HERNDON MICROMOBILITY FEASABILITY STUDY

Technical Memorandum #1

Document Control: Draft Version 1.0
Date: 1/22/2021

Produced by: Foursquare ITP
For: Town of Herndon & Metropolitan Washington Council of Governments

Contents

1. Introduction 1
2. Goals 1
3. Micromobility in the Region 1
3.1. Capital Bikeshare 1
3.2. Other Micromobility Operators: 6
3.3. COVID-19 Impact on Micromobility 8
4. Micromobility Industry 10
4.1. Brief History of the Industry 10
4.2. Technology 10
4.3. Safety 12
5. Local Context 13
5.1. Existing Plans Related to Bikeshare 13
5.2. WMATA Silver Line extension 15
6. Conclusion 16

Tables

Table 1: Trips by Jurisdiction, 2016-2020 4
Table 2: Trips per Bike by Jurisdiction, 2016-2020 6
Table 3: Pricing by Competitor Micromobility Providers 7
Table 4: Capital Bikeshare Trips by Select Jurisdiction by Month, 2019 versus 2020 8

Figures

Figure 1: Capital Bikeshare Service Area 2
Figure 2: Capital Bikeshare Service Area 3
Figure 3: Systemwide Monthly Trips, 2016-2020 5
Figure 7: Trips by Month, 2019 vs. 2020 (Full System) 9
Figure 8: Trips by Month, 2019 vs. 2020 (Suburban Jurisdictions) 9
Figure 4: Example of Docked Bikeshare System (Capital Bikeshare, 2020) 11
Figure 5: Dockless Scooters (Lime, 2020) 11
Figure 6 Growth of Bicycle and Scooter Share - NACTO 2019 State of Micromobility Report (NACTO, 2020) 12
Figure 9: Recommended bicycle network 13
Figure 10: Active bicycle network improvement projects as of June 2019 14

1. Introduction

This technical memorandum is the first work product of the Herndon Micromobility Feasibility Study. The study seeks to evaluate the feasibility and implementation of micromobility services in the Town of Herndon and is funded by the Metropolitan Washington Council of Government's (MWCOG) Transportation Land-Use Connections (TLC) program. Technical Memorandum #1 summarizes the state of micromobility today in the Washington region and nationwide. It provides key background information that will lays the groundwork for subsequent analysis.

This memorandum is divided into the following sections:

- Project Goals
- Micromobility in the Region
- Micromobility Nationwide
- Regional Context

What is Micromobility?
Shared-use personal transportation using small, lightweight vehicles that are either self-powered or rely on a small electric motor. Micromobility services are typically available on-demand and serve point-to-point trips. The most common form of micromobility is bikeshare and scooter share.

2. Goals

As a starting point for the project, the study team drafted a set of goals intended to guide the planning, evaluation, and implementation of micromobility in Herndon. The goals capture the key motivations and desired outcomes for pursuing a micromobility system in the Town. They are especially important for guiding the determination of feasibility as goals help shape how one evaluates a potential micromobility system. Based on feedback from the project's steering committee, the project team drafted the five following goals:

1. Micromobility **makes it easier to travel around Herndon without a car**, improving access to transit, reducing congestion, and alleviating parking constraints.
2. Micromobility services are **affordable, accessible, and equitable**, with programs designed to accommodate the needs of residents and visitors regardless of age, race, income, or ability.
3. Micromobility in Herndon functions as **part of the larger regional micromobility network**.
4. Micromobility is implemented in a **transparent and financially self-sustainable** manner.
5. Micromobility **encourages physical activity and supports the Town's public health objectives**.

3. Micromobility in the Region

The Washington, DC Metropolitan region is served by several micromobility systems, including Capital Bikeshare and numerous private operators dockless operators.

