



Fairfax CUE Access & Technology Improvement Study Summary of Bus Stop Improvement Recommendations

May 2020

Vienna/Fairfax-GMU
Metro Station

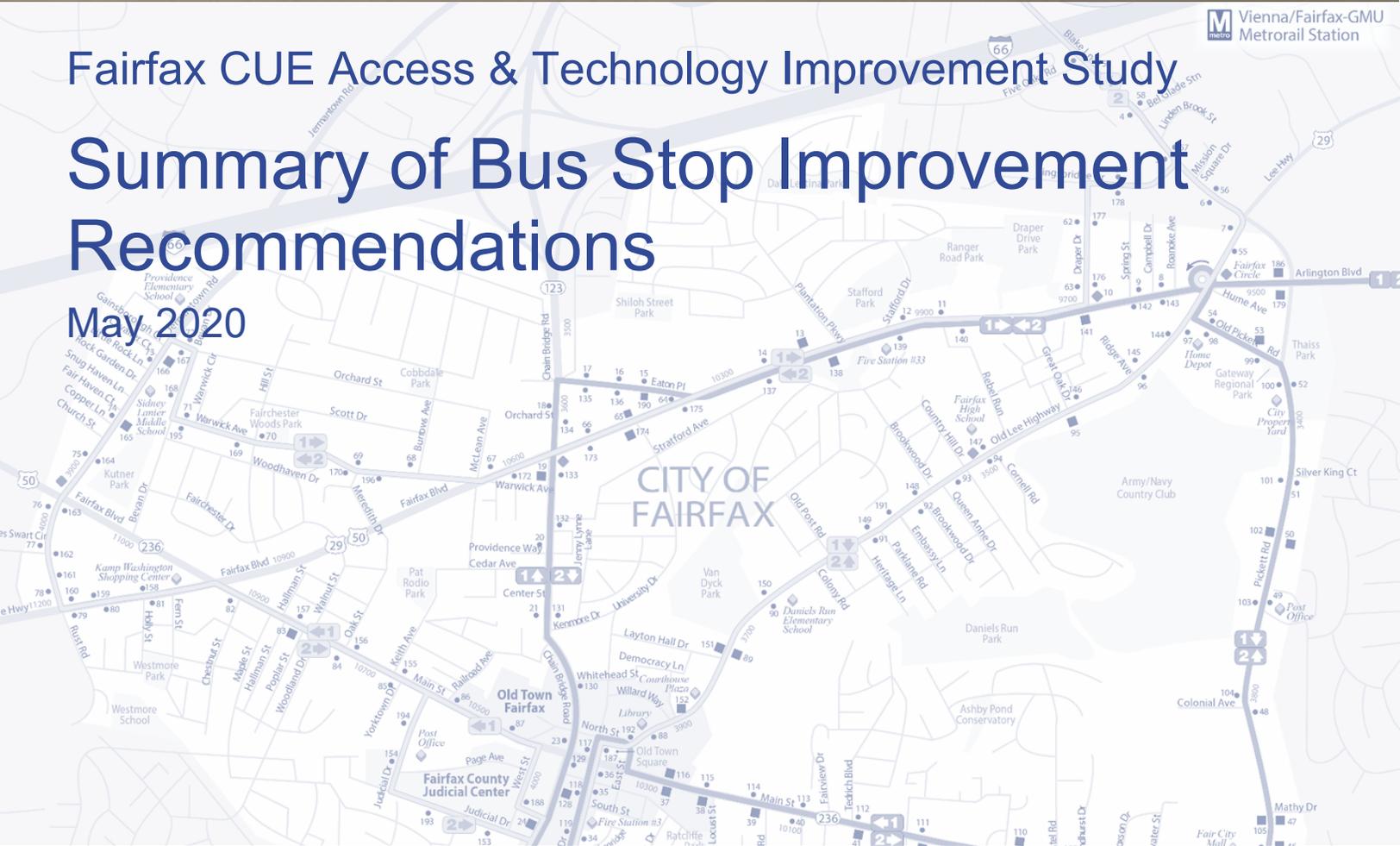


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1 Overview

Bus stops are considered the “front door” of any bus system. If bus stops provide a welcoming and comfortable waiting environment, people will be more likely to use transit. Aside from buses, they can be one of the most visible elements of a transit system, and well-designed stops can help enhance public perceptions of transit and raise awareness about the bus service itself. However, with limited resources, it is important to be strategic and prioritize bus stop investments.

Recognizing this, the City of Fairfax conducted the Fairfax CUE Access & Technology Improvement Study to identify and prioritize bus stop improvements across the CUE bus system, with the goals of raising the profile of CUE bus service, improving the customer experience, and making CUE service a more attractive option for potential riders. A grant from the I-66 Commuter Choice Program¹ funded the CUE Access and Technology Improvement Project which includes this study and implementation of the study recommendations. A key objective of the project is to improve bus stops to attract potential commuters to transit (CUE and Metrorail) as an alternative to driving along the congested I-66 corridor.

The primary outcome of this study is a short-term action plan for bus stop improvements that will improve existing facilities and attract new commuters in the I-66 corridor. The action plan will guide implementation of improvements with the I-66 Commuter Choice grant.

This report also provides a summary of the study area and study process, a brief description of the types of improvements recommended for different categories of bus stops (bus stop “tiers”), and recommended near-term opportunities to improve bus stops in coordination with planned projects. In addition, the appendices include a marketing plan for these short-term improvements and Bus Stop Design Guidelines for the CUE system to guide bus stop improvements in the longer term.

Challenges and Opportunities

Mobility Context and Built Environment in Fairfax

CUE bus service currently operates an average of 30-minute service, meaning that many riders may need to wait more than a few minutes for the next bus. As a result, a comfortable waiting environment and access to accurate schedules or real-time arrival information are critical to attracting and keeping riders, especially those that have other travel options available. However, a mix of land use and

