion of the County, and includes the National Harbor development. For the purposes of this study, this region will be referred to as National Harbor.

Since these two areas are separated by over 20 miles and bike share use between National Harbor and the ATHA area is unlikely, parts of this report address each area independently.

NOTE: The area located in the south of the ATHA Study Area, west of New Hampshire Avenue is part of Montgomery County and was included as part of this study. However, any expansion into this area, should be coordinated with the Montgomery County.

FINAL DRAFT

Figure 3: Study Area



Community Analysis

An essential aspect of determining the feasibility for implementing a bike share system is understanding the existing conditions in the proposed system area. This process helps identify opportunities and constraints for implementation. Moreover, cataloging existing conditions provides planners and local officials with an understanding of transportation patterns that can inform the scale at which a bike share system could be implemented. A summary of existing conditions, challenges and opportunities for each of these variables is presented below. Each of these variables were then mapped and scored with weights based on bike share best practices. These scores were then compiled to develop a "heat map" showing the areas of the community most likely to use bike share.

General Conditions and Topography

The ATHA has many natural features including the Northeast and Northwest Branches of the Anacostia River, Greenbelt Park, and Sligo Creek. Mobility in this area is divided by these natural features. In addition, major barriers like highways (ex. Baltimore-Washington Parkway) and rail lines (ex. MARC and WMATA) bisect the region. The area's street grid follows a traditional post World War II suburban configuration, with significant internal connectivity within developments, but barriers between them (e.g. the major power line corridor between Hyattsville and Langley Park). Local streets generally do not connect across arterials, forcing most travel onto these wider, faster streets. East of Indian Creek, the area has significant topography, which is likely a factor contributing to the disconnected street network. Some of the neighborhoods located within Berwyn Heights, Greenbelt, and New Carrolton have significant topographies that present particular issues. Specifically, there are large elevation changes west of Indian Creek, especially towards the Northeast and Northwest Branches, however most areas are generally flat or have rolling hills.

The ATHA Study Area is also home to the City of College Park and the University of Maryland. Recently, the City of College Park launched mBike, the City's own bike share system. Details about mBike and its impact on the implementation of a regional system throughout the ATHA Study Area are further discussed on page 33 of this report.

The National Harbor area is bisected by Oxon Hill Road with the Tanger Outlets to the east and the Gaylord National Resort, Convention Center, and future MGM Casino to the west. There are significant elevation changes between these two areas – sloping westward from the Tanger Outlets at the top towards the Gaylord Resort complex and ultimately the Potomac River. The two parts of National Harbor are only connected by two roads on the far northern side of National Harbor. **Figure 4** illustrates the topography of the study areas.

The ATHA area includes a number of diverse communities and unincorporated areas of Prince George's County including Mount Rainier, Brentwood, North Brentwood, Colmar Manor, Cottage City, Edmonston, Langley Park, University Park, Riverdale Park, College Park, Hyattsville, Berwyn Heights, and the City of Greenbelt. This diversity has brought both opportunities and challenges to the coordination and implementation of

interjurisdictional/regional initiatives, such as bike share, within Prince George's County. However, organizations such as the Maryland Milestones Anacostia Trails Heritage Area and the Route 1 Bicycle Coalition, have helped to coordinate such efforts through working partnerships that focus on the regional implementation of initiatives within the ATHA area.

The study areas are located in a temperate climate zone with all four seasons. The average high temperature exceeds 80 degrees from June to August and falls below 50 degrees from December through February.[10] The study areas generally do not see significant snowfall, but do experience about 41 inches of rainfall per year.[11]

Challenges:

- Topography will make bicycling challenging in certain parts of the study areas. In the ATHA- topography is most pronounced in parts of Berwyn Heights, College Park, and New Carrollton. The eastern part of the National Harbor area has the most significant topographic challenges.
- Interjurisdictional coordination between the large number of diverse communities including those unincorporated parts of the County has been challenging.
- The street grid in both areas is discontinuous in places, concentrating traffic along certain corridors and reducing routing options for bicyclists.

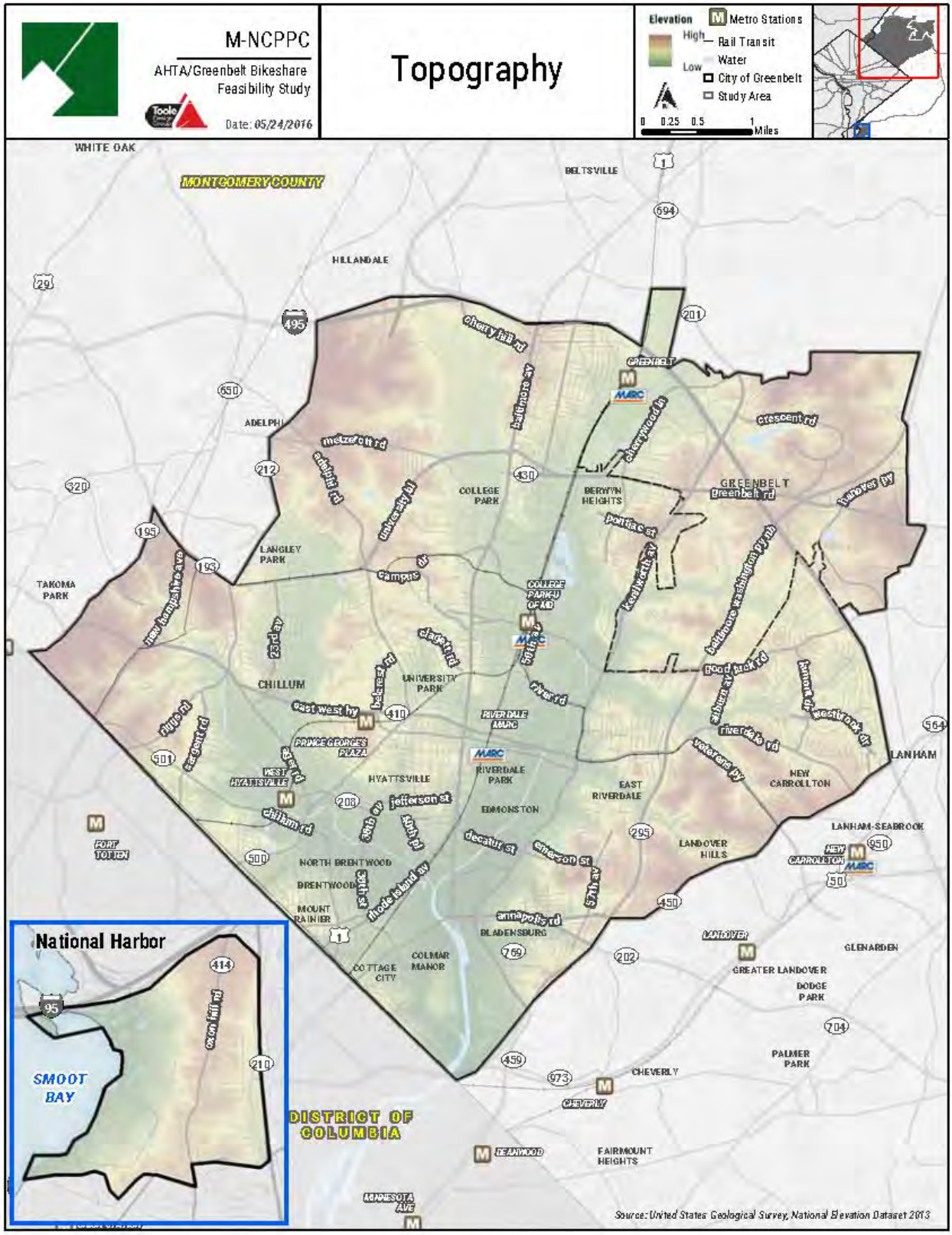
Opportunities:

- Parts of the ATHA Study Area with a topography most conducive to bicycling are located along the Northeast and Northwest Branches of the Anacostia River, such as parts of Bladensburg, Brentwood, Colmar Manor, Cottage City, and Hyattsville. Other areas with relatively moderate terrain include the relatively flat portions of Greenbelt and College Park.
- In National Harbor, areas closer to the Potomac River have a topography most conducive to bicycling.

10 http://www.usclimatedata.com/
11 Ibid

FINAL DRAFT

Figure 4: Area Topography



Demographics

According to 2014 data from the U.S. Census, the population of the ATHA is 213,501, and the population of the National Harbor area is 6,355. The population density for ATHA is 6,016 persons per square mile and 4,453 persons per square mile for National Harbor. This density is comparable to Rockville, Maryland, but lower than Alexandria, VA or Washington, DC – all of which currently have bike share.

Table 1 - Characteristics of Comparable Jurisdictions

	Land Area (sq. mi.)	Population	Density (pop. /sq. mi.)[12]
ATHA Study Area	35.5	213,501	6,016
National Harbor	1.4	6,355	4,453
Rockville, MD	13.5	65,937	4,880
Washington, D.C.	61	658,893	10,792
Alexandria, VA	15.0	150,575	10,018

Figure 5 shows the distribution of population across the ATHA Study Area. The highest densities are found in the City of College Park around the University of Maryland, in the towns and neighborhoods adjacent to the District of Columbia, West Hyattsville, and in East Riverdale between the Northeast Branch and the Baltimore-Washington Parkway. Delving deeper in the study area's demographics:

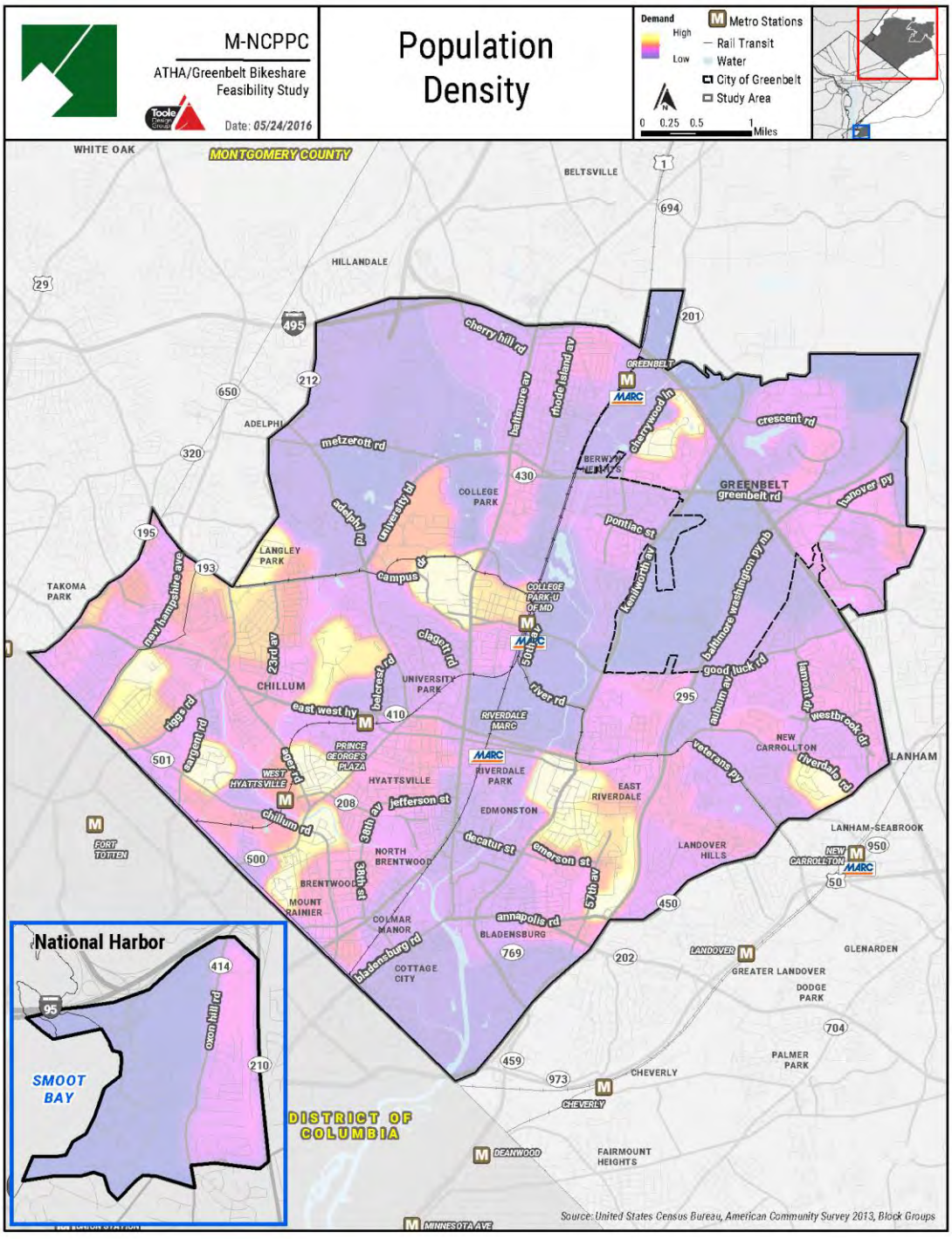
- A large proportion of the population in both study areas is between 20 and 44 years old (42.56 percent in ATHA (**Figure 6**) and 37.33 percent in National Harbor (**Figure 7**)).[13] Nationally, this cohort is one of the most likely to use bike share, and its relative abundance in the study area is a positive factor for bike share feasibility. For comparison, 80 percent of Capital Bikeshare members surveyed in 2014 were younger than 44 years old.[14]
- The Prince George's County median household income is $73,447[15], and both study areas have median household incomes in this range. (**Figure 8, Figure 9**). Statewide, Maryland's median household income is $73,538.[16] These figures are encouraging for bike share as early adopters of bike share have tended to be more affluent.[17] Fully half of surveyed Capital Bikeshare members had household incomes greater than $100,000.[18]
- Twenty eight percent of residents in the ATHA (**Figure 10**) and 24.5 percent of those in National Harbor (**Figure 11**) have earned at least a bachelor's degree. This is slightly less than the countywide figures

12 Census Quick Facts. Washington, D.C., Rockville, MD, and Alexandria, VA.
13 US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. DP05
14 http://www.capitalbikeshare.com/assets/pdf/cabi-2014surveyreport.pdf, 16
15 http://www.pgcedc.com/business-development/expand-a-business/about-prince-george-s-county
16 http://quickfacts.census.gov/qfd/states/24000.html
17 The Bike-Share Planning Guide. Institute for Transportation and Development Policy. December 2013
18 http://www.capitalbikeshare.com/assets/pdf/cabi-2014surveyreport.pdf, 16

FINAL DRAFT

reported (29.7 percent) [19] and lower than that of users in other U.S. bike share cities where 60 to 80 percent hold a four-year college degree or higher.[20]

Figure 5: Study Area Population Density



19 US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. DP05
20 The Bike-Share Planning Guide. Institute for Transportation and Development Policy. December 2013

FINAL DRAFT

Figure 6: ATHA Study Area Population by Age and Sex (by number of people)

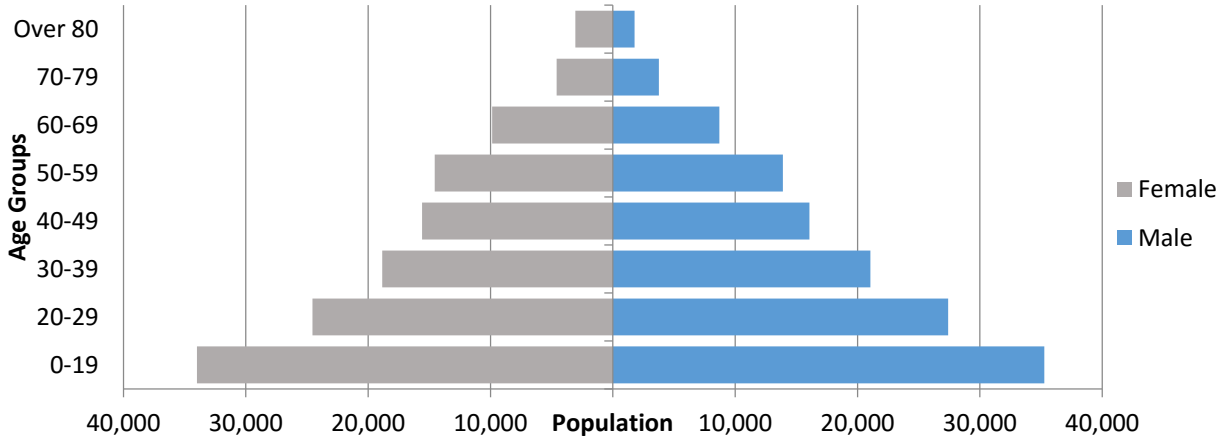


Figure 7: National Harbor Study Area Population by Age and Sex (by number of people)

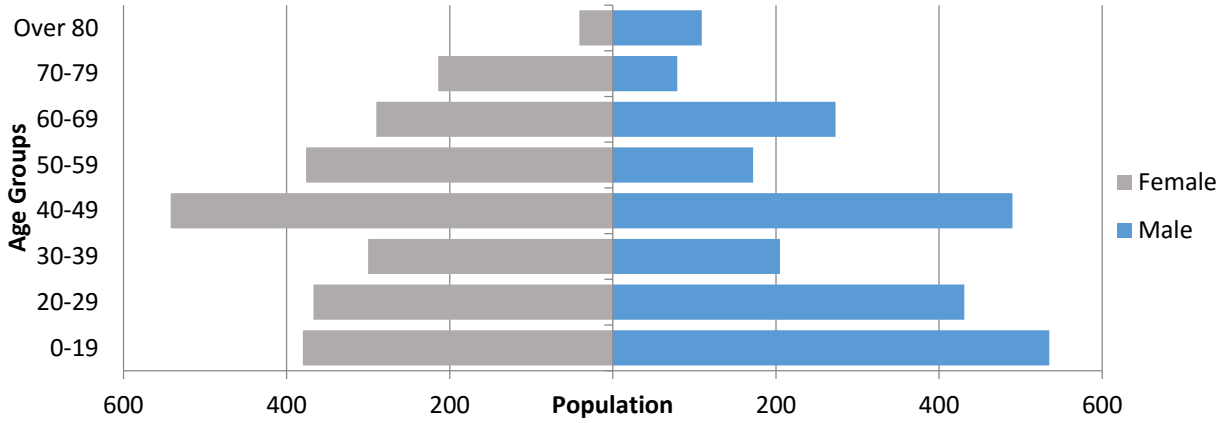
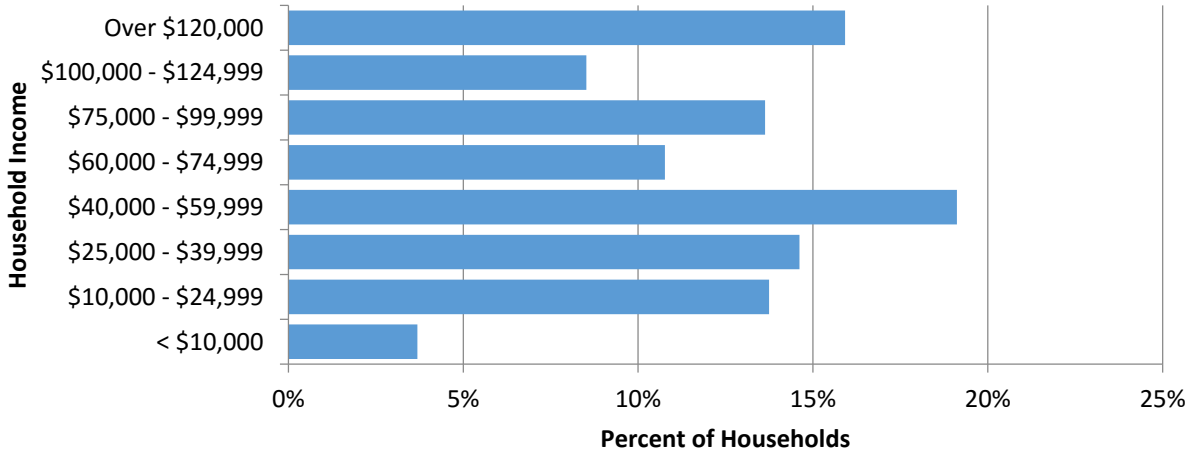