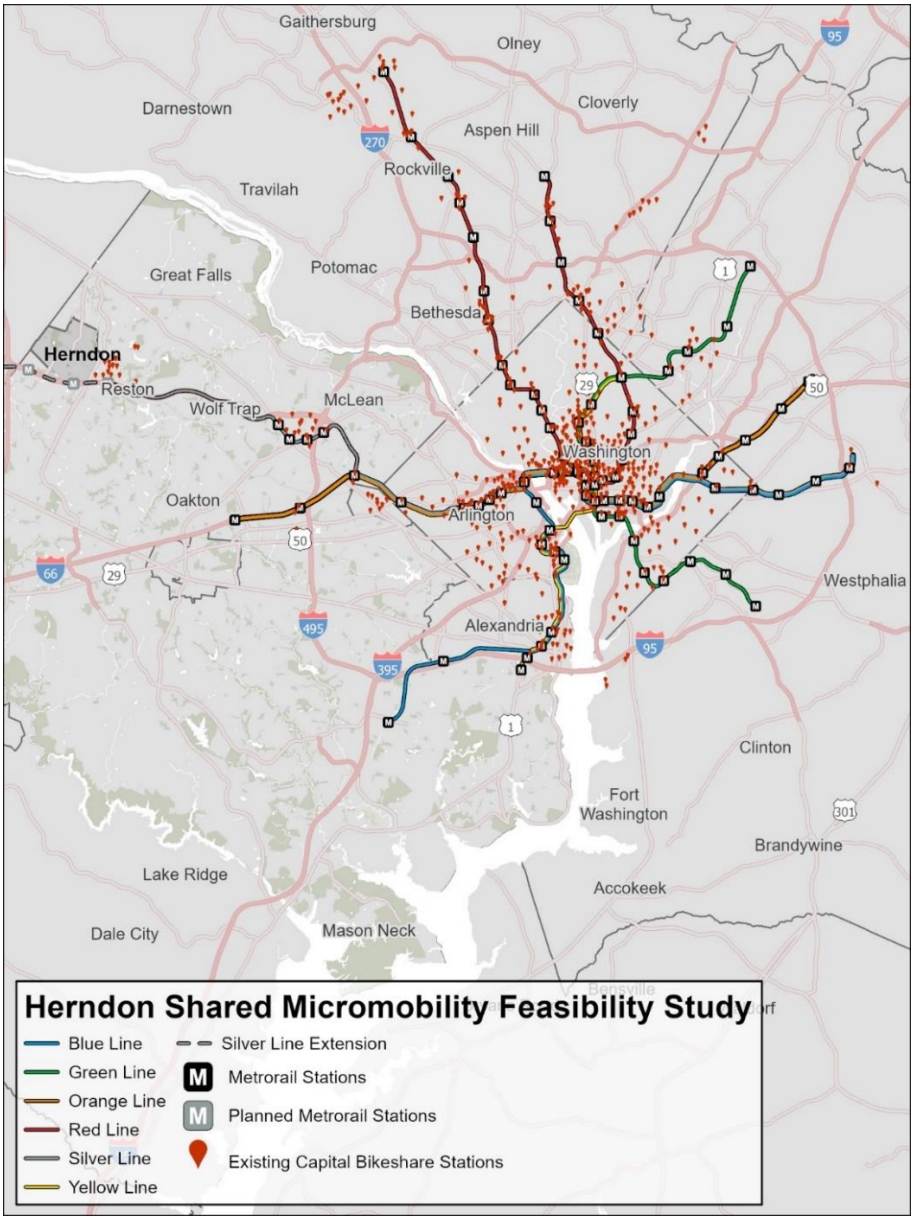
3.1. Capital Bikeshare

Launched in September 2010 in the District of Columbia and Arlington County, Capital Bikeshare was one of the nation's first large-scale bikeshare programs. Today the Capital Bikeshare system operates more than 4,500 bikes (including 1,500 electric bikes) at over 500 stations in six jurisdictions: Washington, DC; Arlington, VA; Alexandria, VA; Montgomery County, MD; Prince George's County, MD; Fairfax County, VA, and the City of

Falls Church, VA.[1][2] Within these jurisdictions, the system operates in several suburban markets with similarities to Herndon, such as Reston, Falls Church, Rockville, Bethesda, Silver Spring, and Alexandria, as shown in **Figure 1**.

Unlike its dockless competitors, Capital Bikeshare is publicly owned. Each jurisdiction in the system owns its stations and a proportional share of the bicycle fleet. The system operations are contracted to a private vendor (Motivate, a subsidiary of Lyft), and the system is funded using a mix of user fees, advertising, and public sources.

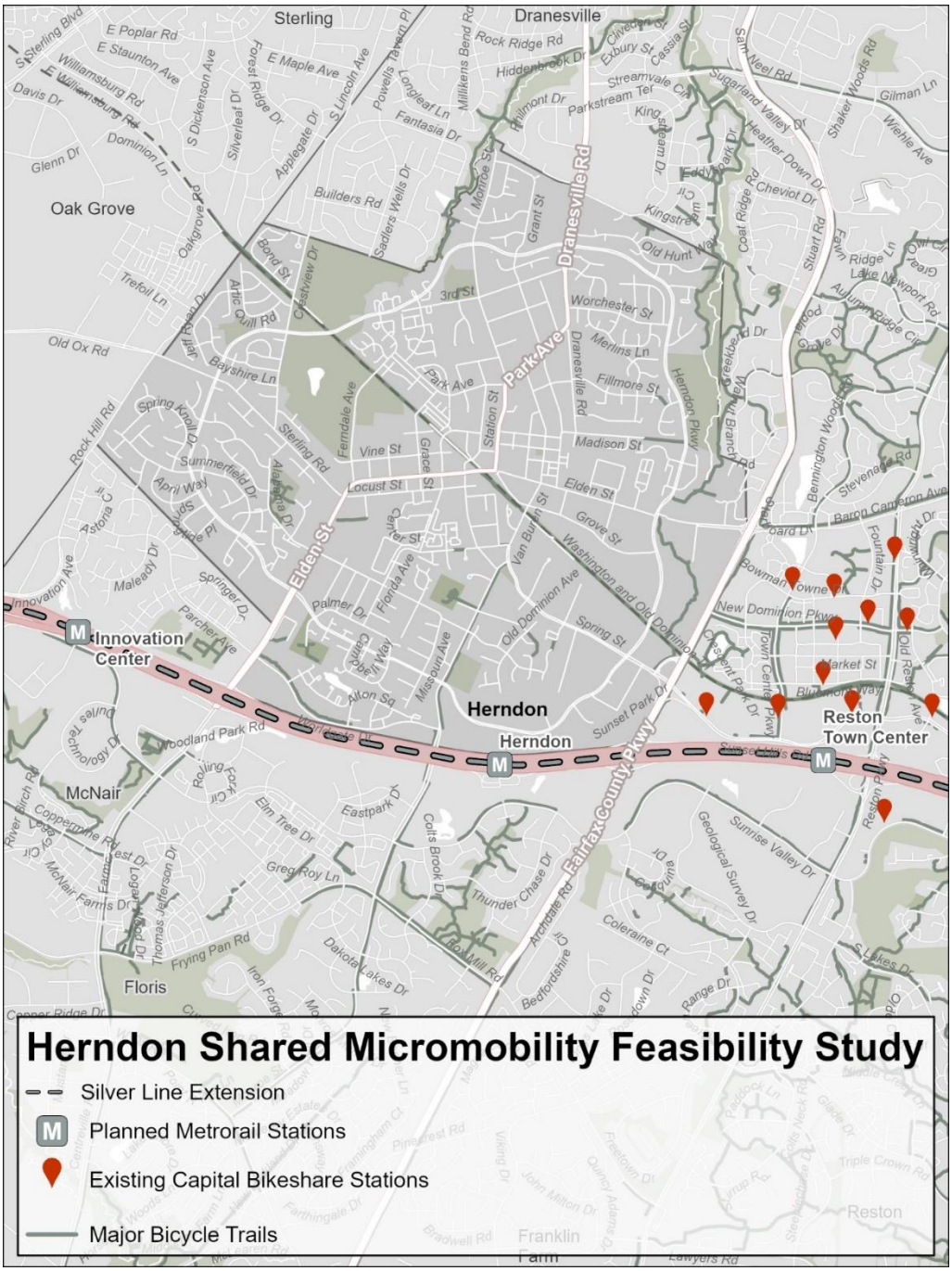
Figure 1: Capital Bikeshare Service Area



[1] "About Capital Bikeshare," *Capital Bikeshare*, https://www.capitalbikeshare.com/about.
[2] Capital Bikeshare began offering electric bikes in the spring of 2020. Unlike the system's conventional bikes, electric bikes are equipped with a lock that allows them to be locked to a public bike rack or a docking station. As such, trips on electric bikes can start and end at a Capital Bikeshare station but are not required to do so.