Figure 1: Bus Stops in Fairfax

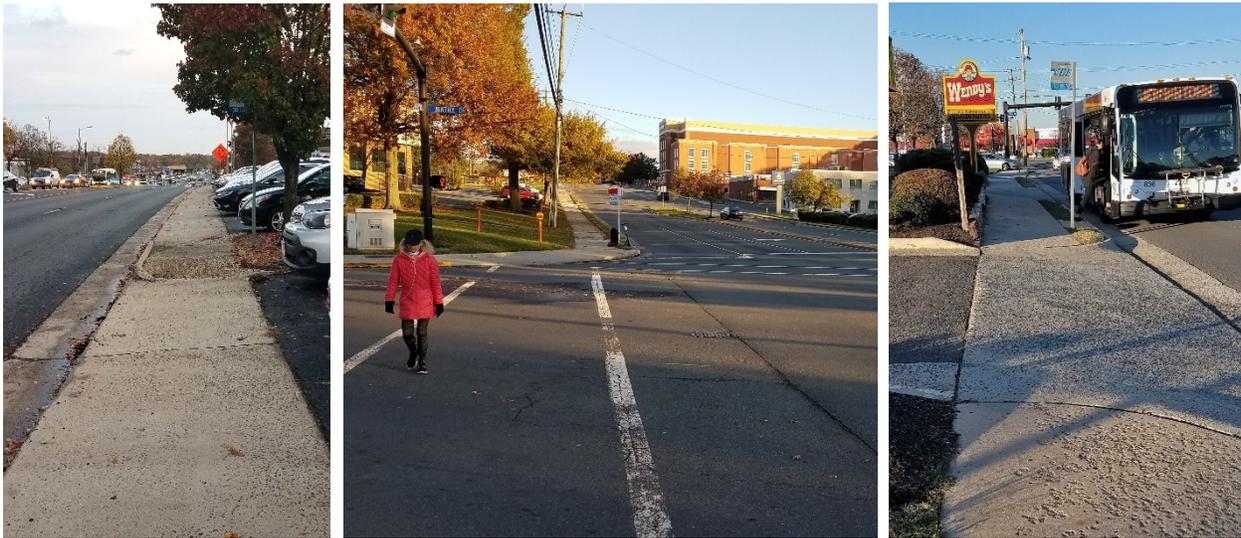


¹ <http://www.novatransit.org/i66commuterchoice/>

transportation environments in Fairfax City impact the attractiveness and convenience of bus service, as well as types of bus stop amenities that would enhance the customer experience.

Many parts of Fairfax City are more suburban in character, with lower density development and less supportive of walking and transit than more urban environments. Most major roads in the City, where CUE buses primarily operate today, are designed as auto-oriented arterials, with wider streets, high-speed traffic, and limited pedestrian facilities (such as in Figure 2). Additionally, many roads that may be comfortable during the day have little or no pedestrian lighting, making them difficult, uncomfortable, or unsafe for pedestrians to navigate at night and making it more difficult for bus drivers to see riders who are waiting at unlit bus stops.

Figure 2: CUE Bus Stops on Fairfax Blvd (left), Pickett Rd (center), and Jermantown Rd (right)



An exception to the largely suburban environment is Old Town Fairfax, the City's historic downtown that is denser and more walkable. However, this environment presents its own challenges, particularly with narrow sidewalks (such as in Figure 3). Some stops in this core area may warrant a covered shelter and other amenities to improve the rider experience, but the limited right-of-way and existing buildings right at the sidewalk line pose a challenge to installing new infrastructure.

While there are a number of challenges to improving the passenger experience in the existing land use and transportation context, there may also be a number of opportunities as the City plans for future redevelopment. The City has a number of planned and ongoing projects to redevelop major roadways with complete streets improvements and to redevelop the urban form of local activity centers identified in the Comprehensive Plan. Some of these opportunities are discussed in Chapter 3 of this report.

Figure 3: CUE Bus Stops in Old Town Fairfax



I-66 Commuter Market

Congestion is a major challenge facing Fairfax residents, visitors and commuters in the greater Washington region. The City is located along the I-66 corridor, which includes I-66, US Routes 50/29 (Fairfax Boulevard within the City), and the Metrorail Orange Line. The overall I-66 corridor is a significant east-west commuter path in the Washington region, serving Northern Virginia and providing a critical link to jobs inside the Beltway. High commuter demand and severe congestion on I-66 leads to extremely long travel times and hinders access to opportunities across the region. This congestion also affects travel on parallel routes through Fairfax City including Fairfax Boulevard (US 50/29), which impacts local circulation as well as regional commuter access.

Metrorail Orange Line service, operated by the Washington Metropolitan Area Transit Authority (WMATA), provides an important alternative to driving along this corridor. Attracting more commuters to transit is a critical path to managing congestion in the region. Fairfax City is located about a mile from the Vienna/Fairfax-GMU Metrorail station, and the Fairfax CUE bus service connects commuters directly to this Metrorail station.

By linking the City of Fairfax to the Metrorail station, CUE effectively expands the reach of regional transit and reduces the need for commuters to drive to access jobs inside the Beltway. A top priority for CUE is to attract new riders to CUE service, particularly those who currently drive to work, as well as retaining and improving the experience for existing riders.

Figure 4: I-66 and Metrorail (left); CUE Bus at Vienna/Fairfax-GMU Metrorail Station (right)



New Development and Roadway Projects

Because the City of Fairfax is also the operator of CUE bus service, it is uniquely positioned to coordinate new development, roadway projects, and bus stop enhancements in a proactive way, maximizing investments to improve local transit. Several new development projects are either proposed, planned, or currently under construction in Fairfax. These new developments will bring new housing, jobs, and commercial space to key areas of the City. The City is also undertaking complete streets improvement projects on some major roadways that are served by CUE. For all these projects, the City has a chance to incorporate bus stop investments as part of the larger project, leveraging these resources to complete bus stop improvements while making efficient use of all available funding sources.

To make the most of these opportunities as they arise, the City needs an official bus stop improvement program with an established set of guidelines and standards for Fairfax CUE bus stops. Equipped with ready-to-go guidance on the design and amenities that are required at each stop, the City can effectively leverage these opportunities to incorporate bus stop improvements as part of new projects and identify the specific improvements that achieve the City's bus stop enhancement goals. This report identifies a few near-term opportunities, and the appendices provide guidance for future opportunities.

The I-66 Commuter Choice Program

The I-66 Commuter Choice Program dedicates toll revenues from the I-66 Inside the Beltway toll road to multimodal transportation projects that expand travel options, mitigate congestion, and ultimately move more people along the critical east-west corridor while reducing demand on the roadways and improving the travel experience for toll-payers (<http://www.novatransit.org/i66commuterchoice/>). The program is administered by the Northern Virginia Transportation Commission (NVTC) through a memorandum of agreement with the Commonwealth of Virginia, and awards funding to projects across the region through a competitive application process.



Improving transit is one of the recognized ways to achieve these outcomes, and City of Fairfax was awarded funding through the I-66 Commuter Choice Program to invest in bus stop amenities, access and technology improvements, and other capital enhancements for the Fairfax CUE bus system. Today, CUE

bus service provides an important connection from the City of Fairfax and the George Mason University (GMU) campus to the Vienna/Fairfax-GMU Metrorail station, providing a transit option via the Metrorail Orange Line that parallels the congested I-66 corridor. The City is using the I-66 Commuter Choice Program grant to implement capital improvements across the CUE bus system, with the primary goal of making transit a more attractive and convenient transportation option for more commuters who travel along the I-66 corridor.

CUE Access & Technology Improvement Study Process

Database of Existing CUE Bus Stops

A first step of this study was to create a detailed database of all existing CUE bus stops, built off of an existing stop inventory provided by the City of Fairfax. The database includes physical characteristics for every stop (such as the presence of a shelter or seating and its location relative to an intersection), stop activity (the number of daily passenger boardings and alightings), and the context at and surrounding the stop (such as connections to other transit services, neighborhood demographics such as the proportion of minority and low-income residents, and proximity to City-designated Activity Center land use areas).