Figure 8: ATHA Study Area Household Income



FINAL DRAFT

Figure 9: National Harbor Study Area Household Income

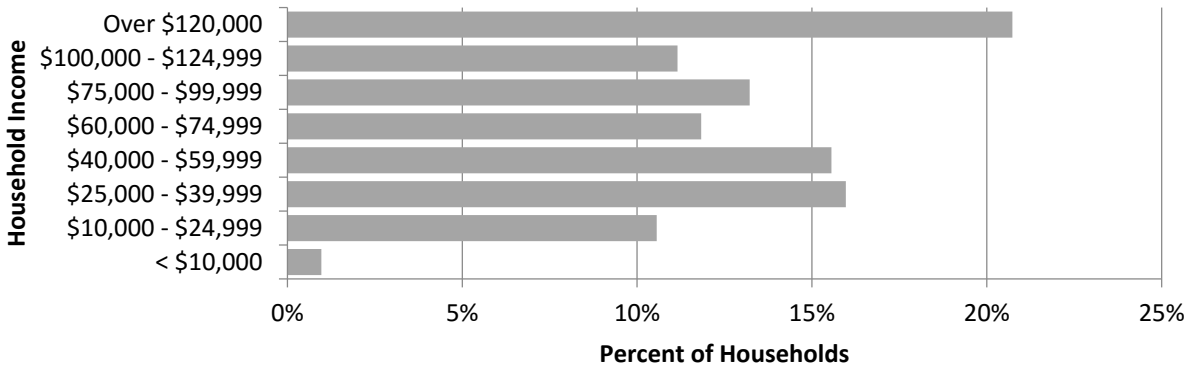


Figure 10: ATHA Study Area Educational Attainment

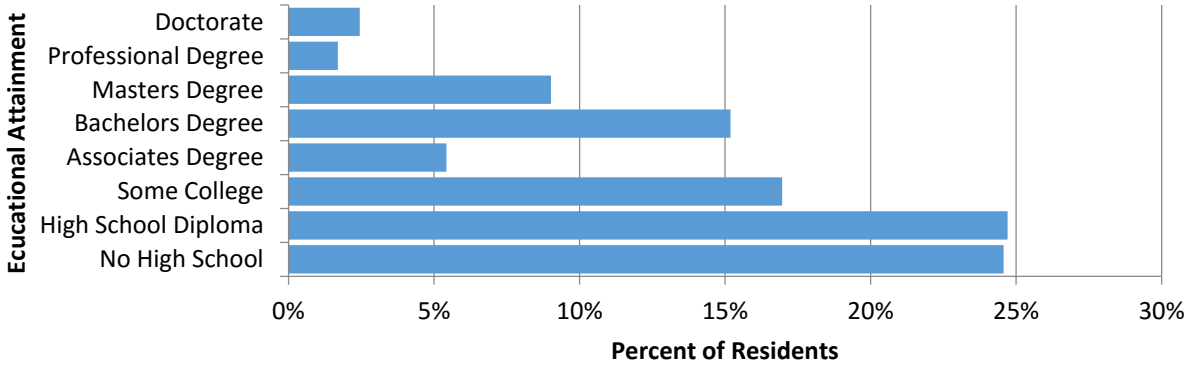
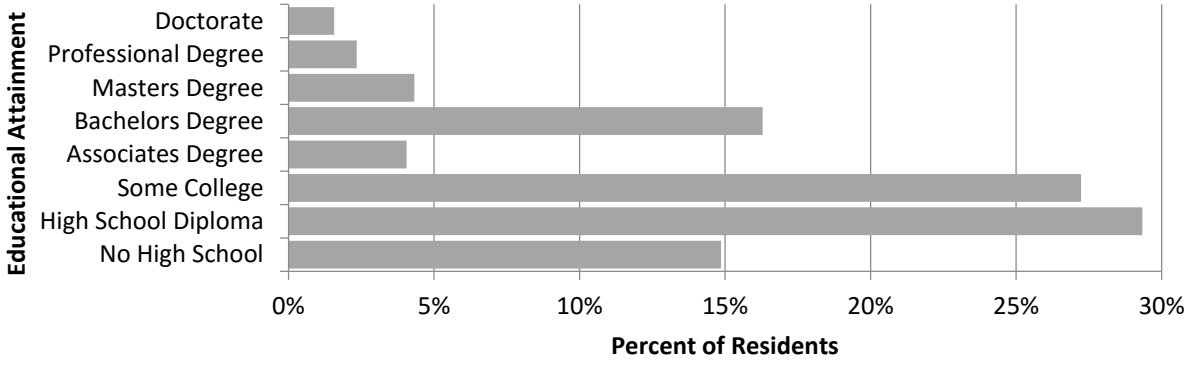


Figure 11: National Harbor Study Area Educational Attainment

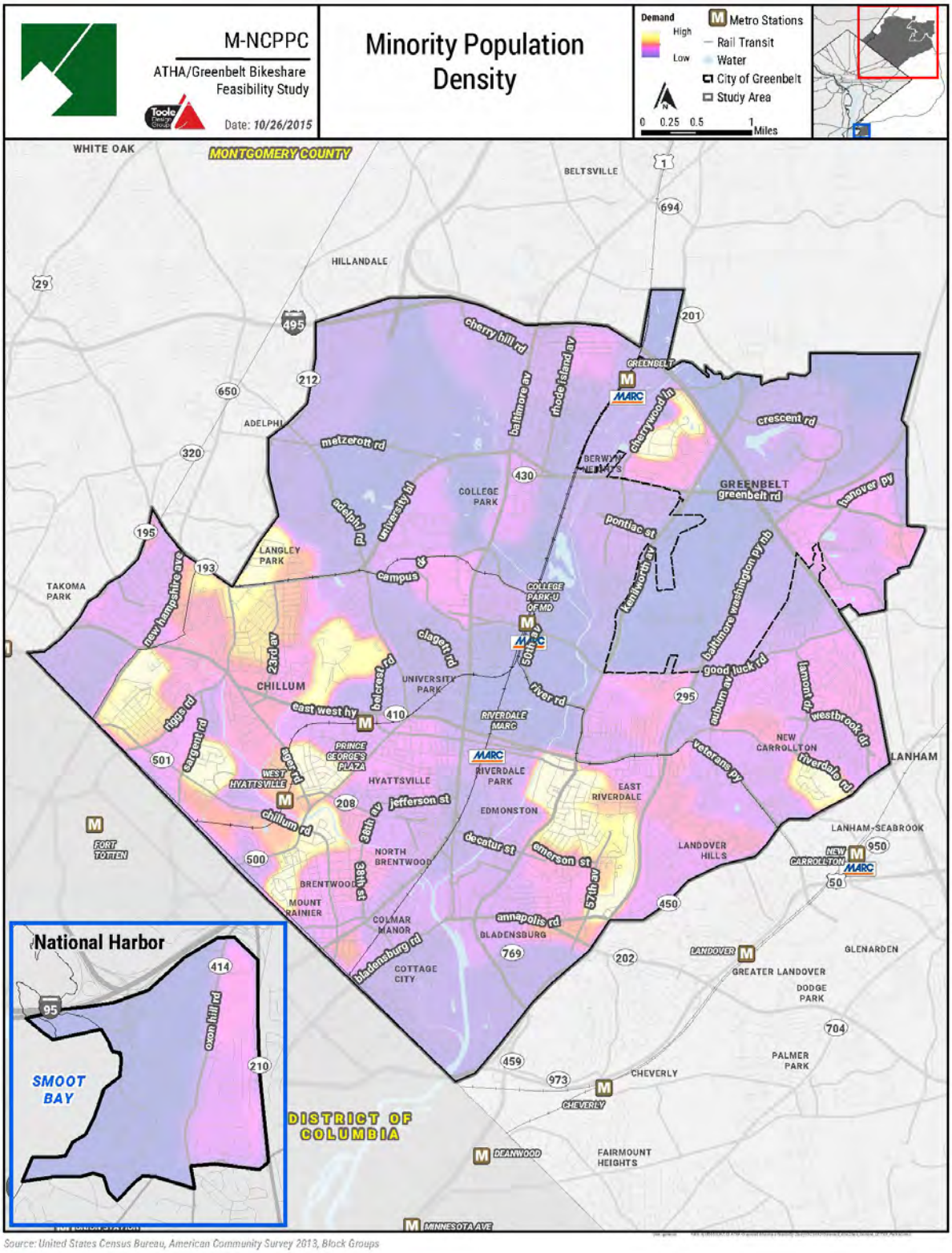


All of the communities in the study areas have significant minority (non-white) populations, but the highest concentrations are in East Riverdale, Langley Park, West Hyattsville, Greenbelt, and New Carrollton, as **Figure 12** shows. Deploying bike share stations in these areas would be of great utility to residents by providing an additional transportation option in underserved areas of the County. Furthermore, as these communities lie

FINAL DRAFT

within short biking distances (one-to-three miles) of transit (in the form of Metro stations) in the study areas, implementing bike share could help provide increased connectivity and accessibility to transit.

Figure 12: Minority Population Density



FINAL DRAFT

As noted in **Figure 13** and **14**, approximately 39 percent of residents in the ATHA Study Area identify as Black or African American, 22 percent as White, 31 percent as Hispanic, and 6 percent as Asian. The demographic breakdown for the National Harbor Study Area include around 77 percent Black or African American, 11 percent White, 9 percent Asian, and 2 percent Hispanic/Latino. In contrast, data from a recent survey of Capital Bikeshare indicates that membership is 84 percent White, five percent Asian, five percent Hispanic/Latino, three percent African-American, and three percent Other/two or more races.[21] Evidence from cities with existing bike share programs has indicated that the demographic characteristics of bike share system users are often different than the demographic characteristics of the community where the bike share system is located.

Zero vehicle households, those where no family member owns a motor vehicle, represent around six percent of households in the study areas. These households are likely already using active transportation and/or mass transit to get to employment centers, shopping areas, and regional amenities. In some neighborhoods, shown in **Figure 15**, zero vehicle households are much more common. For comparison, in Washington, D.C., 34 percent of households are zero vehicle households, 10.2 percent in Alexandria, and 10.7 percent in Rockville.[22] Bike share could serve as an added mobility option for zero vehicle households as well as those without access to a motor vehicle in the study area.

The demographic characteristics of both study areas present both potential challenges and opportunities for bike share success. Overall, residents tend to be younger minorities. Household income is strong, and compares favorably with the state and country. While minority groups have historically not been significantly represented as users of bike share in other cities (as indicated by member surveys), there have been recent efforts in many bike share cities to increase low income and minority ridership. For example, Philadelphia launched the Indego system in 2015 with strong success by focusing on having at least 30 percent of station locations in areas of the city with a high concentration of low income and minority populations.

21 http://www.capitalbikeshare.com/assets/pdf/cabi-2014surveyreport.pdf, 17.
22 Census Reporter
http://censusreporter.org/data/table/?table=B08201&geo_ids=05000US11001,16000US5101000,16000US2467675&primary_geo_id=05000US11001

FINAL DRAFT

Figure 13: ATHA Study Area Demographics

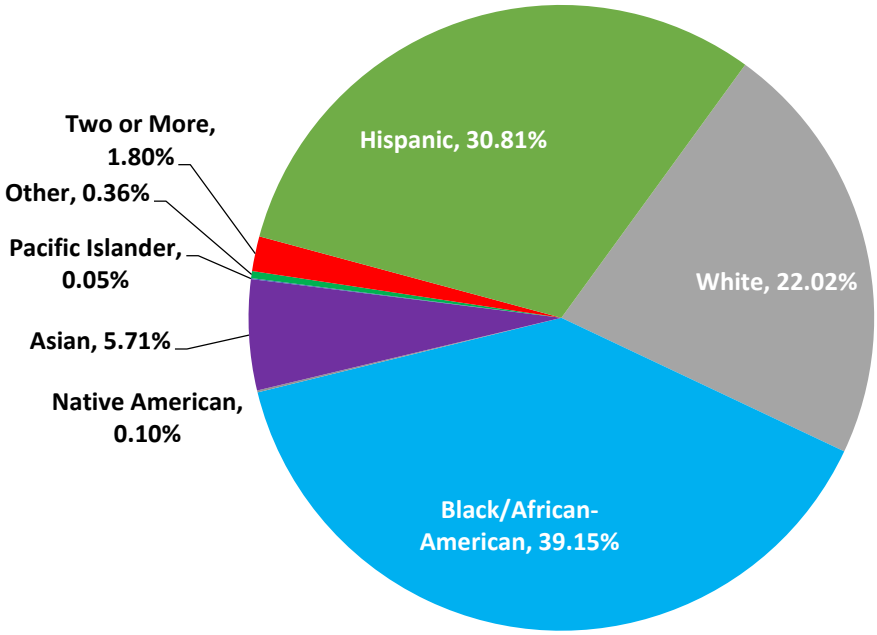


Figure 14: National Harbor Study Area Demographics

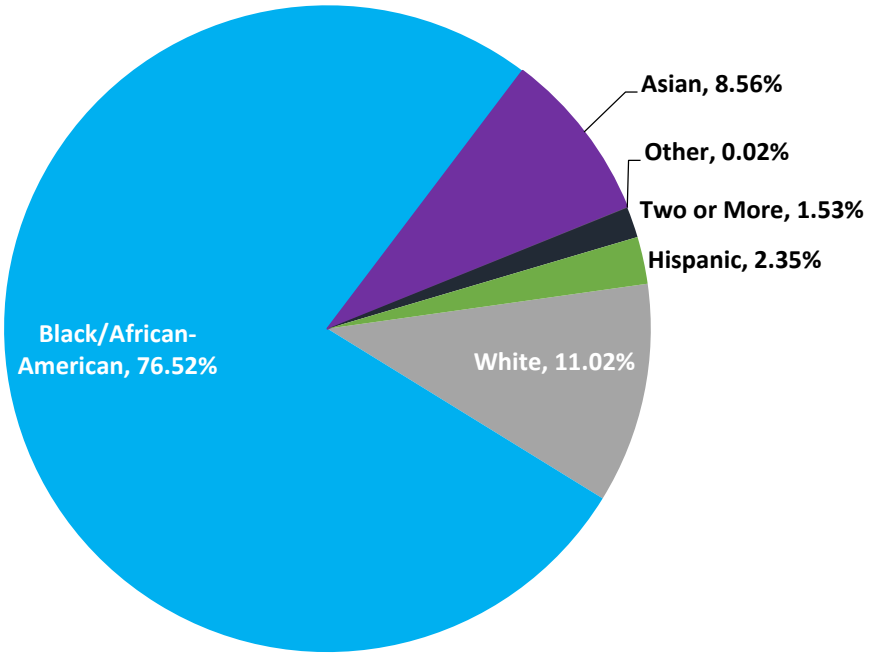
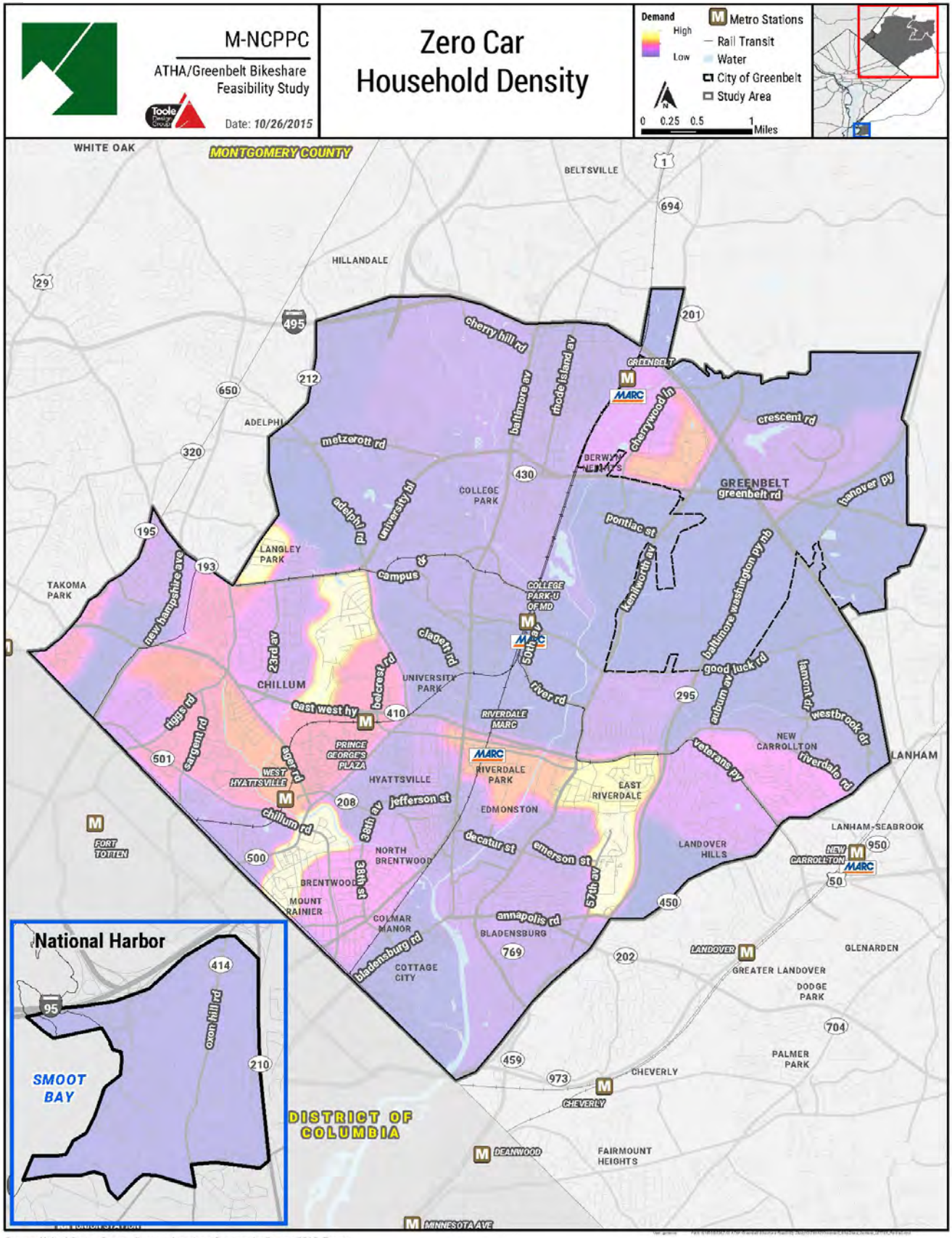


Figure 15: Zero Car Household Density



Challenges:

- While population density is high in some parts of the ATHA Study Area, many areas have lower densities that may not be as conducive to bike share implementation and may experience lower bike share ridership.