Fairfax County owns 35 Capital Bikeshare stations, clustered in Reston, Tysons, and Merrifield. Several of Reston's 17 stations are within close proximity to the Town of Herndon; however, over five miles separate Reston's stations from the next closest cluster of stations in Tysons.

Figure 2: Capital Bikeshare Service Area



In the spring of 2020, Capital Bikeshare re-introduced electric assist bicycles (e-bikes). These bicycles include a small electric motor that provides the rider a boost while pedaling. Unlike conventional bicycles, e-bikes do not have to be locked at a bikeshare station. The e-bikes are owned by Lyft, not the member jurisdictions. Capital Bikeshare riders pay a $1 surcharge to unlock e-bikes and an additional $1 lock fee if the trip ends outside a station.

In 2020, 239,058 trips (11 percent) were by e-bike (includes all jurisdictions in the system). Even though users have the option to start or end a trip outside a station, the majority of e-bike trips utilize existing bikeshare stations. For example, only 35 percent of trips did not start at a station and 37 percent of trips did not end at a station.

Table 1 shows Capital Bikeshare ridership by jurisdiction between 2016 and 2020. The vast majority of trips occur in Washington, DC and Arlington. Of the trips in Fairfax County, about half of the trips started at one of the 17 stations in Reston. In Reston, nearly 40 percent of all trips in between 2016 and 2020 began at Reston Town Center Transit Station or Sunset Hills Road & Isaac Newton Square.

Table 1: Trips by Jurisdiction, 2016-2020[3]

	Alexandria	Arlington	Fairfax	Falls Church	Montgomery County (North)	Montgomery County (South)	Prince George's County	Washington, DC	Systemwide
2016	61,234	256,453	833*	-	6,630	47,247	-	2,956,236	3,328,633
2017	84,956	285,946	11,120	-	8,617	56,646	-	3,302,519	3,749,804
2018	76,081	257,178	11,600	-	14,630	44,884	1,226***	3,130,376	3,535,975
2019	65,683	258,681	15,778	3,924**	13,728	46,024	6,488	2,986,884	3,379,190
2020	45,514	181,924	9,904	4,094	9,208	37,015	16,003	1,798,964	2,187,259
Total	**333,468**	**1,240,182**	**49,235**	**8,018**	**52,813**	**231,816**	**23,717**	**14,174,979**	**16,198,861**

*Capital Bikeshare service began in November 2016.
**Capital Bikeshare service began in May 2019.
***Capital Bikeshare service began in June 2018.

Figure 3 shows monthly trips for the Capital Bikeshare system between 2016 and 2020. Ridership has largely stagnated during this period until March 2020, when the pandemic resulted in a severe decline in year-over-year ridership. Note that bikeshare ridership is highly seasonal; ridership is highest during the peak season (April to October), with winter ridership typically half that of the average peak month.

[3] Capital Bikeshare users took 239,058 electric bike trips in 2020. Of these trips approximately 84,633 trips did not start at a station. This accounts for 3.8 percent of all trips in 2020. These trips are included in the systemwide trip total for 2020, but they are not tied to any jurisdiction in the table.

Figure 3: Systemwide Monthly Trips, 2016-2020

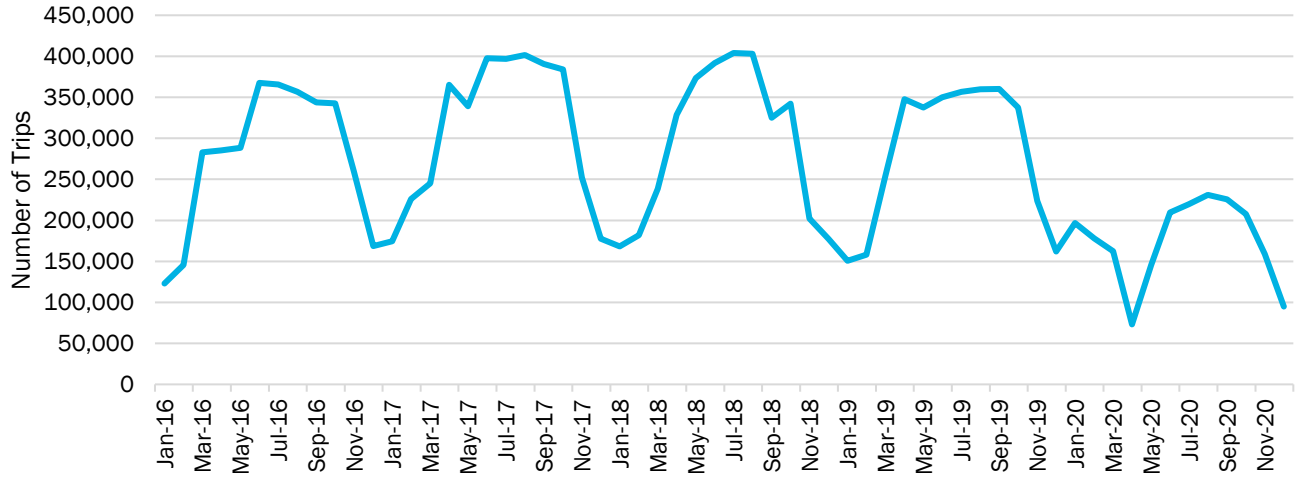


Table 2 shows the average trips per bike per day (TpB) from 2016 to 2020 for the Capital Bikeshare system. Trips per bike per day is a common measurement of bikeshare productivity that controls for ridership growth due to system expansion. As the table shows, the TpB in Capital Bikeshare's urban markets is considerably higher than the TpB in the more suburban markets. At 0.17, the average TpB in Fairfax County is slightly lower than that of some of the other suburban jurisdictions in the Capital Bikeshare system.

The 17 stations located in Reston, which are closest to the Town of Herndon, have an average TpB of 0.15, slightly lower than the county average. While overall, the TpB at Reston's stations is lower than the TpB for all of Fairfax County, at the station level, the Reston Town Center Transit Station has an average TpB of 0.39 and the station located at Sunset Hills Rd & Isaac Newton Square has an average TpB of 0.53. These are the highest ridership stations in Reston and provide an example of where stations in the Town of Herndon could be most successful.