Using this database, all CUE stops were evaluated to determine what types of amenities should be recommended for different stop conditions (Chapter 2), and to prioritize bus stops for short-term investment for implementation with the I-66 Commuter Choice grant (Chapter 3). Key statistics about the existing characteristics of CUE bus stops are summarized in Table 1. This information should be updated periodically to ensure future decisions about bus stop investments are informed by current information.

Table 1: Summary of CUE Bus Stop Characteristics

Bus Stop Characteristic	# of CUE Bus Stops (Total 194)	% of CUE Bus Stops
Ridership (Boardings per weekday) *	50+	4
	30-49	2
	20-29	16
	19 or fewer	172
Transfer to Other CUE Routes or Transit Services	92	47%
Serve Census Block Groups with Higher Numbers of I-66 Corridor Commuters **	49	25%
Serve Census Block Groups with Higher Proportion of Minority or Low-Income Residents **	107	55%
Located in Fairfax Activity Center	71	37%
Has Shelter	45	23%
Has Seating	55	28%
Has Pedestrian Landing Pad	110	57%
Has Real-Time Information Display	7	4%

* Stop-level ridership estimates based on a field survey collected for the 2015 GMU and City of Fairfax Transit Study.

** US Census American Community Survey 5-Year Estimates (2013-2017)

All other data collected by the City of Fairfax in the CUE bus stop inventory (updated 2018).

Public Input

A public survey was developed for Fairfax CUE area residents, workers, and visitors to learn about their transportation preferences and behaviors, with a focus on bus stop amenities and other improvements that may enhance or encourage the use of CUE bus service. The survey was available both online and in print. The online survey was open between mid-April and mid-May 2019, and it was advertised on the City of Fairfax's CUE website and social media accounts. Printed surveys were distributed to the general public in person at several pop-up events in Fairfax, including at the Vienna/Fairfax-GMU Metrorail Station, George Mason University, and Easter and Earth Day events in the City. A project business card was also created and distributed at events to advertise the study and provide a link to the CUE website, where people could learn more about the study and access the survey online (Figure 5).

Figure 5: Project Website and Business Card

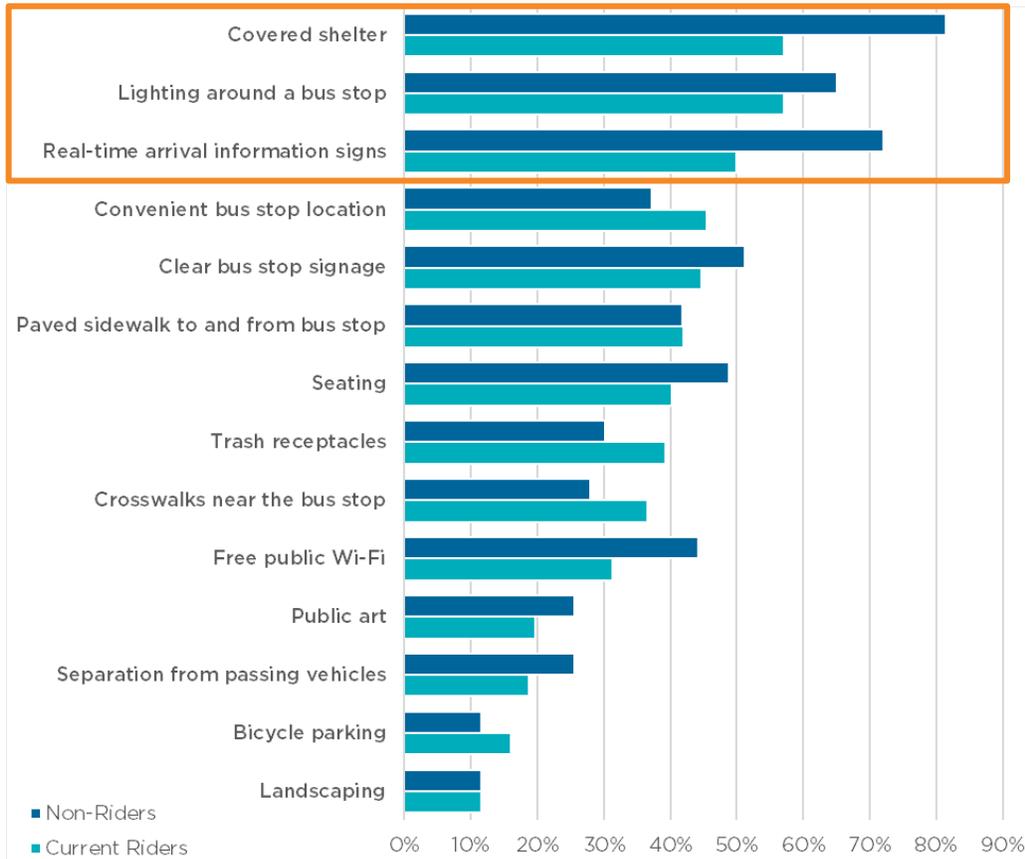


The City received 176 survey responses. Among survey respondents, 47% reported that they travel along I-66 or parallel corridors, such as Route 50 or Metrorail Orange Line. A notable finding is that current CUE riders and non-riders reported the same top three priorities for bus stop facility preferences (Figure 6):

1. Covered shelter (57% of riders, 81% of non-riders)
2. Lighting around bus stop (57% of riders, 72% of non-riders)
3. Real-time arrival information signs (50% of riders, 65% of non-riders)

Detailed results of the survey are presented in Appendix B.

Figure 6: Bus Stop Amenity Preferences (Current CUE Riders and Non-Riders)



Literature Review

A literature review was conducted at the beginning of the study to assess the existing context for bus stops, including existing City policies and plans, industry best practices, and other information that would inform the development of recommendations and design guidelines. This review considered local plans, programming, studies, and anticipated roadway projects that would impact the location, design, and bus stop treatments. In addition, the study team evaluated national literature on bus stop improvements, including best practices and guidelines from peer agencies.

Key findings of the review include:

- The City of Fairfax seeks to foster growth that is more in line with smart growth principles and that better supports transit use. The 2035 Comprehensive Plan defines five Activity Centers, where most new growth is anticipated and where the City encourages more mixed-use, pedestrian-oriented development. These areas in particular present an opportunity to foster a built environment that is supportive of transit use, and investments in bus stops serving Activity Centers can leverage current and future development to encourage transit use.
- Several new development projects are either planned or currently under construction in Fairfax. These new developments will bring new housing, jobs, and commercial space to key areas, and in some cases developers have provided transit improvements or travel demand management (TDM) measures to mitigate traffic impacts. As redevelopment continues, the City should ensure

that developers incorporate improvements to adjacent bus stops as part of any new major development, following the bus stop guidelines and standards included in the appendix.

- Upcoming roadway projects will implement complete streets improvements to some major roads in Fairfax that are served by CUE bus routes. In the near term, projects are planned along segments of Jermantown Road and Old Lee Highway that present opportunities for bus stop improvements. With these and other future road improvements, the City should leverage these planned investments by incorporating bus stop improvements along these corridors.
- Bus stop guidelines from many other transit providers define scoring systems to prioritize bus stop improvements. The City should also use a scoring method to objectively prioritize improvements in line with best practices and community values. Scoring metrics that are frequently considered include factors for ridership volume, equity, and transfer opportunities to other routes and transit services.
- Shelters, lighting, and service information (such as maps, schedule information, and real-time arrival information) are generally considered the most important bus stop amenities for attracting and retaining ridership.