Opportunities:

- Bike share could be an effective and affordable transportation option in areas with concentrations of zero car households. For example, in the 2014 Capital Bikeshare survey, users reported saving an average of $13.65 per week (around $710 per year) on personal transportation costs as a result of their bike share use.[23]
- A concentration of residents live within short biking distances (one-to-three miles) of transit in the ATHA Study Area and bike share could serve as the first-mile, last-mile connection for these communities to jobs and local amenities via transit.

Employment Density

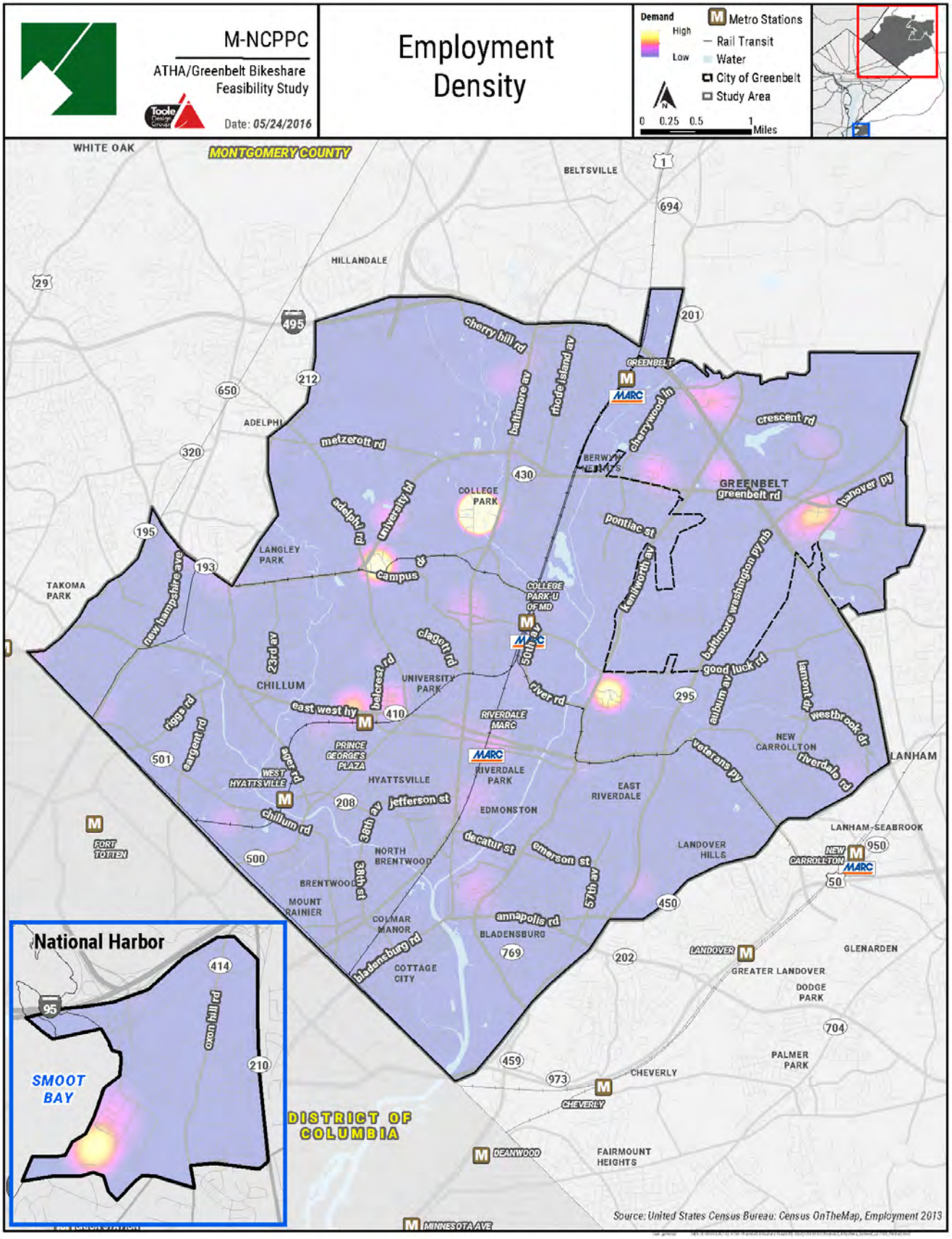
The number and concentration of jobs are also indicators of bike share feasibility. Bike share can act as a first-mile, last-mile connection from transit to employment centers, and offers workers an effective transportation option during the day. Bike share stations located in areas with relatively high concentrations of employment tend to have higher ridership rates as they are accessible to larger numbers of potential customers.[2425]

The employment density map (**Figure 16**) shows the parts of the study areas with greater concentrations of employment (in yellow) than others (in purple). There are several major employment centers in the two study areas. In the ATHA Study Area, the University of Maryland in College Park, the M-Square complex, and the areas around Greenway Center in the City of Greenbelt are major employment centers.[26] Furthermore, the potential relocation of the FBI to the City of Greenbelt could bring an additional 10,000 jobs. In the National Harbor Study Area, the Gaylord National Convention Center and associated hotels is currently the site of more than 6,000 jobs[27] with an additional 3,600 jobs to come online when the MGM National Harbor casino opens.[28]

According to the US Census Bureau, 75,288 people were employed within the ATHA Study Area in 2013. Of those employed, only 12.7 % lived in the study area, while 87.3 % of employees commuted into the study area for work. In the National Harbor Study Area, only 1.5 percent of people both live and work in the study area. The remaining 98.5 percent commute from outside the area.[29,30]

23 http://www.capitalbikeshare.com/assets/pdf/cabi-2014surveyreport.pdf, 61
24 http://www.pedbikeinfo.org/pdf/Programs_Promote_bikeshareintheus.pdf , page 15
25 Cost Recovery Ratio is the ratio of fare revenue to total operating costs, and is a key indicator of financial performance.
26 https://www.irpa.umd.edu/CampusCounts/Employees/employeesumm.pdf
27 https://www.washingtonpost.com/local/trafficandcommuting/at-national-harbor-commuting-is-a-daily-trial-for-service-workers/2013/06/16/a6f82a7e-c7a2-11e2-9245-773c0123c027_story.html
28 http://patch.com/virginia/oldtownalexandria/mgm-national-harbor-begin-hiring-3600-first-quarter-2016
29 Note: This number of employees for the study area is fewer than had been identified in news reports about the area's employment, so the numbers cited in this section are inconsistent.
30 U.S. Census LEHD OnTheMap Inflow/Outflow Analysis.

Figure 16: Employment Density



Bike share would be helpful for both those employees de and outside the study areas. Residents employed nearby could potentially use bike share as their primary mode of transportation to and from work. Additionally, both residents and those commuting employees from further away could use bike share to connect to and from transit resources like such as the College Park, Greenbelt, King Street, and West Hyattsville WMATA stations or local bus services.

The lack of transit options for employees and visitors to National Harbor has been cited by some as an issue.[31] Bike share could provide a connection via the Woodrow Wilson Bridge Bike Path to the King Street Metro station. Additionally, the U.S. Census' OnTheMap analysis tool indicates that National Harbor area residents commute to Washington, D.C., Alexandria, and Arlington more than to any other jurisdictions, therefore bike share connecting to transit stations in Alexandria including King Street and Braddock Road could bring transportation and mobility benefits to residents.

Challenges:

- Existing localized pockets of employment may make implementation of a continuous bike share system difficult due to low employment density.

Opportunities:

- The great majority of jobs are held by those who live outside of the study areas. Bike share presents a strong opportunity to offer an option for running mid-day errands or riding from a parking garage/transit to their workplace.

- With so many residents working outside the study areas, bike share could be used to improve access to transit to jobs and also to improve residents' connections to their neighborhoods. Additionally, the presence of Capital Bikeshare directly adjacent to the study areas indicates that integration into the larger Capital Bikeshare system may provide outsized benefits for study area residents by providing a first-mile, last-mile connection between home and work in other parts of the region.

- Major institutional employers, like the University of Maryland, Prince George's County, and NASA, could provide opportunities for corporate bike share membership. Other large employers in the area may be interested in sponsorship or providing membership to their employees as part of a wellness program or a transportation demand management program.

- Most employment centers are within reasonable biking distances (1 to 3 miles) of transit, therefore making bike share a good option for users to connect employment centers to transit.

Visitors and Tourism

Approximately two-thirds of user-generated revenues in cities with existing bike share programs including Minneapolis and Washington, D.C. come from tourists, visitors or other casual users.[32] Depending on the payment structure of the bike share system, these users can provide an important revenue stream for day-to-

31 https://www.washingtonpost.com/local/trafficandcommuting/at-national-harbor-commuting-is-a-daily-trial-for-service-workers/2013/06/16/a6f82a7e-c7a2-11e2-9245-773c0123c027_story.html
32 https://www.niceridemn.org/_asset/wcwbuh/NRMN_annual-report_2014_web.pdf,

day operations as well as program expansion. Typically, tourists and visitors are less cost-sensitive and are willing to pay higher fees to keep bicycles out longer. For example for Salt Lake City's GREENbike program, in 2014 GREENbike's net revenue per trip for this group was $4.01, compared to only $1.20 for annual members.[33]

Prince George's County saw 6,283,000 visitors in 2014 [34] and has upwards of 10,300 hotel rooms, with nearly 3,000 in National Harbor alone. [3536] The ATHA has many attractions for visitors, from attending a sporting event or musical performance at the University of Maryland to visiting the nearby Goddard Space Flight Center to biking the trails along the Anacostia River tributaries. Furthermore, the pending connection of the Anacostia Tributary Trail system to Washington DC has the potential to generate significant tourism travel into Bladensburg Waterfront Park and beyond. Many people visit National Harbor for the day or overnight for large conventions and events at the Gaylord National Resort and Convention Center, shopping at the Tanger Outlets, recreation along the trail crossing the Woodrow Wilson Bridge, or sightseeing on the Capital Wheel. Bike share could provide an additional mobility option to this area which currently has connectivity challenges with other parts of the region. Furthermore, visitors could use bike share to travel between their hotel, convention center, restaurants or retail locations, or to connect to Old Town Alexandria only a short distance away (1.5 miles) across the Potomac River. Conference and event planners could purchase bulk short-term memberships and include them in event registration packets for all attendees.

Figure 17 shows the areas with a concentration of attractions, including the aforementioned venues, but also parks, community centers, and other amenities.

Challenges:

- None observed.

Opportunities:

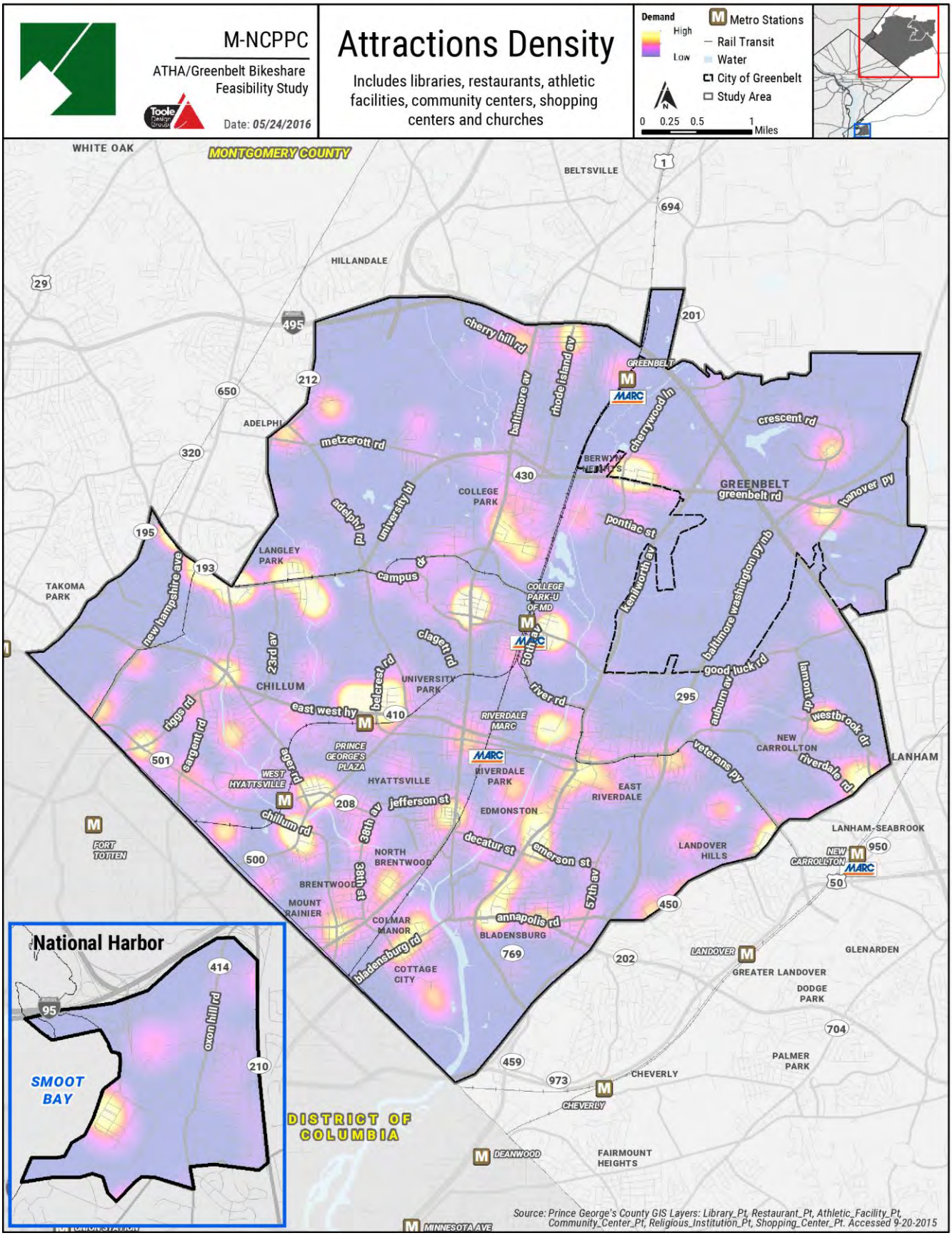
- Conventions and special events may increase usage and revenues, and can be tied with special membership deals or short-term passes to introduce people to the system.
- Regional trails, like those along the Anacostia River tributaries, have the potential to attract significant recreational and utilitarian bike share ridership because they are high-quality, low-stress bicycling facilities.

Transportation - Transit, Car Share, and Regional Mobility

No matter how successful a bike share system is, it is usually not the sole mode of travel for residents and visitors. In concert with walking, public transportation, car sharing, and other modes, bike share can help increase connectivity between an area's origins and destinations. An area without access to these modes can struggle to support a bike share system.

33 https://configuringgreenbike.bcycle.com/docs/librariesprovider32/default-document-library/2014-annual-report.pdf?sfvrsn=2 17
34 http://www.princegeorgescountymd.gov/sites/OMB/Resources/budget-2016/Documents/conferenceandVisitorsbureau.pdf
35 http://www.princegeorgescountymd.gov/sites/CountyCouncil/Resources/Documents/EconomicDevelopment.pdf
36 http://www.nationalharbor.com/wp-content/uploads/2015/06/NH-Fact-Sheet-06.01.15.pdf

Figure 17: Attractors Density



The ATHA has access to a number of transportation options, including many Metrobus routes, Metrorail service, MTA MARC train service, Prince George's County *TheBus* service, RTA of Central Maryland bus service, University of Maryland shuttles, as well as car sharing and private automobile service. Bike share could complement these existing transportation options by improving first-mile, last-mile access to transit, making it easier to complete more trips without using an automobile. Peak headways on the bus services mentioned vary from 12 to 60 minutes depending on the route, however many routes do not offer weekend service.

Transportation options are more limited in National Harbor area. Aside from using a private automobile, Metrobus offers the NH-1 route that connects from the Southern Avenue metro station to the Study Area at 30 minute headways. However, this service is only available from 5:45am to midnight every weekday except Friday[37] making connectivity to other parts of the Washington region difficult for employees and residents without automobiles. Currently there are no public transit options connecting National Harbor to Alexandria, although National Harbor does operate a shuttle service.[38]

Limited transportation choices in National Harbor may impede the effectiveness of bike share in this area due to the fact that bike share users will have limited bicycle commute options, and will likely need alternatives. Tourists, however, tend to be more opportunistic and may use bike share if it is available. **Figure 18** is a map of study area transit density. This map includes data related to the location of bus routes, Metro stations and proposed Purple Line stops.