There are several reasons contributing to low ridership in suburban jurisdictions and Fairfax County in particular. The suburban land-uses and comparably lower development densities suppress bicycle usage. Bikeshare systems enjoy a network effect where a higher density of stations and bicycles in turn contributes to greater ridership. Fairfax County's system today is split into several nodes, with the distances between nodes ensuring each part of the system functions largely independently of one another. Many other suburban bikeshare programs are impacted by the same factors, including other parts of the Capital Bikeshare system. E-bikes show some promise in helping to attract new suburban users as they enable riders to travel longer distances. The expansion of the Silver Line may also help increase bikeshare ridership as many of the busiest bikeshare stations in the region are located at Metrorail stations.

Key Definitions:

Member: *Rider with a monthly or annual membership. Members tend to ride frequently and utilize bikeshare as daily transportation.*

Casual User: *A non-member. More likely to use bikeshare infrequently or for leisure purposes.*

Peak Season: *April to October, when bikeshare ridership is at its highest.*

Off-Peak Season: *November to March, when bikeshare ridership is lowest.*

TpB: *Trip per bike per day. The standard measurement of bikeshare productivity.*

Table 2: Trips per Bike by Jurisdiction, 2016-2020[4]

	Alexandria	Arlington	Fairfax County	Falls Church	Montgomery County (North)	Montgomery County (South)	Prince George's County	Washington, DC	Systemwide
TpB	0.65	0.92	**0.17**	0.22	0.14	0.28	0.22	2.53	1.57
TpB Member	0.46	0.69	**0.10**	0.15	0.10	0.20	0.07	1.97	1.20
TpB Casual	0.19	0.23	**0.07**	0.08	0.04	0.09	0.14	0.57	0.37
TpB Peak	0.79	1.11	**0.21**	0.27	0.18	0.34	0.29	3.00	1.87
TpB Off-Peak	0.43	0.61	**0.10**	0.14	0.09	0.19	0.10	1.84	1.12
TpB Member Peak	0.53	0.80	**0.12**	0.17	0.12	0.23	0.08	2.23	1.37
TpB Member Off-Peak	0.35	0.52	**0.07**	0.11	0.08	0.16	0.06	1.58	0.96
TpB Casual Peak	0.25	031	**0.09**	0.10	0.06	0.12	0.21	0.77	0.50
TpB Casual Off-Peak	0.08	0.09	**0.03**	0.04	0.01	0.03	0.04	0.27	0.17

3.2. Other Micromobility Operators:

In addition to Capital Bikeshare, the region is served by more than a half-dozen private micromobility services (**Table 3**). All of these services are dockless, meaning vehicles do not have to be picked up or returned to a station. With the exception of JUMP and HelBiz, which operates a fleet of e-bikes, all the region's micromobility operators focus on electric scooters. Micromobility operations are subject to different permitting requirements in each jurisdiction they operate in. For example, the District of Columbia places requirements on operators that dictate the number and location of vehicles in operation at any one time.

Private operators do not publicly report ridership and accurate information on fleet size is unavailable. Within DC alone, the District's micromobility operators were permitted to operate up to 12,450 vehicles in 2021. The District Department of Transportation reports that in 2019, over 5 million trips occurred by dockless scooter and e-bikes, compared to 3 million trips by Capital Bikeshare.

The price of dockless micromobility services differs substantially from Capital Bikeshare. While Capital Bikeshare does offer a pay-per-trip option, most users buy memberships of varying lengths that allows for unlimited trips of 30-minutes or less. Dockless micromobility operators charge per minute and generally do not offer subscriptions or passes for frequent users. The pricing model of dockless services means that short trips (<10 minutes) may be cheaper than Capital Bikeshare but become substantially more expensive for longer trips.

[4] The TpB analysis is conducted at the station level. The 84,633 electric bike trips in 2020 that did not start at a station were excluded from the TpB analysis.

Today only a handful of micromobility services operate outside the District, with none currently in operation in Fairfax County.

Table 3: Pricing by Competitor Micromobility Providers[5]

Company	Mode	Unlock Fee	Cost per Minute	Cost of 20-Minute Ride	Prescence in Region
Bird	Scooter	$1	$0.39	$8.80	DC, Alexandria, Arlington, City of Fairfax, Montgomery County
Bolt	Scooter	None	$0.30	$6.00	Washington, DC
JUMP (acquired by Lime)	E-bike	None	$0.25	$5.00	DC
Lime	Scooter	$1	$0.24	$5.80	DC
Lyft	Scooters; E-bikes integrated into Capital Bikeshare	$1	$0.24	$5.80	DC, Montgomery County, Arlington, Alexandria
Razor	Scooters	$1	$0.24	$5.80	DC
Skip/Helbiz (recent acquisition)	Scooters & E-Bikes	$1	$0.25	$6.00	DC, Arlington, Alexandria
Spin	Scooters	$1	$0.25	$6.00	Alexandria, Arlington, Montgomery County
Capital Bikeshare	Bikes and E-Bikes	N/A; $1 fee for E-bikes.	N/A	$.064-$2.30[6]	DC, Arlington, Alexandria, Falls Church, Fairfax County, Montgomery County

[5] Source: DDOT Capital Bikeshare Development Plan Update (Table 19)
[6] Based on average utilization by pass type. Cost varies by pass type.

3.3. COVID-19 Impact on Micromobility

Micromobility services were, like most other modes, impacted by COVID-19, with a significant decline in year-over-year ridership starting in March 2020.

Table 4, **Figure 4**, and **Figure 5** compare Capital Bikeshare ridership by month in 2019 and 2020, illustrating the impact that the pandemic has had on ridership by jurisdiction. Despite ridership increases compared to the previous year in January and February 2020, Capital Bikeshare ridership declined 36 percent between 2019 and 2020. Capital Bikeshare usage has bounced back more than other modes, such as transit. As is highlighted in **Figure 5**, the ridership trends in the suburban jurisdictions match those of the full system. In Fairfax County, ridership declined 37 percent year-over-year, with trips declining sharply in April 2020 before rebounding somewhat the following month.