The complete literature review can be found in Appendix C.

Study Outcomes and Recommendations

The objective of this study is to provide a strategy for the City of Fairfax to implement CUE bus stop improvements, both in the short term under the I-66 Commuter Choice Program, and in the future as additional resources and opportunities become available. Ultimately, the study team developed a program for CUE bus stop improvements consisting of four key pieces:

Tiering System to Classify Bus Stops: The study team developed a tiered classification system for CUE bus stops that outlines what types of amenities are appropriate at different types of stops. Stops were classified from Tier 1 (Premium Stop) to Tier 4 (Basic Stop) based on scoring factors such as ridership, transfer opportunities, and whether they serve key Activity Centers defined by the City of Fairfax. A set of minimum required amenities was defined for each tier, pairing the appropriate level of amenities based on stop characteristics. See Chapter 2 of this report for details.

Bus Stop Design Guidelines: A set of Bus Stop Design Guidelines was developed for the City of Fairfax to provide detailed guidance on bus stop facilities including amenities, stop siting, and other considerations. The Guidelines ensure that stops are designed for safety, comfort, and accessibility, and that bus stop improvements in Fairfax are implemented consistently over time. These Guidelines are provided in Appendix A.

Recommended Implementation Strategy: This study developed both short-term and long-term implementation strategies. Short-term recommendations for bus stop improvements include a first round of high-priority stops to be improved with the I-66 Commuter Choice Program grant funding. The prioritization process and recommended list of improvements are described in Chapter 3. While additional efforts will be required to refine the designs and cost estimates, Appendix E provides conceptual cost estimates to inform the number and type of improvements that are likely to be feasible with the funding available for the short-term improvement program.

Going forward, a long-term prioritization process is outlined in Appendix A (as part of the Bus Stop Design Guidelines). This process will allow the City to quickly identify and pursue bus stop improvements as resources become available. Appendix D provides a recommended bus stop audit to update the bus stop database and inform long-term priorities.

Marketing Plan: Finally, a marketing plan will provide a strategy to promote the City's first round of bus stop improvements and promote transit as an option to the commuter market under the I-66 Commuter Choice Program. These efforts will focus on reaching out to those who currently commute via or parallel to the I-66 corridor, and represent a significant potential market for new CUE ridership. This marketing plan is provided in Appendix F.

2 Defining Bus Stop Tiers

Bus stops can be located in a wide variety of settings, and not all stops need the same types of amenities. Some stops, such as those with very high ridership or located near major destinations, may call for enhanced amenities like real-time information screens, bicycle parking, and investments in placemaking, while others may only need essential elements like a current bus stop sign, lighting, and accessibility features. In order to guide decisions about which elements to include at different bus stops, CUE bus stops were classified into four “tiers,” or stop types, based on criteria including existing use (boardings) and potential demand (demographics, transfer opportunities, and land use). Each bus stop was scored with points for the criteria they meet, and assigned to tiers based on these points (Table 3).

The “tiers” also provide recommendations for the minimum level of amenities needed. All bus stop improvements should meet ADA requirements and ensure that the stop is visible at night (either with ambient street or pedestrian scale lighting, or with lighting at the stop). All stops should also have basic signage and trash receptacles. Bus stops in higher level tiers (with higher demand) should provide more amenities. Additional amenities may be included at any stop based on the specific local context and community priorities.

Each of the four stop tiers and the amenities they include are summarized below and in Table 2. More detail about stop elements are described further in the Bus Stop Design Guidelines (Appendix A).

Tier 1: Premium Bus Stop (6 points or more)

Tier 1 bus stops warrant the highest levels of amenities based on their higher boardings, ability to serve minority and low-income populations, proximity to Activity Centers, proximity to increased density near major developments, and connections to other transit services. As major bus stops in the CUE system, Tier 1 stops should include a shelter, security lighting (either with freestanding light poles or built into the shelter itself), seating, trash receptacles, and service information in the form of posted schedules, a system map, and a real-time information screen.

Tier 1 stops may also be candidates for additional elements such as space for bikeshare, scooters, and other shared mobility options, as well as covered/sheltered bike racks, public art, and other investments in placemaking. These types of elements should be coordinated with other stakeholders (such as community associations or arts organizations).

Tier 2: Major Bus Stop (3 to 5 points)

Tier 2 bus stops are not necessarily CUE’s highest profile stops, but still warrant a significant level of amenities for passenger comfort and convenience based on higher existing and potential demand. Tier 2 stops should include a shelter, seating, lighting (if there is not an existing source of light that illuminates the stop), trash receptacles, and posted schedules and system map.

Tier 3: Moderate Bus Stop (2 points)

Tier 3 includes bus stops that do not qualify as Tier 1 or 2 but still have some potential for increased use. Tier 3 stops should include seating, trash receptacles, lighting, and pole-mounted schedule information.

Tier 4: Basic Bus Stop (0 to 1 points)

Tier 4 includes all remaining bus stops that do not qualify as Tier 1, 2, or 3. Based on the scoring criteria, these stops have the fewest daily boardings and meet just one or none of the other scoring measures.

Tier 4 stops require the minimum level of amenities that should be included for all tiers of bus stops (ADA compliant landing pads, bus stop signs, lighting, and a trash receptacle).

Table 2: Minimum Bus Stop Elements to Include for Each Bus Stop Tier

Bus Stop Element	Tier 1 Premium Stop 6+ points	Tier 2 Major Stop 3-5 points	Tier 3 Moderate Stop 2 points	Tier 4 Basic Stop 0-1 points
ADA Compliant Landing Pads	✓	✓	✓	✓
Bus Stop Sign	✓	✓	✓	✓
Trash Receptacle	✓	✓	✓	✓
Lighting	✓	✓	✓	✓
Seating	✓	✓	✓	
Posted Schedules	✓	✓	✓	
Shelter	✓	✓		
Posted System Map	✓	✓		
Real-Time Arrival Display	✓			
Bicycle Rack	✓			

Note: Check marks indicate which elements are the minimum required elements for stops at each tier. Additional elements above and beyond the requirements for each tier can be included as desired and based on available resources.

Tier Scoring Criteria

Each CUE bus stop was classified in one of the four tiers based on five scoring criteria defined below and summarized in Table 3, with high scores indicating that significant bus stop amenities are warranted and lower scores indicating that only basic stop amenities are required. The tier scoring factors include:

- **Number of Weekday Boardings²:** Boardings, or the number of daily passengers getting on a bus at a given stop, is a reflection of how many passengers are impacted by the waiting environment at a bus stop. It is therefore the most important factor in determining the number, size and quality of amenities that may be needed at a bus stop to improve the waiting experience.
- **Minority and Low-Income Population:** Stops are prioritized if they serve a census block group with either minority or low-income population above the citywide average.
- **Transfers to Other Transit Services:** Stops are prioritized if they provide a transfer between CUE Gold and Green routes, or if they serve other transit providers in addition to CUE, such as Metrobus or Fairfax Connector.
- **Local Activity Centers:** The City of Fairfax's 2035 Comprehensive Plan identifies key Activity Centers as areas where the City wants to encourage pedestrian-oriented, mixed-use

² For this project, existing ridership estimates are based on samples collected for the 2015 GMU-City Transit Study. These estimates should be updated or supplemented with other information prior to assigning the final Tier or priority.

development. Bus stops that are adjacent to or within these Activity Center development areas are prioritized for higher-quality amenities to promote transit and multimodal travel in these areas.