Challenges:

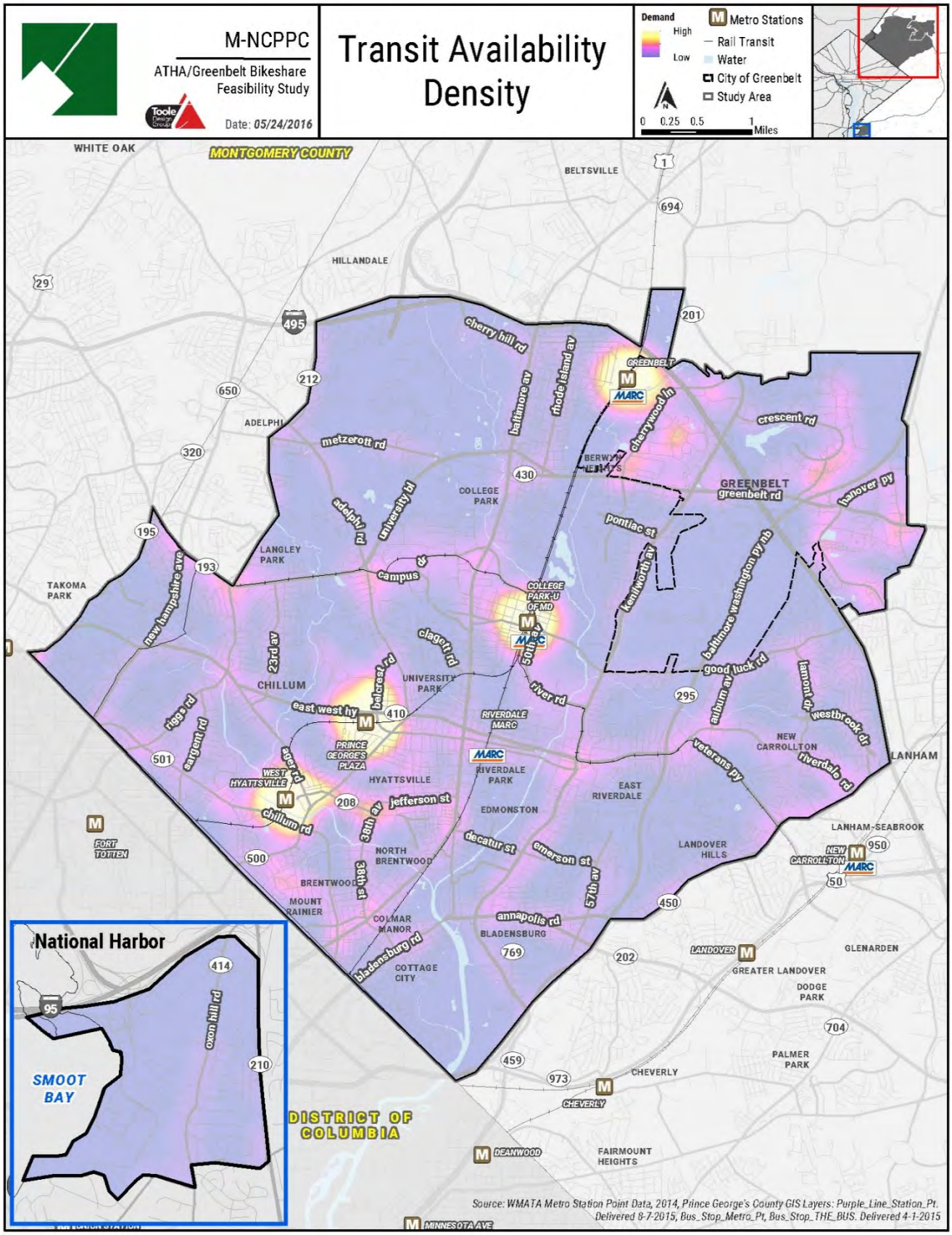
- Long headways between buses in both study areas make it difficult to rely on public transportation in both study areas, increasing private automobile usage.

Opportunities:

- Bike share offers a first- and last-mile connection to and from transit and in particular should be provided as an option at major transit stops and areas around those stops.
- Major nodes of the study network, like the Gaylord National Resort, which are not well-connected to the regional transit network, may benefit from bike share as it may be able to provide additional service linking to Alexandria or other transit hubs.

37 http://www.wmata.com/bus/timetables/md/nh1.pdf
38 http://potomacriverboatco.com/national-harbor-schedule.php

Figure 18: Transit Availability Density



Mode Share and Bicycling Infrastructure

Bicycling is a relatively popular mode of transportation in some parts of the study areas. While bicycle commuting mode share in Prince George's County overall is one percent, in the College Park area and part of the ATHA Study Area, it exceeds four percent, reaching upwards of five percent in Calvert Hills and northern Riverdale Park. The Baltimore Avenue corridor, from the District of Columbia boundary to the northern end of the ATHA Study Area, has a bicycle mode share greater than the County as a whole (3 to 4 percent), indicating that significant bicycling is already occurring. On the other hand, National Harbor currently experiences a bicycle commute mode share of close to zero percent. [39]

There are significant trail facilities in the study areas. In the ATHA Study Area, the extensive Anacostia River Trail system extends along the Northeast and Northwest branches of the Anacostia River, around Lake Artemesia, the Paint Branch Trail extension, and the Rhode Island Avenue Trolley Trail. These trails provide comfortable connections between many of the communities, and will be connected to the Anacostia Trail system in Washington, DC this fall. National Harbor has trails that connect it across the Potomac River to the City of Alexandria, VA and to the extended Mount Vernon Trail network. Hundreds of residents and visitors to the National Harbor use this trail daily. Study Area trails are shown in **Figure 19**.

The study areas however, have relatively few on-street bicycle facilities. Existing facilities include bicycle lanes on Riggs Road, Rhode Island Avenue, Decatur Street, and Cherrywood Lane. On-street facilities are shown in **Figure 20**. Furthermore, east-west bicycle connections north of the Northwest Branch are limited. Future initiatives, such the Prince George's County Trails Master Plan and Maryland State Highway Administration's efforts to add bicycle facilities along Baltimore Avenue in College Park, will improve the bicycle network over time.

While there has been little academic research regarding the link between the provision of bicycle facilities and bike share ridership, there is a significant volume of research that shows a positive relationship between the availability of facilities and general levels of bicycling. [40,41,42] For example, Buehler and Pucher found that cities that made a 10 percent increase in bicycle facilities saw a two- to three-percent increase in bicycle commuting compared to cities with no change. This relationship may be especially strong among minority and low-income individuals: Fifty-nine percent of minorities[43] and 60 percent of low-income people responding to a 2012 survey conducted by the League of American Bicyclists stated that the provision of more bicycle facilities would encourage them to ride more often.[44] In addition, in 2013, 56 percent of Capital Bikeshare members responding to a general survey about their riding preferences stated that a lack of dedicated bicycle lanes or paths was a barrier to using Capital Bikeshare.[45]

39 US Census ACS 2013 5-Year Estimates "Means of Transportation to Work by Sex"
40 http://www.pagnet.org/documents/2012LABfeedback.pdf
41 Buehler, R. & Pucher J. (2012). Cycling to Work in 90 Large American Cities; New Evidence on the Role of Bike Paths and Lanes.
42 Dill, J. & Carr, T. (2003). Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them.
43 Minorities defined as Hispanics, African Americans, Asians, Native Americans, mixed, or other race.
44 http://bikeleague.org/sites/default/files/equity_report.pdf
45 http://www.capitalbikeshare.com/assets/pdf/CABI-2013SurveyReport.pdf

Figure 19: Off-Road Facilities Density

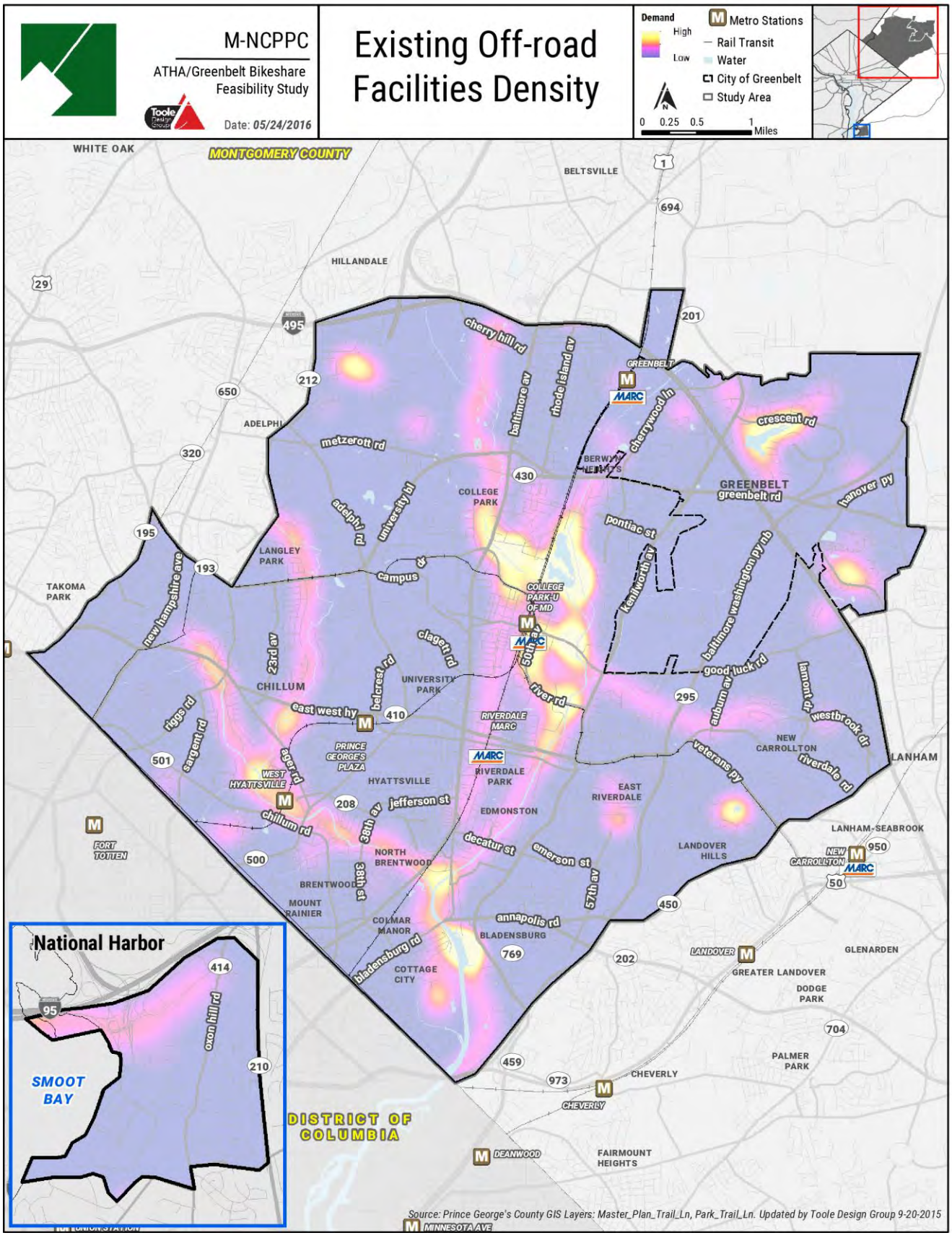
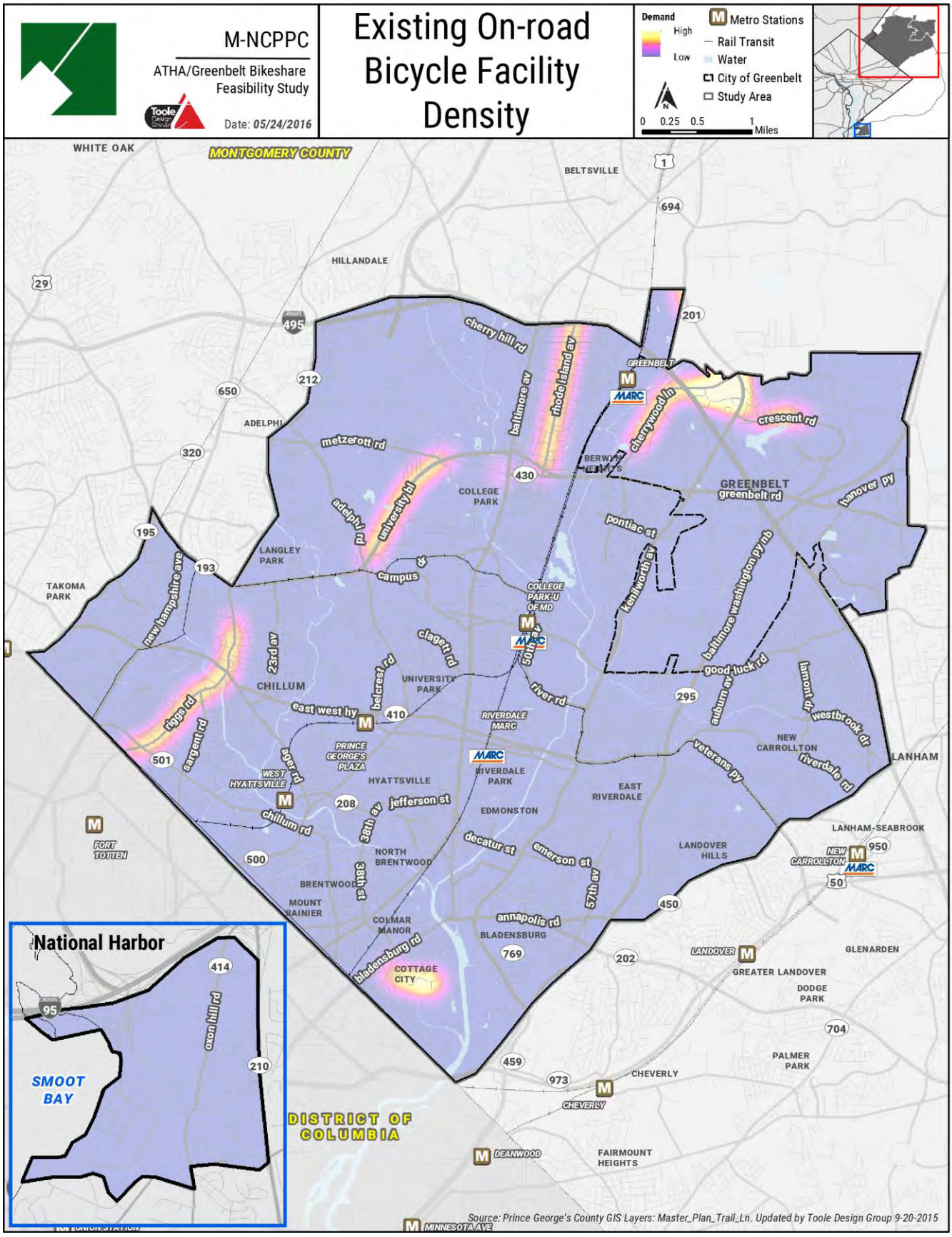


Figure 20: Existing On-road Facilities Density



Challenges:

- While a complete network of on-street bicycle facilities is not necessary for the implementation of a bike share system, additional bicycle facilities would help fill in the gaps between on-street and off-street bike facilities in these study areas. Without a network of low-stress bicycle connections between origins and destinations, potential bike share users may be dissuaded from using the system because they may feel uncomfortable bicycling on streets in the area.[46]

Opportunities:

- The extensive trail system in the Anacostia watershed is a wonderful resource around which to focus a bike share system. However, it will be important to have frequent connections into adjacent neighborhoods and commercial nodes. Furthermore, trails in the ATHA Study Area have the potential to flourish as a bike share superhighway, providing a low-stress connection for users between their homes, businesses, and regional amenities.[47]
- Wherever bicycle facilities help users cross barriers like highways, railways, and bodies of water, they are very valuable. In this vein, the Woodrow Wilson Bridge trail, providing a direct connection between National Harbor and Alexandria across the Potomac River, is a major opportunity for bike share. Bike share could help facilitate greater connections between Alexandria and National Harbor for residents and visitors alike.

mBike - College Park Bike Share

As college students tend to take many short daily trips throughout the day and many do not own automobiles, bicycling and in particular bike share can be an attractive mode of transportation. Locating bike share stations both on-and off-campus can take advantage of this fact. Additionally, colleges tend to have walkable, mixed-use destinations in the vicinity that cater to the student population. This land use pattern has been a key origin/destination of bike share trips in other communities.[48]

In October 2015, the City of College Park selected Zagster, as the official equipment provider and operator of the local bike share program after issuing a competitive bid. mBike, as the program is named, launched as a three year pilot with 14 stations, 125 bicycles, in early spring 2016. This smart bike system currently provides service throughout the University of Maryland campus, with connections to the College Park and Greenbelt Metro stations. The system is located in the middle of the ATHA Study Area. The system and station sites are shown in **Figure 21** along with the existing and proposed Capital Bikeshare stations for both Montgomery County, MD and Washington, DC.

The selected smart bike technology, is currently not compatible/interoperable with the existing regional Capital Bikeshare system or user membership cards. The system incompatibility means that bike share system members who use bike share in College Park and other parts of the D.C. region will need to purchase two separate memberships.

46 It is worth noting that a current workgroup comprised of communities along the Baltimore Avenue corridor of the ATHA is coordinating municipal efforts regarding on-road facilities, and may result in additional facilities being striped or signed in the near future. It will be important that these efforts continue in support of bike share in the area.

47 The M-NCPPC Department of Parks and Recreation is currently developing a wayfinding and signage plan for the Anacostia Tributaries Trail Network that will further support the use of the trail network for transportation related trips.

48 http://www.pedbikeinfo.org/pdf/Programs_Promote_bikeshareintheus.pdf , page 17

Furthermore, visitors to College Park who purchase temporary (e.g. three day, one day, daily key) memberships for one system will not be able to use their membership on the other.

There are however possible workarounds to allow for College Park residents to access Capital Bikeshare and mBike. The County for example could work with the City of College Park to offer its residents discounts on the cost for memberships to each of the systems. The County could also work with other Capital Bikeshare jurisdictions and its operator, Motivate, to begin looking into program interoperability.