Several possible reasons account for the resiliency of Capital Bikeshare during the COVID-19 pandemic. Chief among these reasons is that it is relatively easy to socially distance on a bicycle. This combined with the fact that bikeshare is an outdoor mode of transit likely meant travelers felt safer riding a bicycle than using other shared modes like transit or TNCs. In addition, Capital Bikeshare provided essential workers with a free 30-day membership through July 31, 2020. This free membership could have encouraged essential workers to use Capital Bikeshare instead of an alternative mode.[7]

Table 4: Capital Bikeshare Trips by Select Jurisdiction by Month, 2019 versus 2020[8]

	Fairfax County		Falls Church		Montgomery County North / Rockville		Washington, DC		Systemwide	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Jan.	508	674	-	198	592	748	134,267	174,633	150,683	196,654
Feb.	534	584	-	228	557	537	141,339	158,481	158,051	177,869
March	823	740	-	312	993	595	225,556	139,468	253,705	162488
April	1,303	757	-	233	1,377	533	307,849	57,227	347,873	73,129
May	1,677	1,322	458	340	1,501	1,097	294,604	114,215	337,557	145,493
June	1,940	1,325	672	472	1,489	1,237	304,002	173,315	350,014	209,549
July	1,968	1,077	546	449	1,417	1,035	311,837	185,118	356,515	223,755
Aug.	2,049	1,079	593	487	1,484	1,113	314,534	196,594	359,938	247,022
Sept.	1,826	930	601	492	1,506	956	314,119	194,469	360,103	245,627
Oct.	1,695	708	496	377	1,398	701	295,951	181,357	337,439	226,021
Nov.	853	468	340	297	799	402	198,478	139,871	223,464	173,805
Dec.	602	240	218	209	615	254	144,348	84,216	161,848	105,827
Total	**15,778**	**9,904**	**3,924**	**4,094**	**13,728**	**9,208**	**2,986,884**	**1,798,964**	**3,397,190**	**2,187,289**

*Capital Bikeshare service began in May 2019.

[7] Capital Bikeshare "Caring for the Capital Bikeshare Community," https://www.capitalbikeshare.com/blog/covid19.

[8] The 2020 systemwide total for June through December includes trips made on electric bikes that did not start at a station. These trips are not included in the monthly trip totals by jurisdiction.

Figure 4: Trips by Month, 2019 vs. 2020 (Full System)

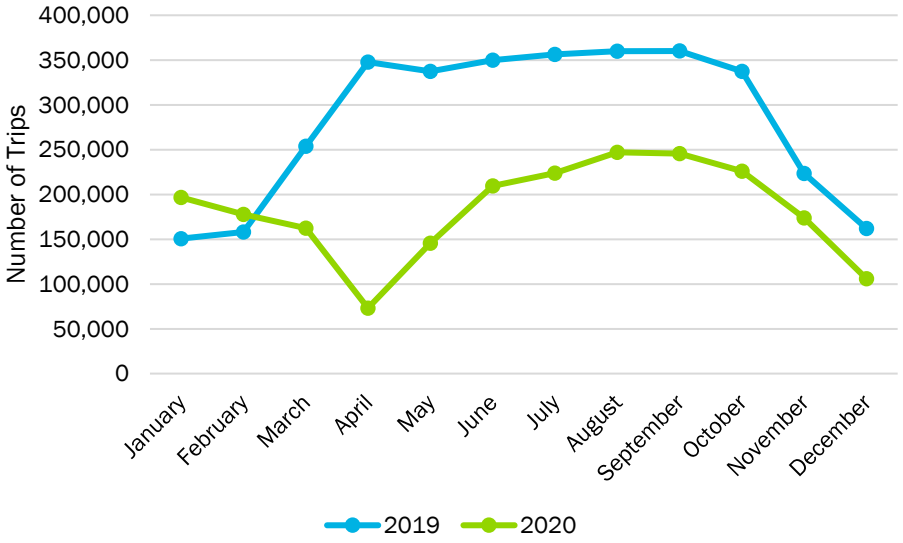
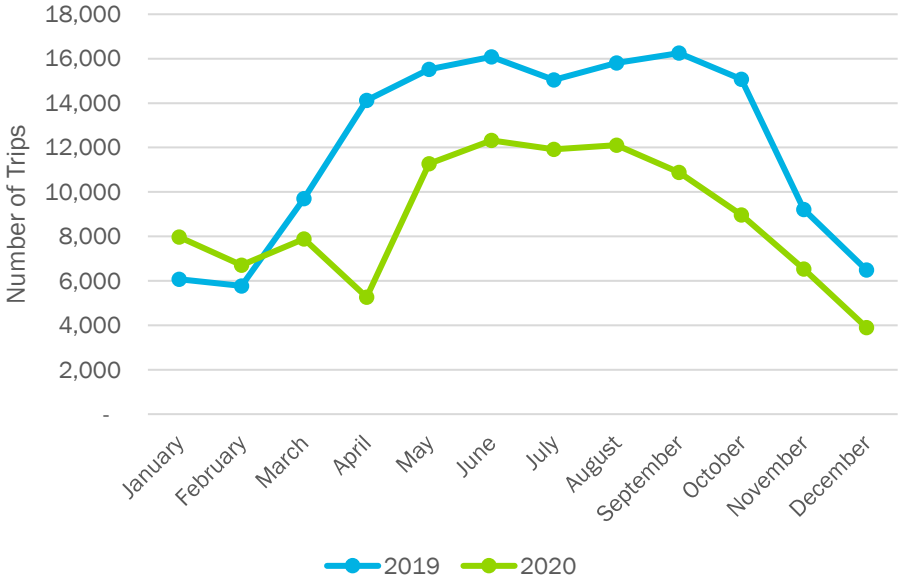


Figure 5: Trips by Month, 2019 vs. 2020 (Suburban Jurisdictions)[9]



[9] Chart excludes e-bike trips as they are not tied to a specific jurisdiction.

4. Micromobility Industry

4.1. Brief History of the Industry

Micromobility is a relatively new mode of travel. Montreal's BIXI was North America's first large-scale bikeshare program when it launched in 2008. Capital Bikeshare followed closely behind, launching in 2010 with the same equipment as BIXI. In its early years, bikeshare programs did not attract large-scale private sector investment. These early programs were typically owned by non-profits and local governments. Private firms focused on selling bikeshare equipment and operating service contracts, and only handful of programs were operated on a for-profit basis.

By the late 2010s, the industry began to see a fundamental shift in its business model. Over $2 billion in venture-capital backed funding flooded into the bikeshare space. Several start-ups launched dockless free-floating bikeshare programs. Unlike earlier systems, cities with dockless operators often had multiple services competing against one another. These firms began experimenting with alternative technologies such as dockless e-bikes and scooters. As bikeshare no longer described the range of modes operated by this budding industry, the term micromobility was coined.