- **Proposed or Planned Development:** Several major new developments are currently proposed, planned, under construction, or recently completed. These present an opportunity to attract CUE ridership by new residents or employees, as well as a chance to leverage mixed-use and transit-supportive development. Amenities at these stops can reinforce these efforts and make transit a more attractive option.

Table 3: Recommended Scoring Criteria for Bus Stop Tier Classification

Tier Classification Criteria	Points Awarded
Number of Weekday Boardings	5 points if 50 or more daily boardings
	4 points if 30-49 daily boardings
	3 points if 20-29 daily boardings
Minority and Low-Income Population	1 point if either minority or low-income population in the surrounding census block groups is greater than the Fairfax citywide average
Transfers to Other Services	1 point if stop is served by both a Gold route and a Green route and/or by other transit services (e.g. WMATA, Fairfax Connector)
Fairfax Local Activity Centers	1 point if stop is located near a designated Fairfax Local Activity Center district
Major Development	1 point if stop is located within 500 feet of a major development

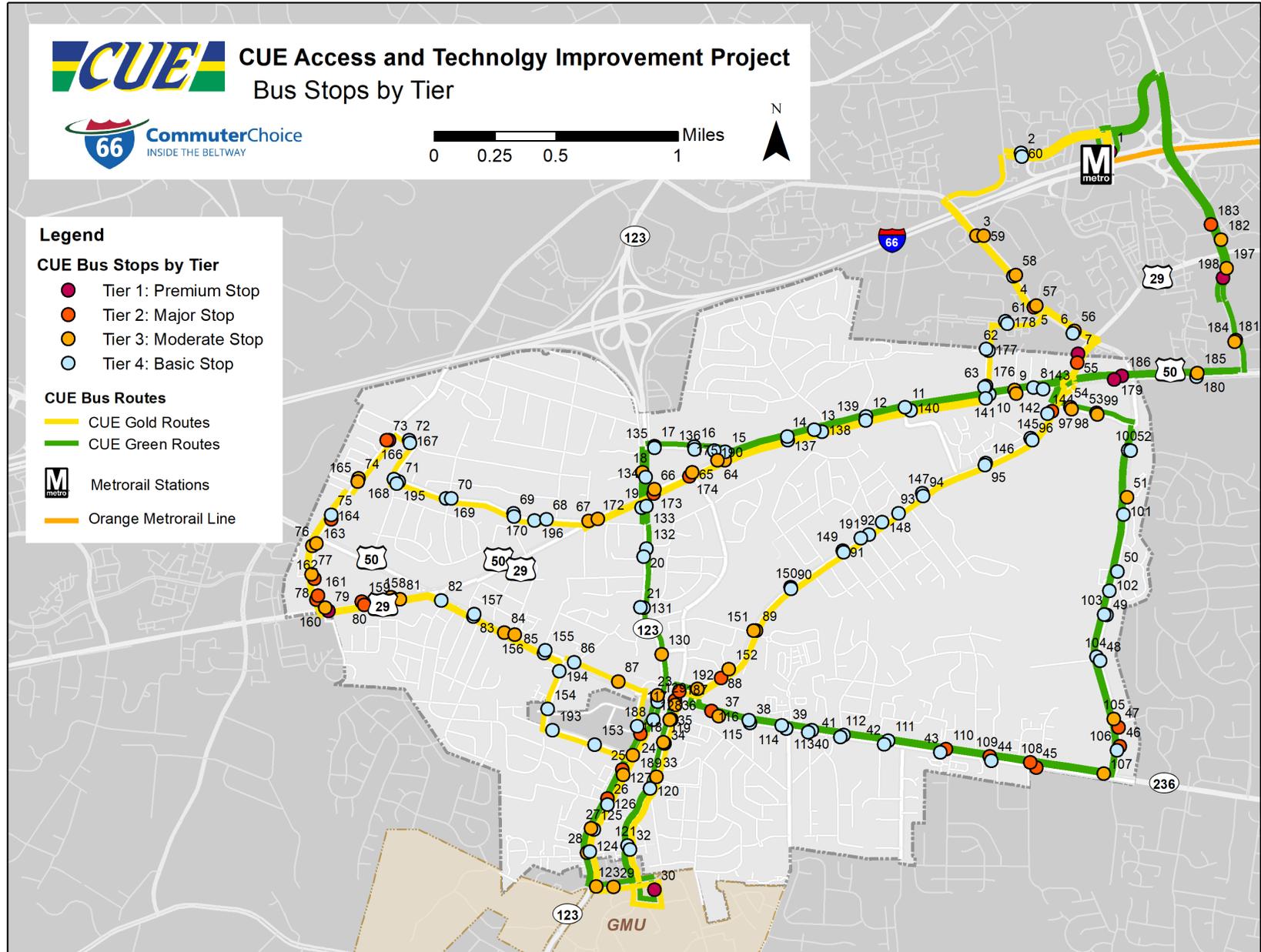
All 194 CUE bus stops were evaluated using this methodology and classified by tier accordingly³. Table 4 summarizes the number of bus stops categorized in each tier, and the location of bus stops by tier is shown in Figure 7. Areas with notable clusters of Tier 1 and Tier 2 stops include Old Town, Fairfax Circle, Jermantown Road, Northfax, and Pickett and Main.

Table 4: Bus Stops by Tier

Tier	Number of Stops
1 (Premium)	8 (4%)
2 (Major)	26 (13%)
3 (Moderate)	56 (29%)
4 (Basic)	104 (54%)

³ Stops were classified in fall 2019 using sample stop-level counts collected in 2015 for the GMU Transit Study. It is recommended that the Tier classification is reviewed and updated as new data become available.

Figure 7: CUE Bus Stops by Tier



3 Prioritizing Bus Stop Investments

CUE currently serves 194 bus stops, and the City of Fairfax must be strategic about investing in bus stop improvements as resources become available. As the recipient of grant funding through the I-66 Commuter Choice Program, the City must maximize bus stop investments within the constraints of the grant funding allocation and timeline, as well as focus on improvements that will meet the Program criteria and attract new commuters to CUE service. The recommended short-term implementation strategy prioritizes a first round of improvements that are more likely to serve residents who commute via the I-66 corridor. This includes improvements at bus stops prioritized using the scoring method described in this chapter as well as select improvements at the Vienna Metrorail station (the key transfer point for transit commuters in the I-66 corridor). The CUE bus stop at the transit center at George Mason University is excluded from the short term improvement program

Additional near-term opportunities were also identified to leverage nearby capital projects, such as roadway improvements or new development, to maximize short-term investments in bus stop improvements citywide. These stops are excluded from the priorities recommended for implementation with the I-66 Commuter Choice grant. Longer term bus stop improvement priorities are discussed in the Guidelines in Appendix A.