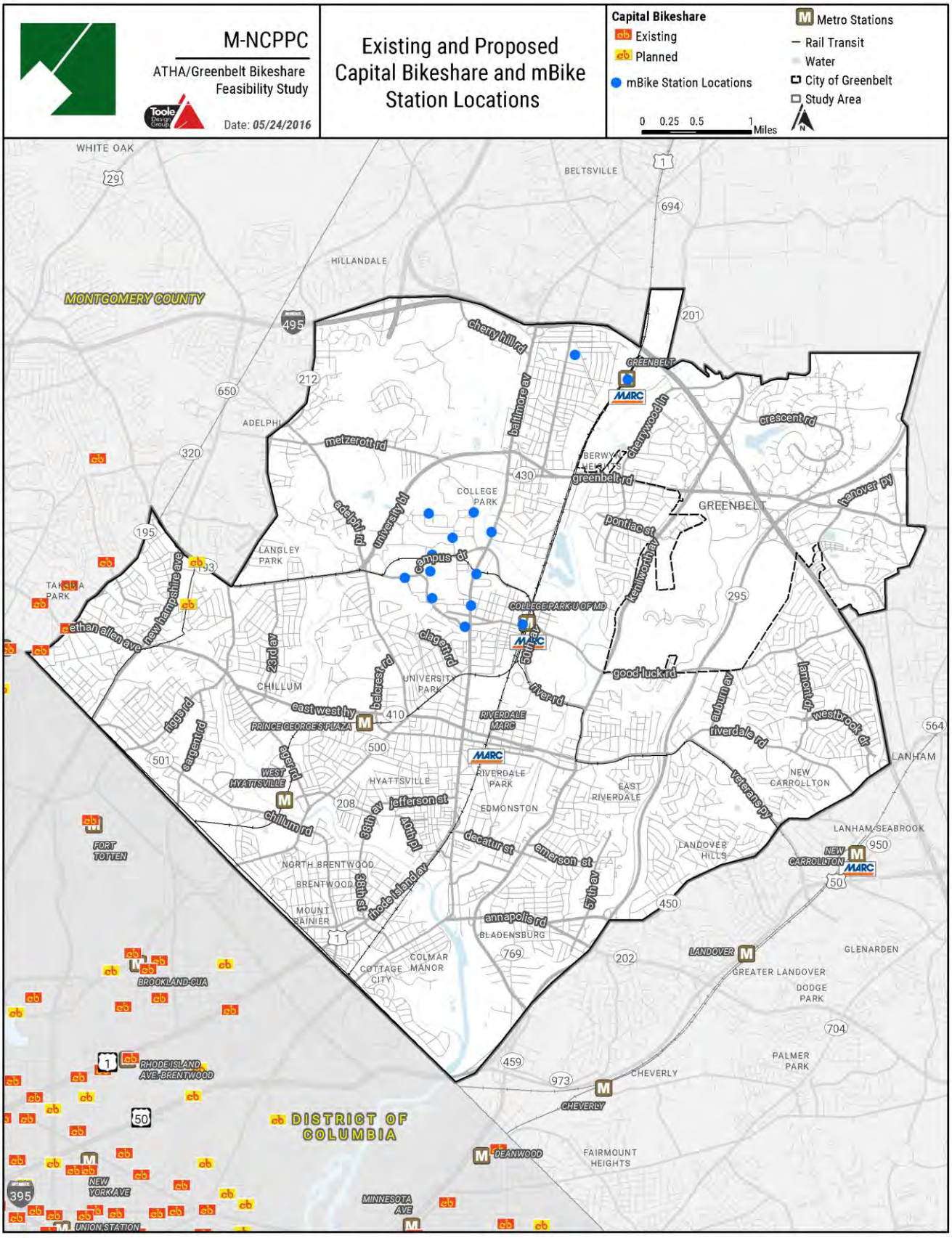
Challenges:

- Currently, the technology for mBike and Capital Bikeshare is incompatible limiting the ability of study area residents and visitors to benefit from a regional bike share system. However, bike share is a fast-evolving field, and there may be technology solutions in the future that will accommodate inter-operability between different vendors.

Opportunities:

- Because of the location of the mBike system (within the geographic center of the ATHA Study Area), Capital Bikeshare stations should be installed in close proximity to mBike stations to allow residents and visitors alike to connect from the Washington, DC border all the way to the City of Greenbelt.
- Because of the fast evolving nature of bike share technology, there may be compatibility opportunities in the near future. Further conversations between the County, the City of College Park, Motivate (the Capital Bikeshare operator), and Zagster are recommended.

Figure 21: Existing and Proposed Capital Bikeshare and College Park Bike Share Stations



Summary of Opportunities and Challenges

While there are challenges to bike share implementation in the study areas, the population density, transit access, bicycle facility network, and demographic base indicate that bike share implementation may be feasible in some parts of the study areas. The Baltimore Avenue corridor from Greenbelt to the Washington D.C. boundary exhibits many characteristics important for the success of bike share. The National Harbor area may be a bike share success based on its strong visitor traffic and comfortable connection to Alexandria.

The primary challenges to a successful bike share system in these areas include:

- A street network with limited on-street facilities and major arterial crossings can be difficult to ride along or cross, and may dissuade some from using bike share at all, or limit the areas that many potential users would ride.
- In parts of the study areas, there is not a diverse array of transportation options. Bike share works best as one mobility tool in a toolbox that includes reliable public transit, car sharing, and private automobile use.
- As the City of College Park and its mBike system are located in the geographic center of the ATHA Study Area, incompatibility between the mBike and Capital Bikeshare systems represent probably the largest challenge to bike share implementation. Having two systems overlapping in the same area, or a system in Greenbelt that is somewhat tenuously connected to the communities south of College Park, will also be a challenge for implementing a truly successful bike share program in the ATHA Study Area.

Key reasons that support bike share in the County include:

- Strong bicycle mode share in core parts of the study area indicates an existing propensity to bike, laying the groundwork for a successful bike share rollout.
- With many regional transit nodes within biking distance of neighborhoods, bike share could make using public transit more convenient. There is a significant amount of in/out commuting from the study area, providing the opportunity for residents and employees alike to use bike share as a first-mile, last-mile tool to get between home and work.
- Population density in parts of the study area is higher than in many communities that have implemented bike share, and there is a correlation between population density and levels of bike share ridership.
- An extensive existing trail network would provide bike share users low-stress connections between home, work, and play. This will be strengthened with the upcoming trail connection between the Anacostia Tributary Trail System in Prince George's County with the Anacostia Riverwalk Trail in the District of Columbia. The connection between the Rhode Island Avenue Trolley Trail and the Anacostia Tributary Trail network will provide additional connections to businesses along Baltimore Avenue in Hyattsville, Riverdale Park, and College Park.

- A significant number of annual visitors could use bike share to connect to regional amenities and events. This is particularly significant in and around National Harbor and the University of Maryland campus, and potentially among tourists using the Anacostia Tributary Trail system. These casual users would also likely provide greater revenue for the system than residents or long-term members, as experienced by the existing Capital Bikeshare system.
- Both study areas connect to the regional Capital Bikeshare system, allowing bike share in these areas to benefit from economies of scale and provide County residents access to the larger regional system (if a decision is made to join Capital Bikeshare). The presence of Capital Bikeshare also increases the awareness of bike share in general- and there are likely already Capital Bikeshare members living in either the ATHA or National Harbor Study Areas.

Bike share station locations along the Anacostia Tributary Trail system and Baltimore Avenue could provide a convenient option for residents and visitors looking to access regional destinations and amenities. In National Harbor, bike share stations could help connect the convention center, hotels and restaurants, future casino, Tanger Outlets, and the City of Alexandria. Some potential bike share users may include:

- Convention-goers looking for a quick connection from their hotel to the convention center
- University of Maryland students and staff running midday errands off-campus
- ATHA residents travelling to metro stations on the Green line, MARC train stations, and future Purple Line stations

With these opportunities and challenges in mind, the implementation of a bike share system in the study areas can be **FEASIBLE**. It is important for the County to continue improving on-street bicycle conditions in the study areas, in addition to improving the quality and quantity of transit service available.

Bike Share Suitability Analysis and Methodology

Based on the review of existing conditions, a suitability analysis (or "heat mapping" analysis) was performed using GIS data provided by M-NCPPC and from publically available sources including the U.S. Census. Bike share tends to be most successful where there are a variety and density of land uses. Therefore, the bike share suitability analysis was created by aggregating various data sets, including: population density, employment density, community and visitor attractions (e.g., libraries, community centers, sports venues, etc.), transit and regional transportation, bicycle mode share, equity, and topography.

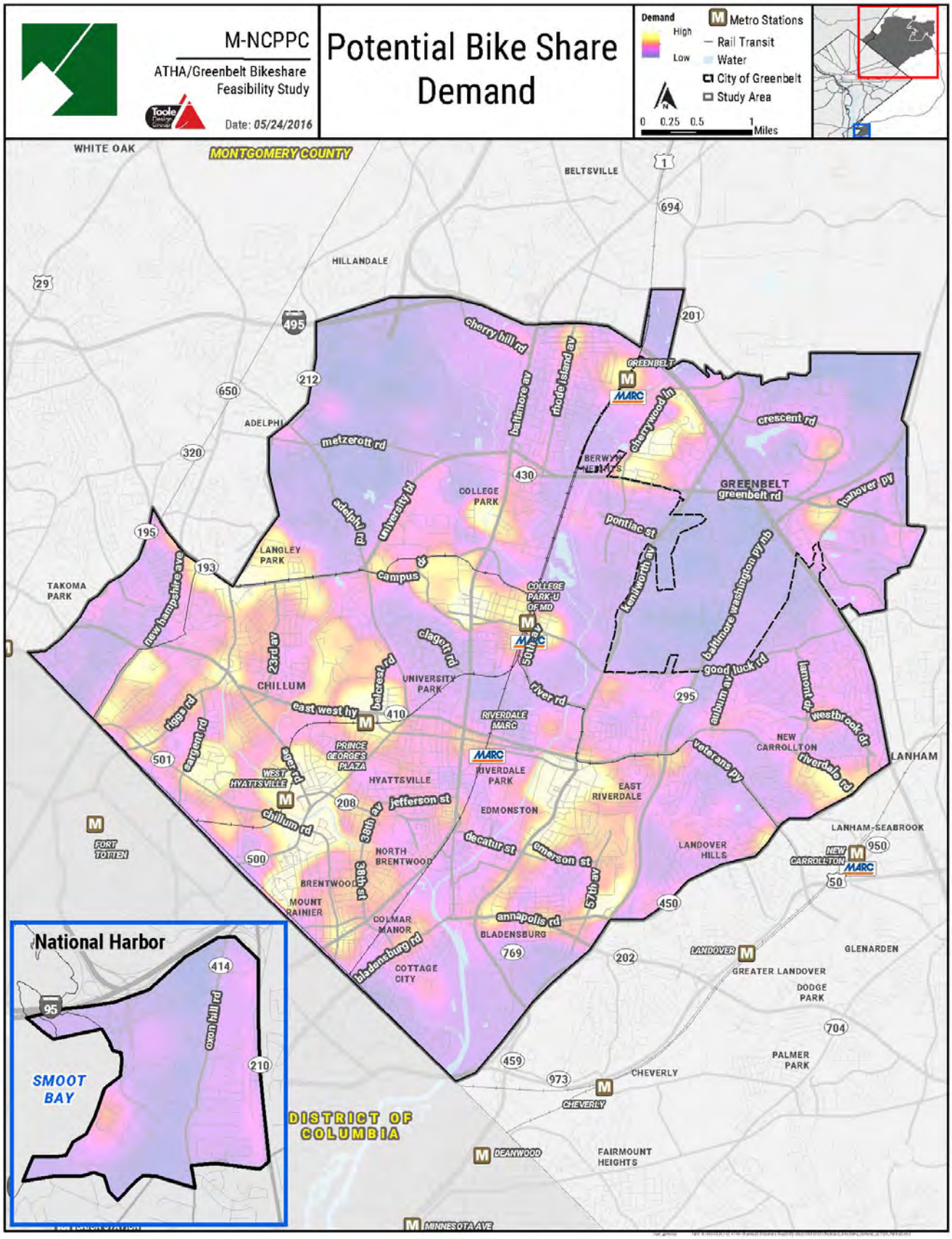
The methodology includes a point-scoring system where points are allocated to variables based on the factor categories discussed in the previous section. Category weights were determined with respect to the established goals and objectives of the bike share system. The points for each category are then summed to give a total *suitability* score. The weighting used for each variable is described in **Table 2**. The results of the analysis are shown as a heat map in **Figure 22**. According to this analysis, the most suitable locations for bike share are shown in the lighter yellow shades on the map, and include portions of the Mount Rainier, West Hyattsville, Prince George's Plaza, Riverdale Park, East Riverdale, College Park, and Greenbelt. The National Harbor area also presents a good opportunity for bike share expansion due to its existing connections to the City of Alexandria, VA.

These outputs were combined with public and stakeholder input to define the recommended bike share service area and proposed phasing.

Table 2: Bike Share Demand Variable Weighting

Data Item	Weight
Employment Density	21%
Population Density	21%
Attractions	18%
Transit Stops Density (includes metro)	9%
Existing infrastructure	12%
Topography	6%
Equity	15%
TOTAL	**100%**

Figure 22: Potential Bike Share Demand



Operating Models

A significant decision when implementing a bike share program is the selection of an appropriate operating model. This is based on several factors including the jurisdiction's funding environment, institutional capacity, and local transportation needs. One important nuance for bike share in Prince George's County is the number of municipalities that may be involved. Certain operating models are better suited to these types of multi-jurisdictional arrangements than others.

In general, the following general functions are required to mobilize and operate a bike share system:

- Obtain political, public, and other support
- Fundraise for initial capital and early operating costs, e.g., multiple years of operating funds
- Procure of the equipment vendor and selection of the operator
- Administer contract with the operator
- Operate the system
- Evaluate and expand the system
- Potentially retain and advertise a system advertising vendor

These functions may be undertaken by one or more organizations. While there are variations on how each system is implemented, the most common operating models in the U.S. include systems i) non-profit owned and operated, ii) owned by public agencies and operated by a private contractor, and iii) privately owned and operated. The advantages and disadvantages of each of these models are reviewed below:

Non-profit Owned and Operated

Through this model, a Non-Profit Organization (NPO) takes on responsibility for the management and day-to-day operations of the system. Funding for equipment typically comes to the nonprofit in the form of public, private, and/or philanthropic sources. Under the recently adopted Fixing America's Surface Transportation Act (FAST Act), NPOs are eligible recipients of federal transportation funding for bicycle projects. However, the State of Maryland and Metropolitan Washington Council of Governments may still be revising the application eligibility guidelines to include NPOs.

Figure 23: Denver B-cycle

Ongoing financial liability for operations and additional equipment falls under the NPO. While NPOs tend to be nimble and adaptive, this model may also require additional support from local government agencies providing organizational and financial support to the nonprofit in its first few years. Due to the NPO's constant reliance on intensive fundraising strategies as a source

of revenue, a large percentage of staff time may be consumed by fundraising and operational activities. Existing systems with this implementation model include Nice Ride, MN (Twin Cities, MN), San Antonio B-Cycle (San Antonio, TX), and Denver B-Cycle (Denver, CO).

Advantages:

- Maximum fundraising diversity
- Community-oriented mission of the non-profit aligns with many of the goals of bike share
- Able to span jurisdictional boundaries
- Transfers risk and ongoing financial responsibility from the County, but maintains some level of transparency through County representation on the NGO's Board of Directors
- Profits are reinvested into the system
- Generally more cost-effective because operating standards are minimal, organizations are small, and assistance is often provided through in-kind services

Disadvantages:

- Financial and operating performance are not the only priorities
- Skills and experience will need to be learned over time
- Typically there are no or limited performance standards for operations
- Can be a long timeframe for NPO creation and capacity building
- May be difficult for NPO to join one of the regional bike share systems if that is the ultimate direction the program takes

Privately Owned and Operated

Figure 24: Citibike NYC

A privately owned and operated system brings established skills and experience, however this model depends on the financial potential of the system to attract private investment. This model minimizes the jurisdiction's financial risk but also removes agency control (e.g., agency involvement in decisions on how and where the system will expand). The model's funding options are limited to whatever the private sector interest is able to bring to the table. In many smaller and mid-sized communities, potential for privately owned and operated systems is low due to the size of the existing markets which may not be able to support such a system. The only two existing U.S. systems operating under this model in the United States are DecoBike in Miami Beach (large tourist market) and Citi Bike in New York City (large tourist market, financial capital, global exposure).

Advantages:

- Removes risk and financial responsibility from the City
- Private operator motivated to ensure visible success of the program (i.e. high ridership and profitability)
- Private sector brings established skills to the program
- Easy to expand across jurisdictional boundaries

Disadvantages:

- Market driven- may not be much interest from potential owner/operators given the relatively small tourist market in the proposed service area
- Minimal agency control and less transparency than other models
- Funding options are limited to what a private company can obtain/bring to the table
- The agency has less control over the use and re-investment of profits
- Expansion is typically market driven making it difficult to achieve geographic and demographic equity goals

Agency Owned and Privately Operated

An agency owned and managed system is a popular governance structure and is the model for some of the largest bike share systems in the U.S. including Capital Bikeshare. Through this model, a government agency (ex. Department of Transportation, Department of Public Works, etc.) is financially responsible for the program, and owns the system infrastructure including the stations and bicycles. The model allows for the agency to select which other functions it takes on and which it contracts to a third party (e.g., operations, marketing, promotions, etc.).

Figure 25: Capital Bikeshare

Through this model, the agency maintains control of the system, including where stations are placed, its density, and the scope of the system. However, this model is dependent on agency interest and capacity to take on this role, as dedicated staff would be required to manage the program (see Project Manager Responsibilities section). As public entities, this model affords agencies access to federal funding in the form of grants (ex. CMAQ) for capital expenditures. In most cases, agency owned bike share systems employ a private contractor to operate the system.

Advantages:

- Maximizes agency control and transparency
- Offers access to federal funding
- Organizational mission aligns with many of the goals of bike share
- Profits can be reinvested into the system – potentially in lower demand areas
- Makes use of the established skills of a private operator

Disadvantages:

- Risk and ongoing financial responsibility are taken on by the agency
- Financial and operating performance is not the only priority

Recommended Model

Based on the County's current funding environment, local transportation needs, proximity to an existing regional bike share system, and internal conversations with staff from DPW&T and M-NCPPC, it is recommended that it pursue an agency owned and privately operated governance structure. In particular, it is recommended that DPW&T take on the management of the program.

Furthermore, it is recommended that the County join the Capital Bikeshare system and promote its expansion into the Study Areas. This decision will enable county residents to access a regional and integrated transportation system that is available throughout many parts of the region including Montgomery County, MD; Arlington County, VA; City of Alexandria, VA; Washington, DC; and most recently Fairfax County, VA. The proposed expansion of Capital Bikeshare into Prince George's County will make use of the existing economies of scale as well as existing contract agreements with vendors and regional partners.

This recommendation will require further discussions between DPW&T, M-NCPPC, local municipalities, and other local partnering agencies. However, as DPW&T is responsible for the maintenance of many of the County's roadways, and the implementation of many on-road bicycle facilities, and has a proven record of regional cooperation, the Department is a logical choice for further consideration. More specifically, DPW&T has:

- A proven history of cooperation with other city, regional and state agencies (such as the M-NCPPC department) that will play a major role in implementing the program. Good inter-governmental communication is necessary to ensure smooth station siting and permitting.
- A clear and sustained interest in overseeing a bike share program. Ownership of the program is a long-term commitment, and based on conversations between DPW&T, M-NCPPC and other local stakeholders, implementation of a bike share program fits within the vision and mission of the department.
- An active presence throughout the County. As DPW&T is responsible for much of the transportation infrastructure in the County including 2,000 miles of roadways, 900 bridges and the implementation of many on-road bicycle facilities, the department has a good understanding of local conditions. Furthermore, the department has great knowledge of successful public outreach efforts throughout Prince George's County which will be invaluable in helping promote the expansion of Capital Bikeshare throughout the County. This will also help the expansion of the program to the rest of the County over time.
- Staff capacity to administer the program. Most agency operated bike share programs have one dedicated staff member to manage day-to-day relations with the vendor and publically represent the agency with regards to bike share implementation. While this position is expected to be full time prior to launch (usually for the first six months of the program) this position may only require 40 to 70 percent of a full time position once the program is up and running.