Since 2017, the industry has been characterized by fierce competition, with start-ups focused on gaining market share. TNCs Uber and Lyft made major micromobility acquisitions, with an interest in cementing their respective apps as all-inclusive mobility as a service (MaaS) platforms. The shift in the industry has had pros and cons for jurisdictions. Communities have struggled to update their regulations and oversight procedures at the same pace as new technologies and companies emerged. Jurisdictions that lacked funding to start or expand their own micromobility program could benefit from the new competition by partnering with private firms looking to expand market share.

Today, the industry is at a major inflection point. After years of rapid growth, firms are now feeling greater pressures to become profitable and are less willing to enter risky markets, including suburban communities and smaller cities that have lower demand. The COVID-19 pandemic impacted the industry, as lockdowns and public health concerns led to ridership declines and even the temporary suspension of some systems. Interestingly, micromobility ridership has rebounded faster than other public modes like transit. A recent report by McKinsey and Associates estimates that by 2030 the industry will be valued at over $300 billion[10]. The industry does not appear to be profitable and the question remains how many operators (and what consumer price points) will allow private micromobility become financially self-sustaining.

The state of the micromobility industry has several implications for Herndon:

- Can the Town attract a private micromobility operator? Will we see less aggressive system expansion in the coming years, with a focus on serving dense urban markets like Washington, DC?
- With less competition, will communities like Herndon have reduced leverage to negotiate with operators? Will the cost of micromobility services increase? Will operators be less willing to conform to local regulations?
- Will Capital Bikeshare continue to operate as a publicly owned system under joint regional management?

4.2. Technology

The definition of micromobility has evolved over time with the introduction of new modes and technology. Micromobility describes transportation services that operates shared-use, light-weight, personal use vehicles that are person-powered (e.g. bicycle), powered by a small electric motor, or a combination of the two. While

[10] The Future of Micromobility: Ridership and Revenue in Crisis, McKinsey and Associates, 2020

programs like bikeshare have been around since the 1960s, modern micromobility services rely on a few key innovations:

- Automated management of vehicles, notably unlocking and locking of the vehicle.
- User account management, including automated payment and linking trips to users to discourage theft.
- Real-time (or near real-time) tracking of vehicles through either GPS tracking or connected stations.

Docked and Dockless

Micromobility modes can be divided into two broad categories. **Docked** services like Capital Bikeshare utilize stations where users can pick-up and return bicycles. Most docked systems embed the digital hardware and locking mechanisms on the stations themselves.

Figure 6: Example of Docked Bikeshare System (Capital Bikeshare, 2020)

Dockless or free-floating systems allow users to start or end a trip without the use of a station. Dockless systems embed digital hardware and the locking mechanism onto the vehicle itself. A user can merely end their trip in any permitted location.

Docked systems tend to be more expensive to implement and take up more space than dockless programs. Conversely, docked programs have lower rates of theft and vandalism and generally avoid issues with right-of-way infringement and the illegal parking of vehicles.

Vehicle Types

The two most common types of micromobility vehicles are **bicycles** (including conventional and e-bikes) and **electric scooters**. While bicycles have been around longer, scooters in recent years have emerged as a popular mode nationwide. In addition to these two modes, there are several less common micromobility modes such as electric mopeds.

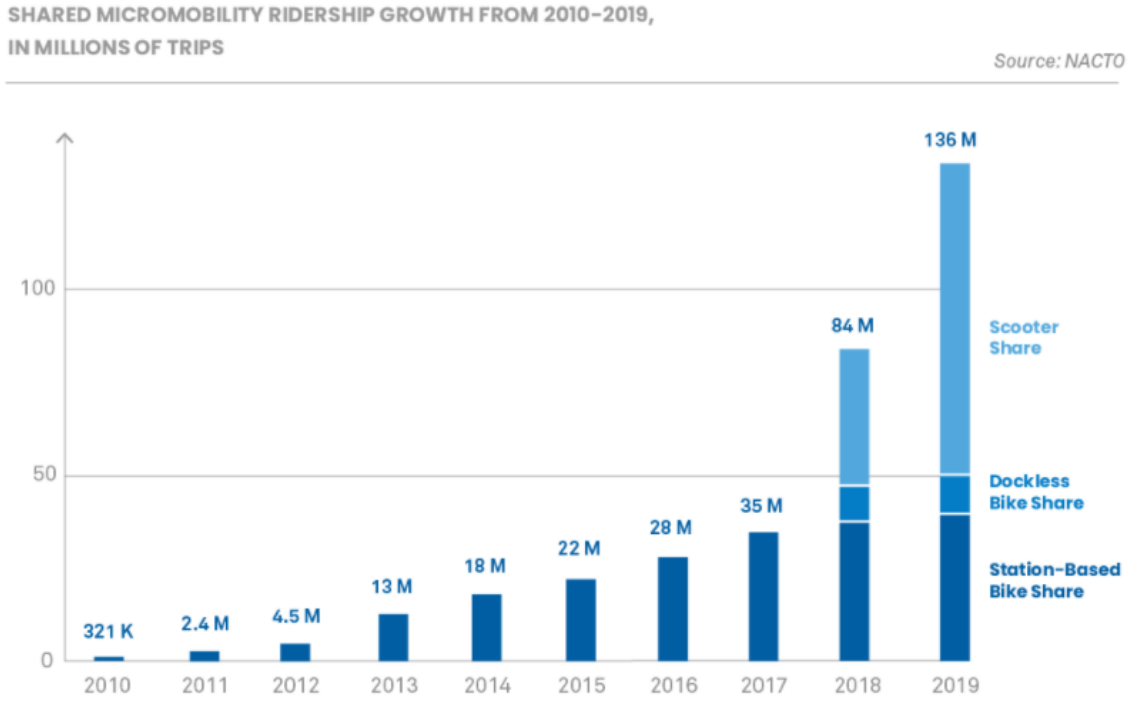
Figure 7: Dockless Scooters (Lime, 2020)

Scooters in 2018 overtook bicycles as the most ridden micromobility mode, however it is unclear whether their popularity is due to a strong consumer preference for scooters or simply better availability of scooters due to the sheer number of systems and vehicles deployed. In the Washington region there are twice as many dockless vehicles available than Capital Bikeshare bicycles during peak deployment; these dockless vehicles cover a smaller geographic area than Capital Bikeshare.