Short Term Implementation Strategy

Short Term Prioritization Method

A bus stop prioritization methodology was developed to evaluate and identify bus stops with the highest investment priority under the I-66 Commuter Choice Program, independent from a bus stop's tier and level of amenities (though similar criteria were used). Evaluation scores for each stop were based on three factors:

- **Total Daily Passenger Activity:** This is measured as total weekday boardings and alightings at a stop. Stops that serve higher volumes of riders should be considered a high priority for any necessary improvements as resources are available.⁴
- **I-66 Corridor Commuters:** This includes stops near census block groups with a higher number of Fairfax residents who commute to the District of Columbia, Arlington, or Falls Church. These residents represent the target market for the study, as commuters who travel in the I-66 corridor.
- **Minority and Low-Income Population:** Stops are prioritized if they serve a census block group with a proportion of either minority or low-income population above the citywide average.

The scoring criteria are defined in Table 5. Figure 8 shows the evaluation score for all bus stop locations using this methodology. These priorities will be further refined by excluding stops that will be improved as

⁴ The level of amenities at a given stop impacts the waiting environment and is therefore informed only by boarding volumes. However, the passenger experience is affected at even basic stops, so all types of stops that require upgrades should be prioritized when there is a high level of alightings as well as boardings.

part of upcoming roadway improvement projects (Jermantown Road⁵ and Old Lee Highway⁶) or as part of upcoming development projects (Scout on the Circle⁷ and Fairfield Gateway⁸).

Table 5: Recommended Scoring System for Bus Stop Prioritization

Prioritization Criteria	Points Awarded
Total Daily Passenger Activity (Sum of Weekday Boardings and Alightings)	5 points if sum is greater than 50 4 points if sum is 30 to 49 3 points if sum is 20 to 29
I-66 Corridor Commuters	2 points if stop is located near a census block group with 20 or more residents who commute to DC, Arlington, or Falls Church (i.e. commute parallel to the I-66 corridor)
Minority and Low-Income Population	1 point if either minority or low-income population in the surrounding census block groups is greater than the Fairfax citywide average

Refined Short Term Prioritization

The evaluation scores were calculated in fall 2019 using sample stop-level boarding and alighting data collected for the 2015 GMU-City Transit Study. The City proposed to update the stop-level passenger data when Automated Passenger Counters were installed on the CUE buses in spring 2020. However, due to the impacts of the coronavirus pandemic in the spring of 2020, typical ridership counts could not be collected.

Therefore, additional review of the prioritized list of bus stops was conducted by City and CUE staff, and the final priorities were adjusted based on local knowledge and context. This include consideration of proximity to higher density residential areas (such as apartment and condominium complexes) or proximity to the Vienna Metrorail station, bus operator knowledge about high ridership stops and commuter trends, and consideration of whether improvements could be coordinated with planned complete streets projects. The final list and map showing bus stops prioritized for improvements with the I-66 Commuter Choice grant are shown at the end of this chapter.

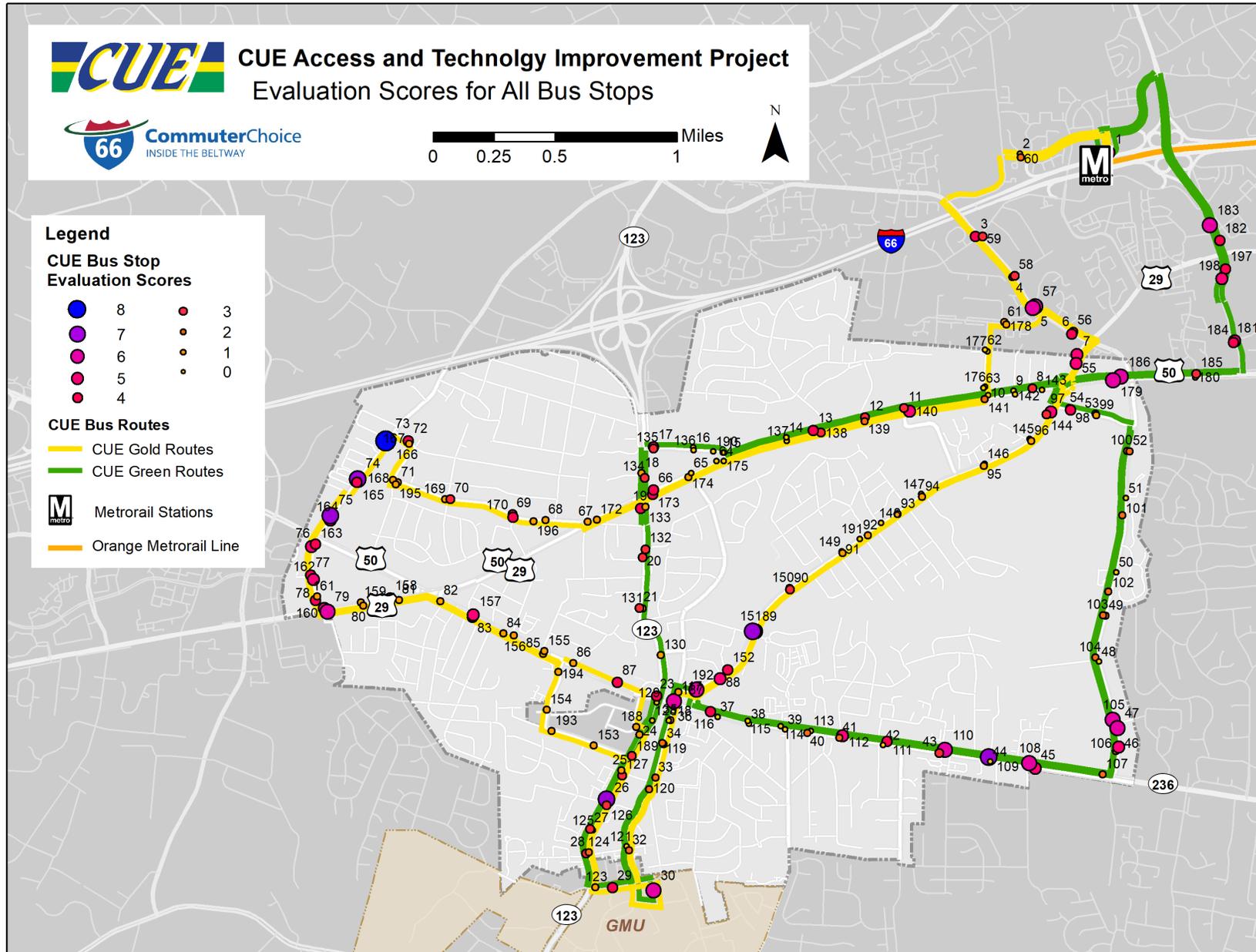
⁵ <https://www.fairfaxva.gov/government/public-works/transportation-division/current-transportation-projects/jermantown-road-corridor-improvements>

⁶ <https://www.fairfaxva.gov/government/public-works/transportation-division/current-transportation-projects/old-lee-highway-great-street-conceptual-plan>

⁷ <http://scoutonthecircle.com/>

⁸ <https://www.fairfaxva.gov/government/community-development-planning/community-development/major-development-projects/fairfax-gateway>

Figure 8: CUE Bus Stops by Short-Term Evaluation Score



Vienna Metrorail Bus Bay Recommendations

The Vienna Metrorail station is a key transfer point for all CUE riders commuting in the I-66 corridor, and it is important to provide a comfortable experience at this transfer point. However, WMATA owns and maintains the bus loop and bus bays at the Vienna Metrorail station, and based on previous conversations with WMATA staff, the City understood that WMATA intended to upgrade this facility in the future. Therefore, comprehensive upgrades of these CUE bus stops are not recommended in this project.