- The typical duties fit well within the department and it may be possible to role bike share duties in with other responsibilities to create a new full time position.
- Direct access to funding for capital expenditures. As a public agency, DPW&T currently has access to regional, state, and federal funds which will be useful in covering the expected capital expenditures related to the procurement of bike share equipment.

Preliminary System Plan

The recommended phasing is based on the expected demand for bike share within the Study Areas, and was developed using industry best practices, and experience in nearby jurisdictions with similar contexts including Arlington County, VA; City of Alexandria, VA; and Montgomery County, MD. Statistics from these programs are described in **Table 3** below.

Table 3: Program Comparison

	Bicycles	Stations	Docks	Dock to Bike Ratio	Stations per square mile
Alexandria	160	16	250	1.6	7.2
Arlington	700	78	1,052	1.5	6.5
Montgomery County	500	51	818	1.6	4.9
Average	*453*	*48*	*707*	*1.6*	*6.2*
Study Area Proposed	**670**	**67**	**1,139**	**1.7**	**5.4**[49]

Density and Extent of Coverage

A key decision is to determine the balance between breadth of coverage and station density. Some jurisdictions have chosen to launch their initial system with a high density of stations in smaller and more densely populated areas (e.g., Arlington County, City of Alexandria, City of Chattanooga, Salt Lake City), whereas others have chosen to spread out the stations at lower densities and cover a larger service area (e.g., Minneapolis-St. Paul, Montgomery County, Washington, D.C.). There are a number of aspects to consider in making this decision:

- Providing bike share stations at high densities maximizes the visibility and convenience of the system by providing users with a reasonable expectation that there will be a station within walking distance from anywhere in the system area. This may also provide redundancy so that if a station is empty or full, a user can go to a nearby station and find an available bicycle or an empty dock.
- If stations are provided at high densities but the coverage area is too small, the system may not serve a sufficient range of destinations and may not be an effective alternative to walking. For stations at the edges of the system, it is important to make sure that there is additional capacity available (i.e., more docking points/racks) so that users are not faced with empty or full stations. In neighboring jurisdictions, station densities average approximately 6.2 stations per square mile. **Table 3** compares neighboring jurisdictions' station densities to the proposed system. In most bike share systems, station densities are higher in the core of the system and get progressively lower at the edges.

49 Includes four phases throughout ATHA and National Harbor study areas.

- A system that provides too few stations will be limited in the number of destinations it serves and therefore may be less attractive to potential users. However, cities generally must take a measured approach due to funding and other constraints and may not initially launch with the full system. Most systems are generally contiguous. Providing a contiguous system offers a larger number of connections between stations than if the same resources were split into several smaller (disconnected) systems. Notable regional exceptions to this are the Capital Bikeshare stations in Rockville, MD, and the proposed expansion of Capital Bikeshare to Reston in Fairfax County. The proposed installation of bike share at National Harbor is another example of this exception.

The goals established by the County for the proposed bike share system focus on reaching a larger portion of the local population, and providing additional transportation options for its residents. A system density of 5.4 stations per square mile is recommended for the proposed system. This density maximizes the number of destinations served while minimizing the distances between stations. Based on the proposed density, all recommended station sites are located within ¼ to ½ mile from each other. The service area and approximate locations have been identified following best practices in station siting which recommend that stations be placed no more than ½ mile from each other. This range is directly related to the distance a person would have to walk to a station.[50]

Dock-to-Bike Ratios

To properly meet demand, bike share systems must maintain enough bicycles for users to check out, and enough open docks for users to return bicycles. Operators employ a variety of methods to balance bicycle and dock availability at stations, including physically moving bicycles or offering incentives for users to move them from full stations to empty stations. Maintaining a specific ratio of bicycles to docks also helps minimize rebalancing efforts, and consequentially, operating costs. Jurisdictions with smart dock systems have adopted dock-to-bike ratios ranging from 1.5 to over 2.0 docks per bicycle. Based on the average dock-to-bike ratio from surrounding jurisdictions, a ratio of 1.7 docks-per-bike was assumed for the Study Area to balance these factors.

System Phasing Plan

A phasing plan was developed to show the potential build out of a bike share system in the Study Area. The phasing plan is shown on **Figure 26** and summarized in **Table 4** below. Generalized station locations are shown on **Figure 27** below. These locations are general locations only and further review is needed before the station locations can be finalized. The first two phases of the program are recommended to include the highest demand locations. The following is the proposed phasing:

- *Phase 1* will include 25 stations, 250 bicycles, and approximately 425 docks. This first phase of implementation includes Brentwood, Cottage City, Colmar Manor, Edmonston, Hyattsville, and Mount Rainer. Both the Baltimore Avenue corridor and the Anacostia Tributary Trail System are expected to serve as the connecting spines for this phase.

50 Bikesharing in the United States: State of the Practice and Guide to Implementation. US Department of Transportation. Federal Highway Administration. September 2012

- Phase 1A proposes a satellite system of four stations, 40 bicycles, and 68 docks at National Harbor. This system is expected to serve as a complementary connection between the National Harbor and the City of Alexandria.
- *Phase 2* would extend service up to the City of Greenbelt, providing service from the Washington DC line through University Park, Downtown College Park, and the University of Maryland campus. This second phase would include 21 stations, 210 bicycles, and around 357 docks. The expanded phasing would provide service to the College Park Metrorail Station, Greenbelt Metrorail Station, M-Square, the City of Greenbelt, as well as the Baltimore Avenue commercial corridor. This phase is expected to complement the mBike bike share system in the City of College Park. Additional coordination with the City of College Park will be required for the final siting of stations so as to not duplicate service.
- Phase 3A would expand service with an additional eight stations, 80 bicycles and 136 docks into Edmonston, Riverdale Park and parts of Bladensburg.
- Phase 3B would extend service into Langley Park with an additional nine stations, 90 bicycles and 153 docks. When implemented, this phase would allow users to take bike share from the City of Greenbelt in Prince George's County, to the City of Takoma Park in Montgomery County. However, to make this truly feasible, proposed station locations will need to be connected by a network of comfortable bicycle facilities. It is recommended that the County work with local and regional transportation partners (ex. Maryland State Highway Administration) to improve bicycle accommodations along the major corridors in this area.

Proposed stations in Phase 3A and 3B will help increase access to affordable transportation for minority and low-income residents in these areas – one of the proposed goals for the program.

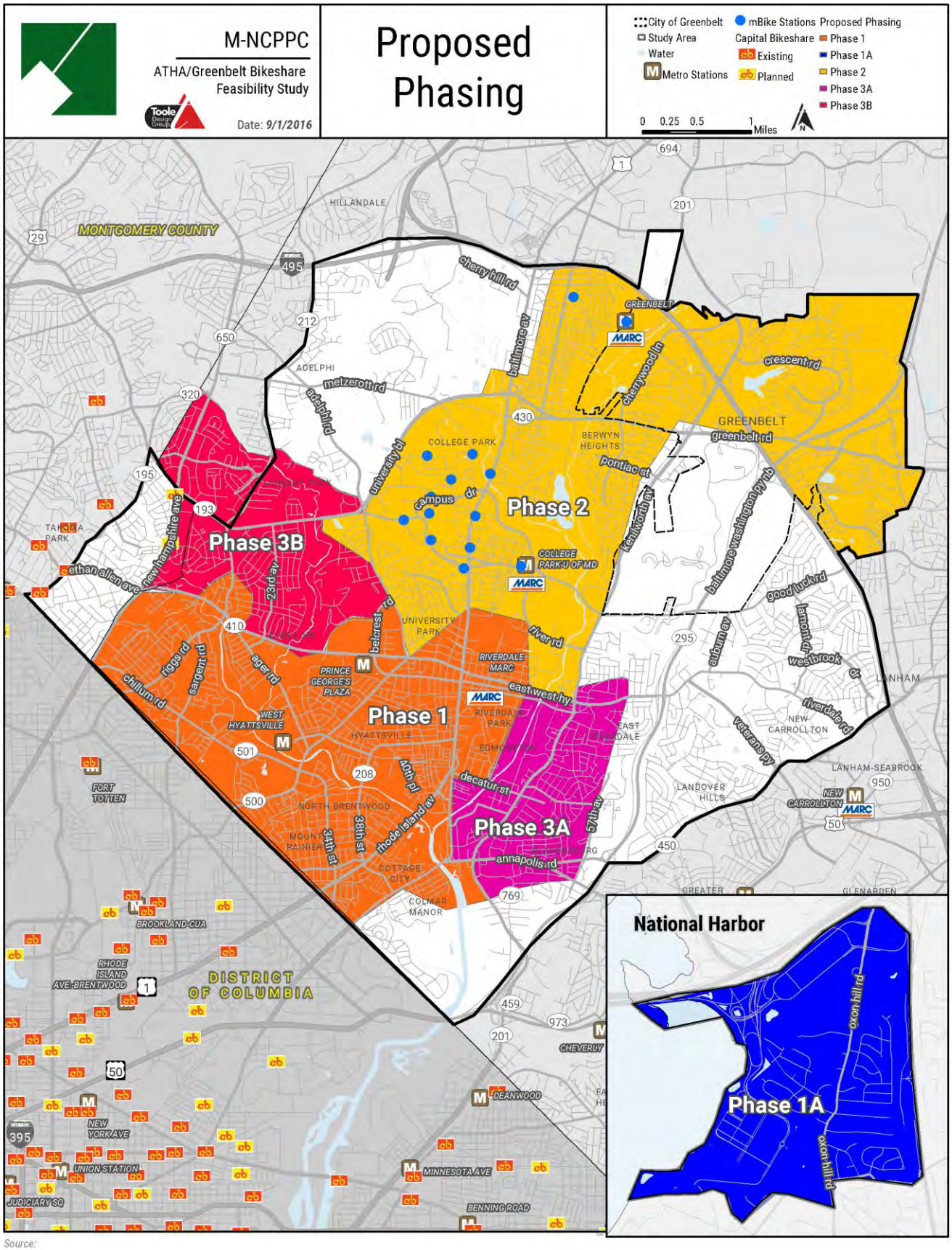
Table 4: Proposed Phasing[51]

Phase	Stations	Bicycles	Docks	Stations per sq. mi.[52]
1	25	250	425	5.4
1A	4	40	68	5.3
2	21	210	357	5.3
3A	8	80	136	5.7
3B	9	90	153	5.1
TOTAL	**67**	**670**	**1,139**	**5.4**[53]

51 For the purposes of this study all the average station size includes 17 docks/racks and 10 bicycles. All stations are assumed to also include an interactive kiosk, a double sided information panel, a solar panel to charge station/information panel, and expansion platforms.
52 To determine the number of stations per square mile per phase, a ¼ mile buffer around each station was constructed. This provided the effective service area for each station. Each service area was then combined into one aggregated shapefile from which the effective service area per phase was calculated.
53 Average station density.

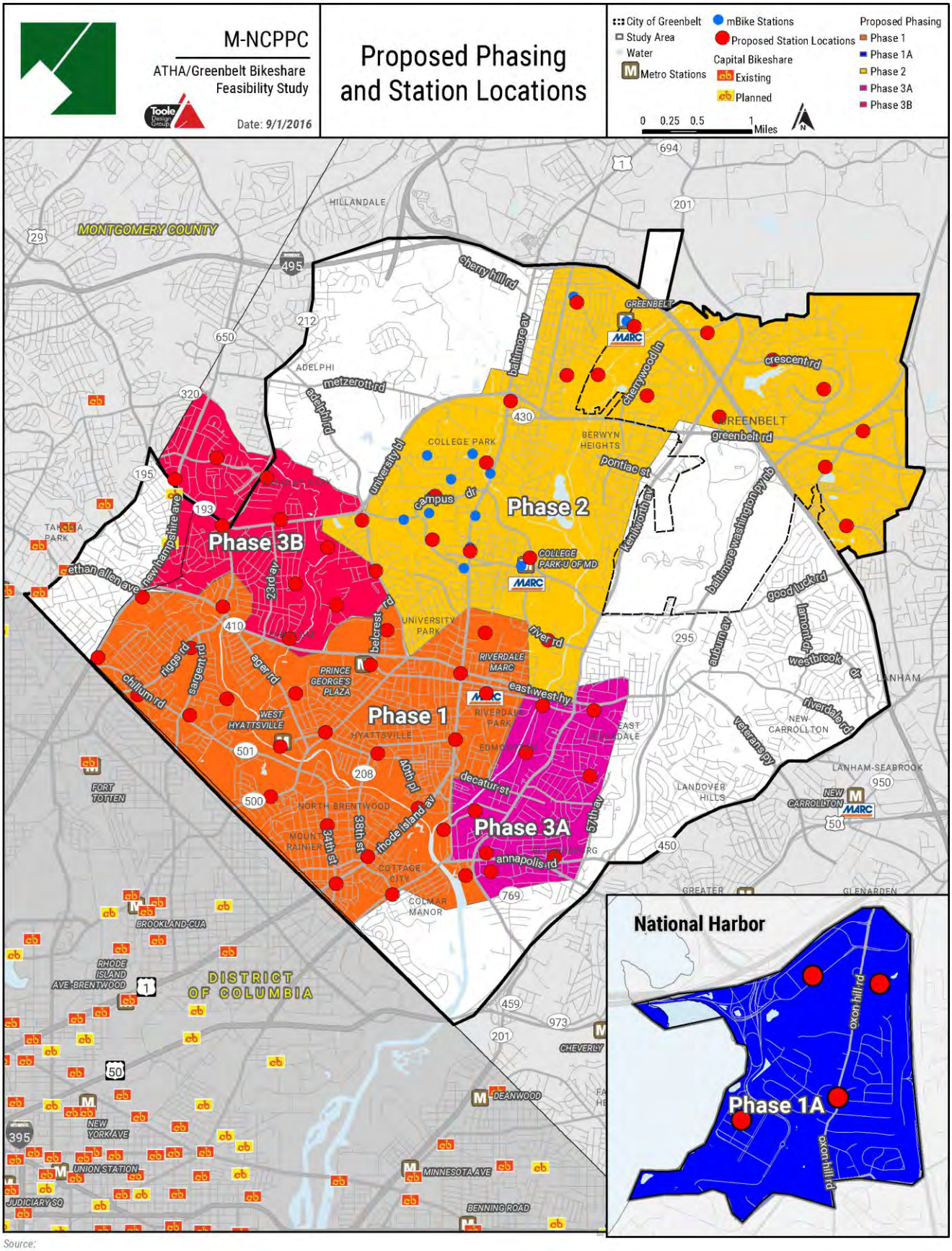
The proposed phasing plan does not preclude future expansion into other areas or accelerated expansion into areas identified in later phases. Expansion from one phase to another should be considered after an initial operating period of six to twelve months when operation of the system (i.e., ridership patterns) is better understood and funding commitments for expansion are in place. The recommended station locations are shown as generalized areas where bike share stations could be installed. Final station placements will require additional public outreach and fieldwork to confirm the availability of space, right of way, property ownership, and to meet the specific needs of the equipment vendor (such as solar exposure requirements). Furthermore, ridership information from the initial phases should be used to inform station location and adjustments to phase boundaries for later phases.

Figure 26: Proposed Phasing



Source:

Figure 27: Proposed Phasing and Generalized Station Locations



Source:

Costs

The costs related to bike share implementation are typically divided into 1) startup, 2) capital, and 3) operating costs. Startup costs include those expenditures directly related to the launch of the system including administrative salaries, purchasing and set up of administrative equipment and resources (e.g., IT, communications, website, call center, etc.), marketing, and insurance. Capital costs include any expenses for equipment (i.e., bicycles and stations), parts, site planning, and installation costs. Operating costs include all day-to-day expenses, including administration, marketing, and operating fees paid to the vendor or vendors.

Capital Costs

Capital costs are estimated to be approximately $4.0 M for the full implementation of the Capital Bikeshare expansion. Capital costs include new stations, bicycles, and installation costs. All costs are based on the proposed phasing of a total of 67 stations, 670 bicycles and 1,139 docks implemented in an area of approximately 12.6 square miles.

Equipment

Capital costs were developed based on average cost for equipment derived from an extensive review smart dock and smart bike vendors and other local sources. These costs were developed based on the assumption that the average bike share station includes 17 docks (or specialized racks for smart bicycles), 10 bicycles, expansion plates, one advertising/sponsorship panel, an interactive kiosk where users can sign up to use the program, and a solar panel to provide power to the station/advertising panel. The average capital cost for one typical smart bike station is $40,000 compared to $60,000 for a smart dock station.[54] These cost averages also assume that should the County select a smart dock technology, the equipment selected would be that of a Motivate system for compatibility with the Capital Bikeshare system (Motivate is the vendor responsible for Capital Bikeshare).

NOTE: During the course of this study, the Prince George's County Department of Public Works and Transportation obtained cost estimates from Zagster, the bike share vendor for the proposed College Park bike share program. The proposed costs for a system including 20 stations and 100 bicycles were: $1,560 per bicycle per year (lease); a set-up fee of $2,000 per station; and a $150 charge per additional docking point or rack. Consequentially, the total cost of capital and implementation for year one of this proposed system is estimated to be approximately $211,000. Each subsequent year would have a charge of $156,000 ($1,560 per bike). As this is a customized estimate for Prince George's County, and this is an annual lease-based quote rather than a purchase, these costs are not included as part of the smart dock/ smart bike averages derived from national averages provided by bike share equipment vendors above.

54 These costs are based on averages derived from information provided by B-cycle, NextBike, Social Bicycles, Motivate systems, and from costs presented in the DC Capital Bikeshare Development Plan and Arlington County Bikeshare Development plan.