Electrification

One of the biggest trends in the industry has been the move to electrified vehicles since 2017. Riders show a strong preference in most markets for electric bicycles or scooters. Today, nearly all systems that operated dockless conventional bicycles have replaced them with scooters or e-bikes. Dockless systems like Capital Bikeshare continue to offer conventional bicycles but have also introduced e-bike options. NACTO's annual State of Micromobility report helps illustrate the popularity of electric modes. Between 2018 and 2019, the number of annual electric scooter trips more than doubled while bikeshare trip growth was nearly flat (**Figure 8**).

Figure 8 Growth of Bicycle and Scooter Share - NACTO 2019 State of Micromobility Report (NACTO, 2020)



4.3. Safety

Micromobility services bring with them a certain amount of risk for both users and other road and sidewalk users. Data shows that scooters have a higher rate if injury and fatalities than bikeshare. In the United States, dockless scooter services have a higher rate of industry and death than docked bike share; in 2019 there were 18 micromobility deaths on scooters compared to 2 on bicycles. A recent study by the CDC found that 48 percent of dockless scooter injuries sampled in Austin, Texas resulted in head trauma.[11] Low rates of helmet use contribute to high rates of head injury; a study of emergency room visits in Southern California found that of the 249 patients with injuries related to scooters, only 10 were wearing a helmet and 100 had sustained some head trauma.[12] There are a few possible reasons why scooters have a higher injury rate: the instability of the vehicles themselves, especially earlier models that had smaller wheels; the public's unfamiliarity with scooters (few bikeshare users learn how to cycle on bikeshare, instead coming to the mode with some familiarity with bicycles); and a lack of standard protocol for where scooters are ridden.

In addition to the safety of those riding a scooter or bicycle, there is a safety risk to pedestrians, especially with regard to dockless equipment. If parked improperly on a sidewalk or on a roadway, dockless scooters can block the public right of way and pose a safety hazard.

---

[11] https://www.cpsc.gov/s3fs-public/Micromobility-Products-Related-Deaths-Injuries-and-Hazard-Patterns-2017_percentE2_percent80_percent932019.pdf?90dOQxC0SzGvGRFGX6UF6Z6zvQhV9R1P); http://www.austintexas.gov/edims/pio/document.cfm?id=318777&utm_source=CNN+Five+Things&utm_campaign=0ef7d90e10-EMAIL_CAMPAIGN_2019_05_02_10_13&utm_medium=email&utm_term=0_6da287d761-0ef7d90e10-82987861

[12] https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2722574

5. Local Context

As part of this Technical Memorandum, the study team reviewed several local plans for additional context. The following section summarizes findings from previous plans as they relate to this study:

5.1. Existing Plans Related to Bikeshare

Herndon Bicycle Network Master Plan

The Herndon Bicycle Network Master Plan, completed by the Town of Herndon Department of Community Development in August 2019, is the first official plan dedicated to the development and maintenance of a comprehensive bicycle route network that serves the entire town.

The plan is a detailed set of strategies to meet the goal from the Town's 2030 Comprehensive Plan of providing safe streets that are friendly to bicycles and pedestrians. Objectives of the plan include improving bicycle safety and ridership within the town, improving connections to the regional bike network and transit stations, and increasing awareness of cycling within the town.

Strategies recommended in the plan include:

- A feasibility study of introducing Capital Bikeshare and/or other micromobility services, which this current study fulfills.
- A comprehensive bicycle network for the town, shown in **Figure 9**, including a list of active bicycle network improvement projects as of June 2019, shown in **Figure 10**. These network recommendations should be considered when selecting bikeshare station locations as part of this plan.
- Increased implementation of transportation demand management programs to involve local business in promoting non-car transportation alternatives.
- Creation of a bicycle design guide and a reiteration of the Town's commitment to a Complete Streets policy.

Figure 9: Recommended bicycle network. Source: Town of Herndon Bicycle Network Master Plan

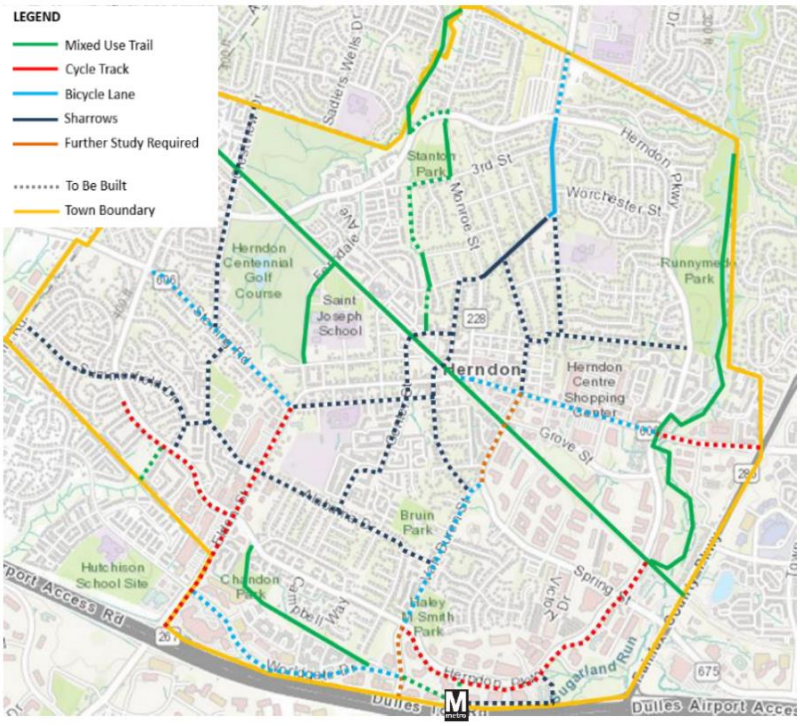


Figure 10: Active bicycle network improvement projects as of June 2019. Source: Town of Herndon Bicycle Network Master Plan