Following additional conversations with WMATA staff, however, it is assumed that it will be several years before the Vienna Metrorail station bus bays used by CUE buses will be upgraded. Additionally, WMATA is considering installing screens in the pedestrian bridge to provide real-time arrival information for all buses that stop at the Vienna Metro (including Metrobus, Fairfax Connector, and CUE routes).

Therefore the City proposes to coordinate with WMATA to install interim improvements that can provide benefits now and be incorporated into future improvements. These improvements include new real-time information signs for CUE stops in the bus loop and new rail-to-bus wayfinding signs. Concepts are listed below. Final locations, equipment, and ADA-compliant graphic designs will be determined in coordination with WMATA.

Table 6: Vienna Metrorail Improvement Concepts

Location	Concept
Pedestrian Bridge	CUE bus schedule holder with simple rail to bus wayfinding directing CUE passengers to the north bus bay
North side exit from rail station	Freestanding pillar sign with wayfinding to specific bus bays
At each bus bay / shelter	Solar-powered real-time arrival information signs

Bus Stop Improvement Project Coordination Opportunities

Although the scoring system described above considers the I-66 Commuter Choice investment priority for all bus stops, specific circumstances such as planned roadway projects and new developments present opportunities to coordinate bus stops improvements. The City of Fairfax can leverage these opportunities to accelerate bus stop improvements in a cost-effective way while incorporating enhancements into the larger project's design process and maximizing the opportunity to attract riders from new developments. Planned new development and roadway construction should always incorporate the improvement of adjacent existing bus stops, even if a stop does not otherwise have a high prioritization ranking. Unlike many other communities, CUE service is operated by the City, making the City uniquely positioned to coordinate new development, roadway projects, and bus stop enhancements to maximize the benefit to the community.

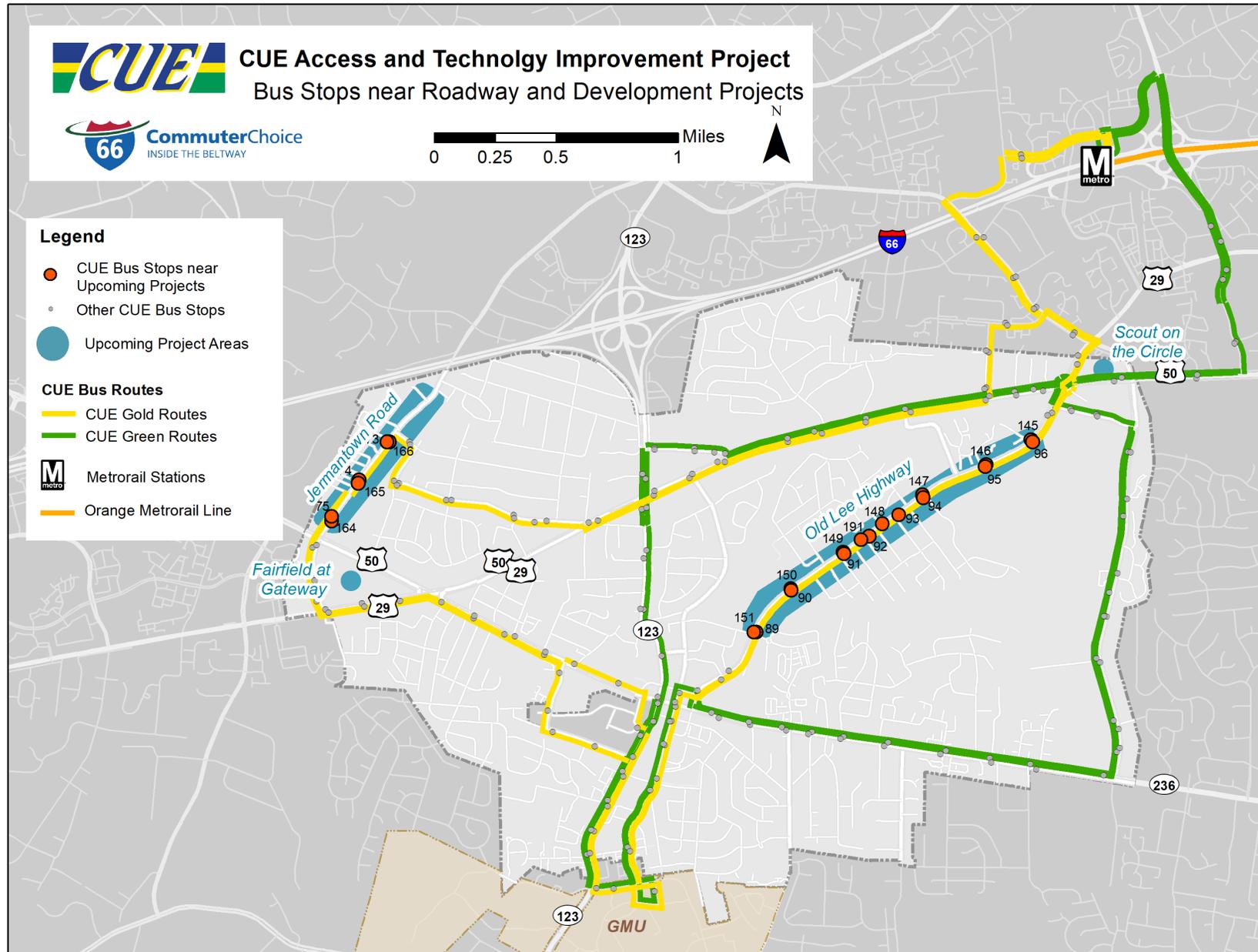
There are currently two major roadway projects planned for the near future that should incorporate bus stop improvements along with other "complete streets" improvements: Old Lee Highway and Jermantown Road. These projects will not be completed until after the CUE Access and Technology Project is completed, however, and it would be inefficient to make improvements to bus stops in these corridors prior to the construction of other roadway improvements. Two exceptions to this are the CUE bus stops Old Lee Highway at Layton Hall Drive (Stops 89 and 151). These are higher priority stops at the southern edge of the Old Lee Highway roadway project area and are being evaluated for potential relocation outside of the roadway project area. Therefore they are recommended for inclusion in this bus stop improvement project.