FINAL DRAFT

Table 5: Projected Capital and Installation Costs[55]

Phase	Stations	Bicycles	Capital (Smart Bike)	Capital (Smart Dock)	Installation Costs
1	25	250	$ 1,000,000	$ 1,500,000	$ 87,000
1A	4	40	$ 160,000	$ 240,000	$ 14,000
2	21	210	$ 840,000	$ 1,260,000	$ 73,500
3A	8	80	$ 320,000	$ 480,000	$ 28,000
3B	9	90	$ 360,000	$ 540,000	$ 31,500
TOTALS	**67**	**670**	**$ 2,680,000**	**$ 4,020,000**	**$ 234,500**

Installation

This analysis assumes that every station will incur installation costs. This calculation also assumes that ten percent of stations may require the construction of a concrete pad and other improvements, making the average installation cost per station $3,500. **Table 5** summarizes the projected capital and installation costs for each proposed phase.

Startup Costs

Implementation of a bike share system includes start-up costs during the pre-launch period. Startup costs include:

- The hiring of a program administrator (see Project Manager Responsibilities for more details), and six month salary which is approximately the period between equipment procurement and launch of the system.
- Administrative costs such as insurance, legal, and accounting.
- Marketing costs which may include hiring an agency to establish the name and brand of the system, website development, marketing materials (brochures, collateral, etc.), and event staff.
- Direct operational costs such as leasing a warehouse/operations center, vehicle costs, purchase of uniforms, supplies and equipment, and employee training.

Note: Due to redevelopment in Washington, DC's Navy Yard/Waterfront area, Motivate may be forced to relocate Capital Bikeshare's operations center. Prince George's County has many locations that may be suitable this kind of operation and may wish to explore this with Motivate.

Table 6 provides a cost comparison between the startup costs for smart dock technology and a smart bike system. This calculation assumes that if the County selects smart dock technology for its bike share system, it would join the existing Capital Bikeshare system. This would likely result in savings on many of the administrative, marketing, and direct operational start-up costs that would be required for starting a new system. At this time, it is anticipated that start-up costs for joining the Capital Bikeshare system would be limited to elements where additional capacity needs to be added to existing services, e.g., additional number of vehicles

55 Figures presented do not include any variable inflationary numbers or state of good repair costs/pressures.

needed by Motivate to serve the areas in Prince Georges County, etc. For this reason, the startup costs for creating a new smart bike system are expected to be higher than joining an existing program in the region.

Table 6: Startup Costs (6-month pre-launch period)

Startup Expense Item	Smart Bike	Smart Dock
Total Personnel Costs	$178,500	$54,500
Agency Manager	$45,000	$45,000
Operations Personnel	$102,500	-
Taxes and Benefits	$31,000	$12,500
Total Facility Costs	$7,500	-
Total Vehicle Costs	$2,500	$2,500
Total Supplies & Spares	$50,000	$20,000
Total IT & Communications (excl. Call Center)	$1,500	$500
Total Call Center Operations	$15,000	$5,000
Total Office & Administrative costs	$5,000	-
Total Professional Fees	$11,000	$5,000
Total Marketing (non-Personnel)	$40,000	$10,000
Total Insurance	$15,000	$5,000
TOTAL STARTUP EXPENSES	**$326,000**	**$100,500**

Operating Costs

Operating costs are usually calculated on a per-dock-per-month basis. This approach is taken because docks are a relatively stable piece of infrastructure that don't vary on a daily basis due to repairs, rebalancing, and seasonality such as bicycles. Typically, this metric is used to calculate costs to the jurisdiction, and payments to the operator of the program. These costs are negotiated at the beginning of each contract period with the bike share vendor and remain constant for the duration of said contract, unless otherwise specified.

Table 7: Operating Cost (Capital Bikeshare jurisdictions)

Jurisdiction	System Size	Cost (per dock per month)
Alexandria, VA	250 docks, 16 stations; 180 bicycles	$ 124.59[56]
Arlington County, VA	1052 docks; 78 stations; 700 bicycles	$ 107.22[57]
Montgomery County, MD	818 docks, 51 stations; 500 bicycles	$ 117.43[58]
Washington DC	*3,674 docks; 200 stations: 2,000 bicycles*	*$ 145.00[59]*
STUDY AREA	**1,139 docks; 67 stations; 670 bicycles**	**$ 122.23[60]**

56 Capital Bikeshare Alexandria Dashboard and Hillary Orr. Complete Streets Program Manager.
57 Arlington County Capital Bikeshare Plan. Pg. 6-2.
58 Anne Root. Capital Bikeshare Manager. Montgomery County, MD.
59 Washington DC Capital Bikeshare Development Plan. Page 78. These costs are only noted for informational purposes and were not included in the final calculations.
60 The average operating costs for Washington DC were not included in this calculation as Washington DC exhibits different land use and ridership characteristics from the other three jurisdictions.

Table 7 provides a summary of per dock per month operating costs for jurisdictions participating in Capital Bikeshare. Under the current contract, operating costs include the following services: remote management of the station's electronic access system, station rebalancing, station cleaning and maintenance, and bicycle maintenance. The current price agreement also includes the costs for running the call center and has fixed annual rates for administration, marketing, and website hosting.

To provide a projected annual operating cost for the Study Area, an average cost per dock per month was calculated using the average per dock costs for the City of Alexandria, Arlington County, and Montgomery County, as they share similar land use patterns to the Study Area. An additional five percent was added to this average to build a price contingency to the final projected cost. The resulting operating cost per dock per month is $122.23.[61]

Because there is less information on smart bike operations costs, this analysis assumes the projected operating cost to be the same for both the smart bike and smart dock systems. However, these costs may vary based on the type of technology selected, and on contract negotiations with the potential operator of the system. The projected five year operating cost for all phases is expected to be approximately $6 million (see **Table 8**).

Table 8: Projected Operating Costs

Year	Operating Costs[62] (smart bike and smart dock systems)
1	$627,000
2	$698,000
3	$1,331,000
4	$1,535,000
5	$1,786,000
5 year TOTALS	**$ 5,977,000**

Projected Revenues

There are three basic drivers of system revenue: annual membership, casual membership, and usage fees. To forecast potential revenues, this analysis assumes the price structure to be the same as the existing Capital Bikeshare pricing structures and is noted in **Table 9**.

Table 9: Existing Membership and Usage fees for Capital Bikeshare

Membership Fee	
24-hour	$8
Annual	$85
Usage fees	$2.00 per 30 minutes after first 30 minutes

61 This average was calculated from the existing per dock cost for the City of Alexandria ($124.59); Arlington County ($107.22) and Montgomery County ($117.43). This number was rounded down to $122 per dock per month for consistency.
62 All numbers have been rounded up to the nearest $500 for ease in calculating the final numbers and readability.

Annual Membership Revenues

- **Annual membership fee:** the model assumes an $85 fee to become an annual member.
- **Annual members per bike per 100,000 residents:** the model assumes that the system will have 0.0021 persons/bicycle/100,000 residents purchasing annual memberships and that this will grow five percent annually. This number was derived from a comparative analysis of existing peer systems. The model does not include any special membership promotions or group sales to increase membership.

Casual Membership Revenues

- **Casual membership fee:** The model assumes an $8 daily fee to become a 24-hour user.
- **Casual users per station per year:** Casual users typically learn about a bike share system by seeing a station. Therefore, the pro forma uses the metric of casual users per station to estimate casual usage. The model assumes that on a yearly basis, the County will attract 800 casual users per station.

Usage Fees

Available data from other U.S. systems was used to estimate revenues for the proposed system including:

- **Rides per member:** Data shows an average of 75 rides per year per annual member and 2.1 rides per casual user. To provide the most accurate projection, the values used to forecast ridership (49 rides per annual member, and 1.1 rides per casual user) were derived from available Capital Bikeshare data.[63]
- **Percent of rides incurring usage fees**: Data show that approximately four percent of member trips and 30 percent of casual trips incur usage fees. These numbers are consistent across the systems for which data is public.
- **Average usage fee incurred:** The average usage fee incurred for annual members ranges from $4 to $6 for annual members and $6 to $10 for casual members. The pro forma assumes an average usage fee of $4 for annual members and $9 for casual members.

Forecast Results

Using the cost and revenue forecasts above, a pro forma was prepared to forecast membership and ridership, summarize system costs and revenues, calculate system performance metrics, and identify any potential funding shortfall. The pro-forma includes a five-year forecast, which represents the typical length of bike share contract. The pro-forma is included in **Table 10**.[64]

Membership and Ridership

- **Trips per bike per day:** Used globally to measure system usage. The pro forma predicts an average ridership of approximately 0.7 trips per bicycle per day over five years.
- **Percentage of casual and annual member rides:** The forecast output predicts a split of approximately 66 percent of rides made by annual members and 34 percent by casual users. This split is weighted more towards annual members because there are fewer tourists in the County in comparison to other peer

63 Capital Bikeshare trip history data. 2014 Quarter 3 through 2015 Quarter 2. Retrieved from http://www.capitalbikeshare.com/trip-history-data

64 The data presented on Table 10 are estimates based on existing Capital Bikeshare data. Final expenditures will vary.

cities like Washington DC or the City of Alexandria, and one of the system goals is to focus on providing transportation services to all residents.

Finances

- **Farebox recovery:** This factor is important in understanding the financial needs of the system. The pro forma shows that around 49 percent of operating expenses are expected to be recouped through membership and usage fees. Expected farebox recovery is within the range of other jurisdiction-owned and managed bike share systems of the same size.[65]
- **User revenue split**: User revenues are expected to be split approximately 15 percent from annual membership sales, 49 percent casual membership sales, and 37 percent from usage fees. Data for this metric is not released by all cities; however, in most cities this split is approximately equal with 33 percent of revenue from each type.

Table 10: Operating Cost and Ridership Projections

	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Equipment						
Stations	25	29	50	50	67	67
Bikes	250	290	500	500	670	670
Docks	425	493	850	850	1139	1139
Membership						
Annual members	567	634	1250	1,471	1,785	
Casual users	20,000	21,280	40,000	44,800	51,800	
Annual member rides	15,125	25,065	43,589	57,585	70,013	
Casual user rides	44,000	46,816	88,000	98,560	113,960	
Trips / Bike / Day	0.6	0.7	0.7	0.7	0.7	
Percent Rides Casual Users	74%	65%	67%	63%	62%	66%
Percent Rides Annual Members	26%	35%	33%	37%	38%	34%
Capital Purchase	$1,500,000	$240,000	$1,260,000	-	$1,020,000	$4,020,000
Installation	$87,000	$14,000	$73,500	-	$59,500	$234,000
System Startup	$100,500	-	-	-	-	$100,500
Total Capital and Startup Costs	$1,687,500	$254,000	$1,333,500	-	$1,079,500	$4,354,500
Total System Revenues	$329,000	$355,000	$671,000	$759,000	$885,000	$2,999,000
Total Bike Share Operating Costs	$627,000	$698,000	$1,331,000	$1,535,000	$1,829,000	$6,020,000
Total Operating Shortfall	($298,000)	($343,000)	($660,000)	($776,000)	($944,000)	($3,021,000)
Farebox Recovery	52%	51%	50%	49%	48%	50%

65 This is comparable to the farebox recovery for Montgomery County at around 50 percent; Alexandria at around 65 percent and Arlington County at around 65 percent.

Operator Responsibilities

One of the fundamental decisions regarding operations of a bike share program is determining who will operate the system. Depending on its existing staff and organizational capacity, an implementing agency may determine that it can both manage and operate the system. Generally however, private operators represent a more cost effective option based on their existing expertise and intricate knowledge of bike share operations.

As previously noted, under the current structure, Capital Bikeshare jurisdictions (i.e., City of Alexandria, Arlington County, Montgomery County, and Washington DC) have negotiated a contract and oversight mechanisms to ensure that the operator meets its obligations. Through this agreement, operator responsibilities including redistribution of bicycles, maintenance of equipment, customer service, and the provision of insurance, have been agreed upon. The following is a summary operator responsibilities generally found under operating contract agreements:

- **Redistribution** or the rebalancing of bicycles from stations that are near or at capacity to stations that are close to empty is critical to the viability of the system from the customer's perspective. However, redistribution is one of the greatest challenges of operating a bike share system. Through the use of IT systems redistribution of bicycles becomes predictive after the first few months of operations. Successful operators create the best redistribution plans using available data patterns and refine that plan once the system is implemented. Redistribution services make up one of the largest portions of the total operational costs and are determined by the level of service.
- **Maintenance** is another large line item under operational costs. Maintenance includes both preventive and repair activities for stations and bicycles. Maintenance can be as simple as cleaning the equipment or removing snow from stations. However, maintenance can require more complex procedures including fixing electrical equipment on the station, or readjusting small parts in each of the bicycles. Bicycle maintenance and repair are of course some of the most important items in ensuring the reliability of a bike-share system. As with redistribution, maintenance procedures are spelled under the service level portion of the operator agreement. This portion of the contract also includes penalties to the operator for noncompliance. These procedures ensures that users only access the best bicycles and equipment.
- **Customer Service** The costs related to customer service are derived from the goals of the system and the environment in which it operates. For example, some systems have limited hours of operations (ex. Denver B-Cycle operates from 5:00 a.m. to midnight), or operate on a seasonal basis (ex. Nice Ride MN operates from April through November – weather permitting). This tends to drive costs down. Other systems like Capital Bikeshare which operate year-round have a severe weather policies which effectively shut down the system due to severe weather warnings like snowstorms or hurricanes. Another consideration regarding customer service is related to the systems call center. Some systems have a fully staffed customer service center, like Capital Bikeshare, while others tend to have a fully automated system which helps drive costs down. The operating cost is completely dependent on the type of service the system desires to provide.

- **Insurance and Liability**. The cost of liability insurance is usually part the operating budget for the system, however coverage levels vary by jurisdiction. It is advisable that system planners seek advice from existing systems in addition to trusted legal counsel to decide what level of coverage is selected.
- **Marketing and Customer Information** Another important operational cost to consider is the production of marketing materials and any activities associated with promoting and running the system. These materials may include simple printed information to market the system during the months prior to launch, an interactive website, social media sites, blog posts and other elements to help engage the local public and provide information about the system.
  Historically, U.S. bike share systems have included marketing and information as part of the operator duties. However, this has changed in the past few years as these services have started being bundled as part 'premium services' and jurisdictions have opted to perform these marketing duties. Currently, most marketing and customer information responsibilities for Capital Bikeshare are not included in the contract with the operator. Instead, these duties fall to *GoDCGo* which is multimodal campaign to provide employees, residents, and visitors with the education and assistance about the different transportation choices around the DC Metro area.

Project Manager Responsibilities

To help manage the launch, day-to-day activities with the contractor, and evaluation of the program, the overseeing agency should consider adding a manager/coordinator position. Currently each jurisdiction subscribed to the Capital Bike share system has its own agency program manager/coordinator. For the first six months, prior to launch, this position is expected to be full time. Following launch, this position may only require 40 to 70 percent of a full time position.[66] Its duties, could therefore be folded into a position with other responsibilities. The expected duties for this position prior to the program launch include:

- Oversee and manage any grant funding and lead sponsorship acquisition (assuming that the County will allow sponsorship on its bicycles)
- Coordinate equipment and operator procurement
- Negotiate contract with vendor(s)
- Coordinate with local and regional agencies
- Oversee stakeholder outreach activities (i.e., city council members, community groups, etc.)
- Manage public outreach related to station siting (e.g., contacting residences and businesses near station locations)
- Serve as the point of contact for the general public and lead any outreach
- Provide oversight of any potential local marketing efforts (this duty may be coordinated by a third party – *GoDCGo* – as the County joins Capital Bikeshare)

66 This range was derived from conversations with existing bike share project managers in the City of Alexandria, VA: Arlington County, VA; Montgomery County, MD and Washington, DC.

FINAL DRAFT

Following launch, a bike share program manager would:

- Coordinate planning and implementation of new stations/expansion
- Provide oversight of the operations contractor. Ensure that the contractor is following rebalancing, maintenance requirements, etc. as established in the contract
- Coordinate with other regional partners and ensure quality service
- Provide oversight of any local marketing efforts (this duty may be coordinated by a third party)
- Serve as first point of contact for general public, stakeholders and the media. Act as public spokesperson for the program
- Research and coordinate efforts to increase revenue generating efforts (e.g., grant writing, advertising, sponsorship)
- Provide oversight of advertising/sponsorship contractor
- Report progress/updates to director of agency in charge
- Represent the County in the North American Bikeshare Association (NABSA) should the County choose to join this organization

FINAL DRAFT

Appendix

Station Siting Guidelines

When it comes to bike share station siting, every jurisdiction has its own set of political and siting constraints. Decisions about station placement must take into account the desires of a community or neighborhood and technical criteria including the widths of sidewalks, right of way ownership, and access to direct sunlight. Other technical considerations include pedestrian and bicycle volumes, location of utilities (ex. light posts), location of bus stops, and the location of safe crossings to access stations.

Figure 28: Protective buffer for Capital Bikeshare station in Arlington County, VA (Photo Credit: Euan Fisk Flickr)

General Guidelines

While the siting of bike share stations can be very specific, there are some general guidelines that can be applied throughout. As general rules, stations should be placed in safe, convenient and visible locations where potential users can easily access them. Stations may be placed in on-street, sidewalk, parks, and other public lands, or on private property through the use of a license agreements with the property owner. Stations sited on public right-of-way (ROW) may need to obtain a permit from the County, or State (depending on who owns and maintains the ROW). Bike share stations are modular, which means their capacity can be expanded or reduced over time in response to demand or availability of space. In all instances, stations should be available at all times to the public and to the operator for the purposes of maintenance and bicycle redistribution.

Bike share stations should be placed on a hard, level surface in a location where they meet the solar exposure and cellular signal needs specific to the type of equipment (smart bike or smart dock). Where possible, sites should make use of existing lighting to provide a secure environment for users. Additionally, stations should be placed in locations that enhance the quality of the surrounding pedestrian environment rather than compete with it.

Bike share stations should be placed to complement transit (i.e., bus or rail). Consequentially, it is recommended that bike share stations be located in close proximity to high traffic station entrances or bus stops. However, if adequate space is not available in these locations, the County should consider smaller stations in close proximity to transit so as to seamlessly integrate transit services.

The footprint of the station will depend on the type of equipment selected, and the proposed number of docks/racks. Many vendors offer different configurations for where space is constrained. These include angled dock (45 degrees) stations, back to back stations, curved or angled, and even right angled stations. The space considerations should include the length of the station, the width of the station and the bicycles, any clearances required for utilities or other street furniture, and space behind the back of the bicycle to allow users to comfortably pull a bicycle out of the dock. The latter distance may vary depending on the constraints behind the

bicycle, and for on-street stations the presence of a bike lane or buffer spaces and the speed and volume of traffic on the adjacent street. **Figure 29** below includes general dimensions of a 17 dock bike share station.

Approximate station sizes are shown in **Table 11,** however, actual station dimensions will need to be confirmed once an equipment vendor is selected. For example, a 17 dock/rack, single sided station is between 45 to 48 feet long and around 6 feet deep (the footprint is approximately the size of a single Prince George's THEBUS transit bus).