ACTIVE PROJECTS
Last Updated: June 2019

Project Name	Project Location	Status	Notes
East Elden Street - Bicycle Lanes & Cycle Track	Between Fairfax County Parkway and Monroe Street	Design Completed.	Expected to be under construction in 2024. Town project.
Chandon Park - Mixed Use Trail	To connect with Worldgate Trail to Van Buren Street	Design Completed.	Expected to begin construction in 2019. Town Project.
Herndon Parkway - Cycle Track	From Spring Street to Van Buren Street	Fully planned and concept designed. Portions completed.	To be built in phases *dependent on private development*
Van Buren Street Phase I- Bicycle Lanes	From Spring Street to Herndon Parkway	Fully planned and designed.	Expected to begin construction in late 2019. Town project.
Van Buren Street Phase II – TDB Facility Type	From Herndon Parkway to south town line and Spring Street to W&OD	Planned and beginning concept design	May also be built in phases *dependent on private development*.
Sterling Road – Bicycle Lanes	From Elden Street to Herndon Parkway	Planned, not yet designed.	Expected concept design in FY20. Town project.
Trails to Metro – Mixed Use Trail	From Worldgate Drive to Herndon Metrorail Station	Fully planned and designed	Expected to begin construction in late 2019. Town project.
Folly Lick Regional Trail	From Herndon Parkway to Center Street	Fully planned and concept designed	Dependent on substantial land acquisition (as currently designed). Town project.
Station & Spring Streets - Sharrows	From Park Avenue to Van Buren Street	Fully planned and designed	Expected construction 2019. Within existing right-of-way. Town project.

Town of Herndon Pedestrian Plan

The Herndon Bicycle Network Master Plan, completed by the Town of Herndon Department of Community Development in October 2019, is the Town's first pedestrian plan. The plan features a comprehensive analysis of town's pedestrian infrastructure and strategies to make walking in the town safer, more desirable, and more convenient.

The *Pedestrian Plan* identifies 40 specific improvements to the town's pedestrian network, mostly focused on filling gaps in the sidewalk network and improving crosswalks at intersections. Walkability is a key factor in bikeshare feasibility, as most bikeshare trips include a pedestrian leg at the beginning and end of the trip. This current study should pay close attention to gaps in the sidewalk network when considering locations for bikeshare stations.

Herndon FY2020 – FY2025 Capital Improvement Program

The Town of Herndon FY2020 – FY2025 Capital Improvement Program (CIP) describes the Town's budget for infrastructure improvement projects over the next five years. Many bicycle and pedestrian network improvements are among those earmarked for funding in the CIP. Most of these improvements scheduled for early implementation improve connections to transit stations or the regional trail network.

In additional to trails to new Metrorail stations, the principal bicycle network connections included in the CIP are:

- Center Street (Station St to Alabama Dr)
- Dranesville Road (Park Ave to Madison St)
- Locust Street (Elden St to Center St)
- Station Street (Center St to Park Ave)
- Dranesville Road (Herndon Pkwy to North town line)
- Van Buren Street (W&OD Trail to Park Ave)

Should this current study recommend phased implementation of bikeshare stations, phasing should be coordinated in the Town's plans for implementation of major network improvements as described in the CIP.

Herndon Comprehensive Plan (2008, updated 2015)

The Herndon Comprehensive Plan (adopted 2008, updating 2015) guides the Town's decision-making for planning priorities including land use, transportation, historic preservation, and much more, as required by state law. The plan recommends strategies including promotion of pedestrian and bicyclist safety through infrastructure improvements and providing a useful bicycle and pedestrian network for the town. The Comprehensive Plan does not provide many specific tactics to implement these strategies, which are elaborated on in subsequent plans such as the Town's Bicycle Network Master Plan and Pedestrian Plan.

Fairfax County Bicycle Master Plan (2014)

The *Fairfax County Bicycle Master Plan*, prepared in 2014, provides policies, programs, and physical facility recommendations that support and update the County's Comprehensive Plan. Bicycle network recommendations from this plan for the Town of Herndon are supplanted by the *Town of Herndon Bicycle Master Plan*. This plan does not address bikeshare, as Capital Bikeshare had not yet started operations in the county at the time of its adoption. The County is currently preparing a countywide active transportation plan called *ActiveFairfax* (expected in 2021 or 2022), as many of its recommendations no longer meet evolving Federal and Virginia Department of Transportation design standards.

5.2. WMATA Silver Line extension

The WMATA Silver Line, slated to open in 2021, will include a Metrorail station within the town's limits, along with new stations just beyond the town's borders at Reston Town Center and Innovation Center. The new rail connection will allow one-seat rides from Herndon to major employment and activity centers such as Tysons, Falls Church, Arlington, and downtown Washington, DC to the east, and Dulles Airport and Ashburn to the west. The Fairfax County Department of Transportation is currently working on a major redesign of Fairfax Connector bus service in the Herndon area to coincide with the opening of the new Metro line, with the goal of improving connections to new Metro stations and providing better service to the town outside of peak travel hours. This study should ensure that proposed bikeshare stations work in harmony with proposed transit improvements, as providing first- and last-mile access to transit is an important trip generator for bikeshare systems.

6. Conclusion

The research in this technical memorandum will help guide the next phase of the study, the Market Study. The upcoming Market Study will look at the demand for micromobility in the town, including the market potential by user groups, geographic locations, and use case.

This memorandum has several key findings which will influence upcoming analyses:

Key findings:

- Capital Bikeshare ridership and average trips per bike in Fairfax County is consistent with other suburban markets in the region, like Falls Church and Rockville, but substantially lower than urban markets like Washington, DC. Existing ridership rates suggest that micromobility services either cannot rely entirely on user fees to sustain operations, or utilize an operating model with very low unit operating costs.
- While no dockless micromobility services operates today in Fairfax County, several companies operate systems in the region. There remain high levels of competition in the local micromobility market, with no dominant dockless provider.
- Capital Bikeshare remains the region's largest micromobility operator but today accounts for fewer than half of micromobility trips in the region.
- COVID-19 impacted ridership in 2020, especially at the beginning of the pandemic, but Capital Bikeshare ridership recovered somewhat over the summer. It remains unclear whether micromobility ridership will return to pre-pandemic levels in 2021 but the market shows long-term growth potential.
- The micromobility industry is rapidly changing. In the short-term, the industry will likely see some consolidation due to overcapacity and the effects of the pandemic.
- The micromobility market is moving toward electrification, with the majority of trips taken by electric scooter or e-bike. Companies will likely introduce additional modes in the region over the coming years.
- Herndon's recently completed bicycle and pedestrian plans could help guide this study by influencing the placement of proposed micromobility infrastructure.
- WMATA's Silver Line will improve transit access to Herndon. Micromobility could integrate with the Silver Line by facilitating first/last mile trips to transit.