The CUE bus stops in each of these project corridors are listed below in Table 7 and shown in Figure 12.

Table 7: Bus Stops Adjacent to Planned Roadway Projects

CUE ID	Stop Name	Project Name	Evaluation Score	Stop Tier
Bus Stops Adjacent to Jermantown Roadway Improvement Project				
73	Jermantown Rd at Gainsborough Ct	Jermantown Road	8	2
74	Jermantown Rd at Fair Haven Ct	Jermantown Road	7	3
75	Jermantown Rd at Kutner Park	Jermantown Road	7	4
166	Jermantown Rd at Cavalier Ct.	Jermantown Road	6	1
164	Jermantown Rd at Comfort Inn	Jermantown Road	5	2
165	Jermantown Rd at Fair Haven Ct	Jermantown Road	4	3
Bus Stops Adjacent to Old Lee Hwy Roadway Improvement Project				
151*	Old Lee Hwy at Layton Hall Dr	Old Lee Highway	7	3
89*	Old Lee Hwy at Layton Hall Dr	Old Lee Highway	6	3
90	Old Lee Hwy at Daniels Run School	Old Lee Highway	3	4
94	Old Lee Hwy and Cornell Road	Old Lee Highway	1	4
95	Old Lee Hwy at Great Oak Dr	Old Lee Highway	1	4
96	Old Lee Hwy at Ridge Ave	Old Lee Highway	1	4
91	Old Lee Hwy at Heritage Ln	Old Lee Highway	1	4
92	Old Lee Hwy at Embassy Ln	Old Lee Highway	1	4
93	Old Lee Hwy at Queen Anne Dr	Old Lee Highway	1	4
150	Old Lee Hwy at St. Leo's Church	Old Lee Highway	1	4
145	Old Lee Hwy at Ridge Ave	Old Lee Highway	0	4
146	Old Lee Hwy at Great Oak Dr	Old Lee Highway	0	4
147	Old Lee Hwy at Fairfax High School	Old Lee Highway	0	4
148	Old Lee Hwy at Brookwood Dr	Old Lee Highway	0	4
149	Old Lee Hwy at Heritage Ln	Old Lee Highway	0	4
191	Old Lee Hwy at Embassy Ln	Old Lee Highway	0	4
<i>* Stops 89 and 151 will be evaluated for relocation and improvement outside of the Old Lee Hwy project area</i>				

Figure 9: CUE Bus Stops Adjacent to New Development and Upcoming Roadway Improvement Projects



I-66 Commuter Choice CUE Bus Stop Improvements

The primary outcome of this study is a list of high priority CUE bus stops to pursue for short-term stop investments through the City's I-66 Commuter Choice Program grant.

As described above, all stops were classified across the 4-tiered spectrum to determine the recommended types of amenities at each stop. Planning-level cost estimates were then developed based on the "typical" types of capital improvements and amenities recommended for installation at each stop tier. Cost estimates will change at specific sites to reflect existing conditions (such as existing amenities or challenging site conditions). These cost estimates include engineering estimates and contingency, but do not include right-of-way or easement costs as these needs have not yet been identified. Details for the example cost estimates are provided in Appendix E.

Stops were then given an evaluation score based on several criteria including ridership and proximity to neighborhoods with higher estimated proportions of I-66 corridor commuters, low-income or minority populations. Bus stops that can be improved as part of a larger roadway project or a new major development project were reviewed to determine whether there are opportunities to coordinate short-term improvements with other projects. Finally, City staff reviewed the list and made manual adjustments based on local knowledge about current ridership and commuting patterns and other contextual factors including proximity to higher density residential areas and to the Vienna Metrorail station. The City's priorities are as follows:

1. Highest priority stops near the Vienna Metrorail station
2. Moderate priority stops with high potential for commuters going to the Vienna Metrorail station
3. Higher priority stops at the edge of the Old Lee Highway project corridor

The final list of CUE bus stop improvements recommended for implementation with the I-66 Commuter Choice grant are listed in Table 8 and shown on the map in Figure 13. Average cost estimates for improvements for each Tier (not including potential right of way costs) are included to demonstrate the potential number of stops that may be further evaluated for improvement under the project budget.

Summary of Bus Stop Recommendations
Fairfax CUE Access & Technology Improvement Study

Table 8: Summary of Bus Stops Recommended for First Round Improvements by City Priority and Tier

CUE Stop ID	Stop Name	City of Fairfax / CUE Priority	Evaluation Score	Tier (2)	Stop Cost Est. (3)	Cum. Cost Est. (4)
Special stop recommendations						
1	Vienna Metrorail station	Incidental improvements at Vienna Metro recommended separately, independent of Tier. To be coordinated with WMATA.			\$50,000	\$50,000
Scored stop recommendations						
179	Fairfax Blvd at Pickett Rd	1	6	1	\$75,000	\$125,000
186	Fairfax Blvd at Pickett Rd	1	6	1	\$75,000	\$200,000
5	Blake Lane at Knightsbridge Dr	1	6	2	\$60,000	\$260,000
57	Blake Lane at Lindenbrook St	1	6	3	\$40,000	\$300,000
7	Lee Highway at Arthur Teachers	1	5	1	\$75,000	\$375,000
55	Fairfax Blvd at Fairfax Circle Plaza	1	5	2	\$60,000	\$435,000
181	Nutley St at Barrick Drive	2	5	3	\$40,000	\$475,000
33	University Dr. at Armstrong St	2	2	3	\$40,000	\$515,000
52	Pickett Rd at Thaiss Park	2	2	4	\$25,000	\$540,000
100	Pickett Rd at Thaiss Park	2	2	4	\$25,000	\$565,000
101	Pickett Rd at Silver King Court	2	2	4	\$25,000	\$590,000
51	Pickett Rd at Silver King Court	2	0	3	\$40,000	\$630,000
151	Old Lee Highway at Layton Hall Dr	3	7	3	\$40,000	\$670,000
89	Old Lee Highway at Layton Hall Dr	3	6	3	\$40,000	\$710,000
Total Budget for Design and Construction/ Asset Acquisition (1)						\$666,995
Notes:						
1) The remainder of the project budget includes \$150K for ROW, \$43K for real time sign operations, and \$25K for Marketing.						
2) Tier assignments and scores may be adjusted if current conditions indicate higher ridership than observed in the 2015 sample.						
3) Stop-level cost estimates are based on average examples of each tier, including design and construction but not including potential ROW costs; actual costs will vary by site. Vienna Metro cost estimate is subject to change pending additional coordination with WMATA.						
4) Estimated cumulative cost of the recommended stops does not include potential ROW cost estimates.						

Appendices

Appendix A: Bus Stop Design Guidelines

Appendix B: Bus Stop Survey Results

Appendix C: Literature Review

Appendix D: Recommended Checklist for Detailed Bus Stop Accessibility Audit

Appendix E: Example Cost Estimates

Appendix F: Marketing Plan