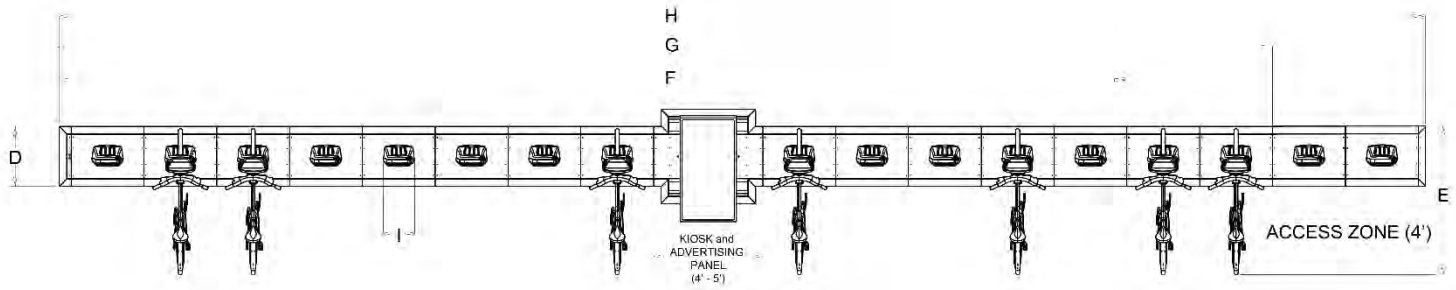
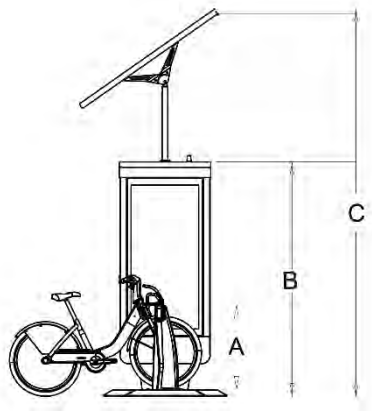


Figure 29: General dimensions of a 17 dock bike share station

While smart bike systems do not necessarily require large docking platforms to work, many communities have opted to install custom bike parking branded for the bike share system to help promote the program and provide a location for navigational kiosks and advertising panels.



Final bike share station locations will require additional public outreach and field work to confirm the availability of space, identify right-of-way and property ownership, meet the specific needs of the equipment vendor (such as solar exposure requirements), gauge reactions to potential sponsorship agreements, and identify the interests of the adjacent property and business owners.

Table 11: Approximate Station Dimensions[67]

Characteristic	Reference	Dimensions
Dock height	A	2'-6"
Kiosk/map panel height	B	6'-6" – 7'-0"
Height to top of solar panel	C	9'-0" – 11'-6"
Base plate with dock	D	<3'-0"
Station with bicycle	E	<6'-0"
13 docks + kiosk	F	35'-0"
15 docks + kiosk	G	40'-0"
17 docks + kiosk	H	45'-0"
Additional docks	I	2'-6"

Site Specific Guidelines

Below are some additional considerations for bike share stations on sidewalks, on-street, in parks and plazas and on private property.

Sidewalk

Sidewalks are a common location for bike share stations. Sidewalk sites are preferred where road space is unavailable or where high vehicular traffic volumes make on-street stations undesirable. Sidewalk sites should not interfere with existing pedestrian travel patterns and must maintain sufficient clearance to fixed objects and utilities. Sidewalk sites should not impede access to and from buildings especially with relation to emergency services. Sites should be placed in line with other street furniture wherever possible. Clearances to utilities and other street furniture and street uses will need to be developed with the relevant agency staff, but in other cities, clearance requirements prohibit stations:

- Within 5 feet of a crosswalk.
- Within 10 feet of driveways.
- Within 15 feet of fire hydrants.
- Within 5 feet of stand pipes.
- Within 2 feet of fixed objects such as lamp posts.
- Within 15 feet of a bus stop, plus sufficient distance from rear bus egress doors (if the station is placed on the curbside). Stations can be closer if placed away from the curb or along the building frontage.

67 Based on average station dimensions from B-cycle, PBSC, Social Bicycles and Next Bike equipment.

Stations should have a 2 foot setback from the curb when adjacent to on-street parking to allow for the opening of automobile doors; 12 to 18 inches may be acceptable where parking is not allowed. An example of a bike share station located on a sidewalk is shown on **Figure 30**.

Figure 30: Sidewalk station in Washington DC

On-street

The placement of stations in on-street locations is most frequently done where sidewalks are too narrow for both pedestrian traffic and the station itself. Bike share stations usually fit within a standard on-street parallel parking space (8 to 9 feet wide). On-street station placements should first consider low traffic volume streets. However, higher traffic volume streets can be considered where there is sufficient width for a user to pull a bicycle from the station without encroaching into the traffic lane, or where there is a buffer provided between the station and moving traffic, e.g., a bike lane or painted buffer. Examples of on-street stations are shown on **Figure 31** below.

FINAL DRAFT

Figure 31: On-street station location in Arlington, VA

On-street sites typically make use of converted parking spaces, though restricted parking areas may also be considered where these sites do not impact sight lines or emergency access. The local jurisdiction should be consulted to confirm where conversion of metered and non-metered parking would be acceptable.

To help protect bike share equipment and users from motor vehicles, adding flexible delineators, wheel stops, and thermoplastic street markings is a common practice for on-street stations. However, any safety treatments for stations throughout Prince George's County should be developed for on-street stations in consultation with DPW&T as well as representatives from the Maryland SHA.

FINAL DRAFT

Parks, Plazas and Open Spaces

Parks, plazas and open spaces provide great opportunities for bike share stations as they can complement existing spaces or make use of locations that are underutilized. Typically, stations placed in parks are at the discretion of the relevant agency. In general, the same guidelines used for sidewalk sites would apply. However it is important to consider the type of park, pedestrian volumes and potential attractions within the park. To increase user safety, it is recommended that bike share stations are placed along the periphery of parks where the highest pedestrian traffic is expected, and appropriate lighting should be provided. This will increase the users' sense of comfort and the use potential for bike share. An example of a bike share station in a park is shown on **Figure 32**.

Figure 32: Zyp BikeShare station in Birmingham's Railroad Park

Private Property

Stations may be placed on private property at the discretion of the property owner. In these cases, the operator usually secures a license agreement to establish the terms of use, transfer liability, and ensure the site is accessible to the public at all times. Generally, sidewalk siting guidelines apply to these sites. **Figure 33** provides an example of a bike share station on private property.

Figure 33: Boulder B-cycle station on private property

The following is a list of resources that were consulted to construct these general guidelines:

- Bike Sharing in the United States: State of the Practice and Guide to Implementation. U.S. Department of Transportation. Federal Highway Administration. September 2012. Accessed from: http://www.pedbikeinfo.org/pdf/Programs_Promote_bikeshareintheus.pdf.
- The Bike-Share Planning Guide. Institute for Transportation & Development Policy. Accessed from: https://www.itdp.org/wp-content/uploads/2014/07/ITDP_Bike_Share_Planning_Guide.pdf.
- NACTO Bike Share Station Siting Guide. Obtained from http://nacto.org/wp-content/uploads/2016/04/NACTO-Bike-Share-Siting-Guide_FINAL.pdf.

FINAL DRAFT

Stakeholder Meetings Summary:

Summary

The ATHA/Greenbelt Bike Share Feasibility Study team, on behalf of the Maryland-National Capital Park and Planning Commission and the City of Greenbelt, met with representatives from local jurisdictions and government agencies; large employers in the study area; nonprofit organizations, and bicycling advocacy groups. In three small group discussions on November 9, 2015, participants discussed bringing a bike share program to Prince George's County. Three themes common to each group discussion emerged: safety, funding options, and system.

Safety: The government discussion participants inquired about the process for handling a bike when it breaks down on a rider. What does the rider do? Is the rider required to walk the bike back to the station? What happens when a rider is too far from a station? And, does the provider work with area bike stores and co-ops to maintain and repair bikes? Large employer representatives were primarily concerned with liability insurance and the options users have to purchase additional coverage. Bicycling advocates stressed that there are too many high speed roads with facilities. There should be a bike path along all numbered highways.

Funding Options: Large employer representatives, especially from Beltway Plaza Mall and the National Harbor (Peterson Corporation), raised advertising as a viable funding source. National Harbor advertisements reach 10 million people. Retailers view advertising opportunities as positive. Employers asked who receives the income from ads and where are the bike share system locations to display ads? Government representatives also discussed sources for sponsorship and advertisements. Ads are not permitted on WMATA property, possible locations for bike share stations. The University of Maryland received a grant that will cover three years of funding for the Zagster bike share program. A nonprofit representative suggested that when researching funding options, do a comparison of the total transportation budget to the ride share percentage in terms of local costs.

Bike Share System: The system theme includes operation of the bike share program, its ownership structure, the jurisdictional cooperation, and sustainability of the system. In the government discussion, ATHA offered a nonprofit ownership model, in which multiple municipalities would form a collaborative. Municipalities could join in a phased approach. Nonprofits also stated the need for jurisdictional cooperation with each using the same system. The benefit would be to riders who would only have to join one system. Employer representatives asked about the timeline to begin the bike share system in Prince George's. Who makes the final decision on which bike share company to work with? Nonprofits shared that a sustainable system funds a low income program that provides education, helmets, and membership.

FINAL DRAFT

Small Group Discussion: Government

Safety/Maintenance

- What are the repair steps if a tire blows out?
- How do you handle helmets?
- Is there a log for each bike? Or, insurance for each bike?
- Do you operate with a release for each member?
- Concerning bike repairs. Is the rider required to walk the "broken down" bike back to the station? What happens when a person is too far from a station?
- Could systems talk to each other to assist with a break down?
- Does the provider work with an existing bike coop or store to maintain bikes?
- How do you handle someone who may not be healthy for bike riding?

Funding Options

- Fare box recovery? It varies between jurisdictions.
- Where would subsidies come from? Where would sponsorship and ads come from? Ads are not permissible on WMATA property.
- Are there any grant funding mechanisms? How about foundation funding? What is the University of Maryland's (UMD) system?
- Baltimore, College Park, and Rockville applied for foundation funding. The funding is for 3 years. UMD was ready to sign with Capital Bikeshare in 2013, but the supplier faced bankruptcy. The grant is specifically written for Capital Bikeshare. UMD did an RFP to attract a new system. Zagster and Social Bicycles replies to the RFP, however Capital Bikeshare did not. Zagster sells the turn keys for each bike, as well as provides maintenance and advertisements. While Zagster has a phone app for users, UMD will also provide computer located opportunities for those without a smart phone. UMD is in contract negotiations with Zagster.
- What are the projected startup costs?
- What are the costs for operating and the initial investment for Arlington for bikes and stations?

System

- Who would operate the system?
- Come up with a menu of options?
- Capital Bikeshare is a nonprofit. What is the ownership structure?
- ATHA—A model of nonprofit ownership is multiple municipalities form a collaborative. More join in on a phased approach. MOUs to work with ATHA. A separate MOU for different stations. The Baltimore Avenue Ride Project has agreements in place. The Hyattsville CDC has a model.
- Do you see a next generation or evolution of the bike share program? Some organizations may step up with an advanced system.

Jurisdictions

- ATHA—Shared roads and bike lanes are in discussion with jurisdictions. We are glad for the safety aspect of police participation in these discussions. ATHA is willing to be a holder for funding. Tourism is important to ATHA. So movement ease is important to historical destinations. Concerning sponsorship and ads—funders want branding. Maps and wayfinding signage are important for connectivity.
- Hyattsville looked 2 years ago, especially at College Park, and determined that individual efforts do not work. Bike share requires compatibility between jurisdictions.
- Any ideas of where to start and broaden out?
- Brentwood—Certain municipalities are grouped together. Those could be micro groups to initiating bike share locations.
- MNCPPC—Look at pilot program such as along the corridor with 5 to 6 stations. These could serve as the spine to expand.

Location of Program

- Does Alexandria have a bike share?
- What is the relationship of the community's size to the number of bikes?
- What is the distance between stations that is optimal for success?

Technology

- What is the cost of the College Park system? UMD and the City of College Park have split costs of each bike. (114 bikes, 8 stations, soft start on 1 March 2016, full launch in September when students return to campus.)

Marketing

- Branding and distinctive stations are important to public awareness. With smart bikes, a jurisdiction is able to move stations to primary locations.
- Looking into density for determining hubs. (White males, age 25-40, are the dominant users.)

Small Group Discussion: Employers

Safety

- National Harbor—We are always concerned about insurance. Are there any cases of lawsuits?
- UMD—Do users have options to purchase additional coverage? Looking into Zagster offering liability insurance. Social Bicycles offered helmet vending.
- National Harbor—What are the laws concerning drinking and driving in Prince George's County? Are bikes considered a vehicle? Accidents encourage lawsuits. Is the user responsible for an accident repair fee?
- Plaza—Safety on Greenbelt Road is an issue.

Funding Options

- National Harbor—Who sells ads? Who gets income from ads? What is the incentive to advertise at bike share stations? What are the system locations to advertise? Is that a startup cost? Is there a onetime fee? Are there seasonality impacts on costs?
- National Harbor—We can cover some of the costs but not $50,000 per station. Is there another source of funding?

- Plaza—Does Montgomery County fund the entire program?
- National Harbor—We have a ton of advertisers. We reach 10 million people. MGM adds another few million. We have 20 business associations and are now forming a convention and large business association focused on tourism. This association would not sponsor bike share. The tourism director markets within a 40-mile radius of National Harbor.
- Plaza—Any ad opportunity for retail is positive.
- UMD—We learned through the negotiation process that three years is more optimal than one year. Zagster normally rents everything. If bikes break down then Zagster will replace it free. The state said that we must purchase bikes. After three years we might want to replace bikes.

Zagster replaces bikes during the three year period of deal. If UMD wants to expand the system then UMD must finance it. Zagster does not have tracking of the full movement of bikes, allowing the campus to determine ideal destinations. UMD has seven station locations on campus but does not have residential stations, which would be popular.

We are willing to talk because it is such a learning curve. Ohio State has a scientific approach to bike share. Duke University, with four stations, did no real study before implementation. They have experienced problems with their bike share system.

System

- National Harbor—Is Capital Bikeshare at its maximum with older equipment? Wasn't there an earlier version? Are there bikes for a new system? Will new bikes be compatible?
- National Harbor—Is the timeline to begin operation in 2017? What is the process for developing recommendations? Who makes the ultimate decision?
- UMD—Not sure of bike costs for riders and still determining bike locations. We think three years is enough time to get people interested in using the system.

Location of Program

- UMD—Have to negotiate with state highway and businesses on bike rack locations.
- Plaza—In this area, transportation is a problem. It is very disconnected. The city of Greenbelt is so spread out. Connectivity is important and addressed mostly by the bus.
- National Harbor-- Most of our roads are county funded. DC said ridership is down due to bike share. Will Prince George's be impacted in the same way? In Virginia I could see riders using Metro to King Street and biking to the harbor.
- Plaza—Bike share could connect between Metro stations.
- UMD—As a Metro user and bicyclist, I noticed that Metro use is low on weekends due to the weekend maintenance schedule.
- National Harbor-- We would like to reduce the need for shuttle service from King Street Metro. There is a high ridership during rush hour. The headway is a half hour during rush hour.
- UMD—The Baltimore Washington International Airport has a system for travelers to use a bike loop between flights. Mostly used by military. BWI travelers may be a tourist option for National Harbor.

Technology

- UMD—First three hours are free because it's a school. We use smart bikes. GPS allows use of other bike racks that will register end of usage.

Potential Users

- National Harbor—Employees would use it.
- Plaza—50 percent of employees would use, if it is inexpensive. Employees mostly live within a three to four mile radius of the plaza.
- UMD—Expect both students and faculty. UMD will have Zagster and a bike rental system with a semester of maintenance. Expect that parents will appreciate the system for students.
- National Harbor—With bike share it would be more popular to cross to Virginia. Alexandria has options for bike share, as opposed to no options in Oxon Hill. More people are using water taxis from Virginia to the harbor.

Opportunities

- The Wilson Bridge path is an opportunity for bike share.
- The National Harbor has 1500 residents in condos and apartments and is expanding.

Small Group Discussion: Nonprofits and Bicycling Advocates

Safety

- The biggest challenge is connectivity. There are too many high speed roads without facilities. Wayfinding is a challenge, without a single map of trails.
- There should be a bike path along all the numbered highways.

Funding Options

- Compare total transportation budget and ride share percentage in terms of local costs.

System

- I would like to see everyone use the same systems. Otherwise riders have to join different systems.
- After three years, UMD might reevaluate Capital Bikeshare.
- Are UMD and College Park working together? Is Zagster's bidding process designed to get their foot in the door for College Park?
- Actually interested in seeing how smart bikes work through tracking.
- Balance a sustainable system with a desire for equity, a low income program.
- Promotion in low income areas through education, helmets, and membership. Would need funding for access.
- Start at National Harbor.
- Indian Head area is interested in bike share. There is an existing bike trail to Charles County.
- Place stations in downtown Oxon Hill, maybe Forest Heights.

Jurisdictions

- The more investment of bike share between jurisdictions the better. Connectivity is important.
- Rockville's bike share program has 20 stations, but it is not the best design. A regional system is good.

Location of Program

- Can it work? Absolutely, especially in denser and small areas. Look at existing main streets, Hyattsville, College Park, and metro stations.

FINAL DRAFT

Potential Users

- Do you have any numbers on current bike share riders in Prince George's?
- Study who rides in DC to help determine ridership in Prince George's.

Opportunity

- Trails next to College Park are an opportunity.
- A good message is economic development, number of bike share stations is a push.
- River programs provide an opportunity.
- Access the bike share membership list in Prince George's.
- MGM interested in trail access to National Harbor
- Montgomery County is a good comparison for bike share.
- Public transportation from the northern part of the county to National Harbor is low.

Potential Supporters

- National Harbor, M. Peterson
- Bike shop owners in local jurisdictions
- Healthcare systems
- Developers
- Corridor area businesses
- Hyattsville created an advocacy group
- Council member Obie Patterson
- Council member Mary Lehman

Bike Connectivity

- New York and Pennsylvania have state bike routes, which is needed in Prince George's County. A regional map paid with state funding, to include existing trails and desired trails. There are many venues to get the bike message out, including a bike summit.

Infrastructure

- Can bike share bring jurisdictions together to support bike infrastructure and better messaging?
- Street and utility maintenance could be an opportunity to build bike paving.
- What is the cost of running a concrete tunnel with utilities beneath a bike path?