DC Circulator

2014 TRANSIT DEVELOPMENT PLAN UPDATE

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DRAFT: SEPTEMBER 2014

Foreword from Matthew T. Brown, Acting Director

The District of Columbia has entered an exciting new period in its transit history. We are expanding our local transit options by providing new and additional bike, bus, and streetcar service to help residents and visitors connect to our neighborhoods and employment centers in the city.

The DC Circulator has always been at the forefront of this transit innovation and the brand is now recognized throughout the region. Since starting service in 2005, the Circulator has grown from two routes to a more extensive, regional network of five routes that served 5.6 million riders in 2013. The DC Circulator is known for its strong brand and guiding service principles, which include:

- **Distinctive and comfortable buses;**
- **Frequent and reliable service (all day, 10-minute headways);**
- **Connections to key activity centers and transit modes;**
- **Easy to understand routes; and**
- **A simple and affordable fare structure**

As the District Department of Transportation and the DC Surface Transit work together to explore expanding the Circulator service, I am pleased to submit the 2014 Transit Development Plan Update. The report describes the planning process undertaken to update the 2011 Transit Development Plan, the public engagement effort associated with it, and the results of an operations analysis of the existing system. The remainder of the report focuses on the evaluation of potential service corridors throughout the city and recommendations for future expansion.

The District has recovered from decades of declining population and is growing again. Neighborhoods across the city are reemerging and adding people, jobs, and businesses. This rebirth has created challenges for the District's infrastructure, and we need to make informed transportation investments that will support our growth and further strengthen our city. The DC Circulator will play a key role in meeting this transportation need only by continuing to provide a reliable, efficient, and appealing transit option. The analysis and recommendations contained in this report will support the District's efforts to achieve these goals.

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ES Executive Summary

ES 1 Introduction

The 2011 DC Circulator Transit Development Plan (TDP), the first such plan for the Circulator in its nearly 10-year history, established the need for a TDP update every three years. This report fulfills that directive and will guide the future growth of the DC Circulator bus system by keeping the existing system, and future growth of the system, current and aligned with demand and development in DC.

Since beginning service in 2005, the Circulator has grown from an initial two routes to a more extensive network of five routes. The Circulator is known for its strong brand, identified by:

- Distinctive, comfortable buses.
- High-frequency service (all day, 10-minute headways).
- Connections to key activity center and transit modes.
- Easy to understand routes.
- Simple, affordable fare structure.

In 2013, the DC Circulator provided more than 5.6 million trips and now operates a fleet of 49 buses. It is the fourth largest bus system in the region in terms of ridership. This success has led to increased demand for additional Circulator service, and the purpose of this plan is to provide a basis for directing that growth and continually improving the existing system. As such, this plan accomplishes the following objectives:

- Provide a transparent planning and decision-making process through a broad outreach and participation process.
- Update citywide land use, demographic, development data, in addition to data and plans for other transit services, in order to identify corridors that support Circulator service and warrant all-day 10-minute headways.

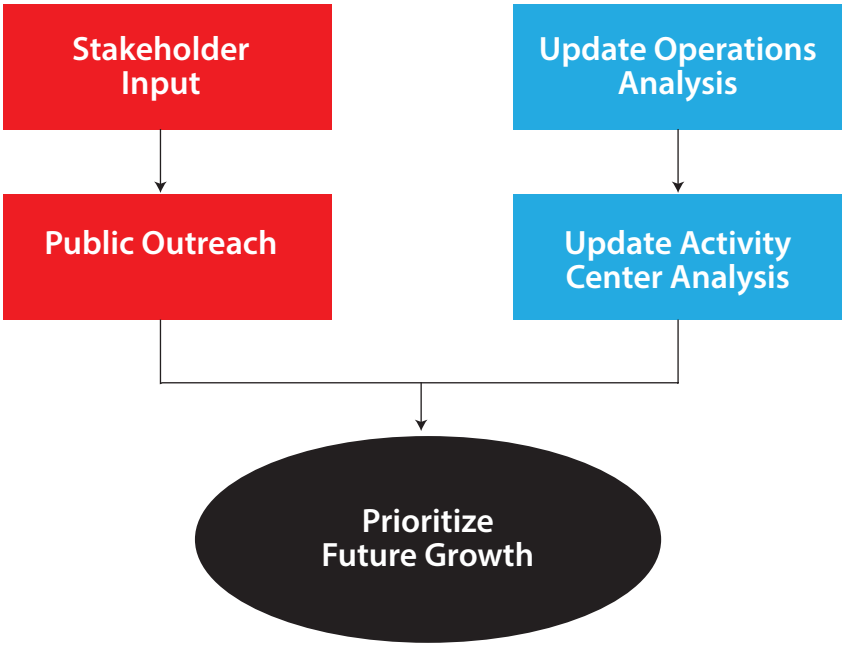
- Apply previously defined measures and criteria to this data to plan new service.
- Develop a usable, living plan for near- and long-term growth.

The remaining sections of the Executive Summary briefly describe the major elements of this plan.

ES 2 Planning Process

The DC Circulator 2014 Transit Development Plan Update is the result of a planning process focused on updating the 2011 TDP, a plan that established a robust planning process for improving existing service and developing new and expanded Circulator service throughout the District. The process aimed to increase transparency by involving a variety of stakeholders and providing opportunities for public input. **Figure ES-1** illustrates the planning process.

FIGURE ES-1 | PLANNING PROCESS FOR THE CIRCULATOR TRANSIT DEVELOPMENT PLAN



ES 2.1 Stakeholder Outreach and Public Involvement

DDOT collected input from a variety of sources to define priorities and inform the future growth of the Circulator. In addition to the semi-annual DC Circulator forum, DDOT met with key stakeholders several times; held a focus group with bus operators and supervisors; hosted an online survey; and held six public pop-up events where surveys were conducted on-site with DDOT and project staff available to answer questions. **Chapter 4** describes in further detail the results of the public engagement efforts.

ES 2.2 Update Operations Analysis

DDOT conducted a thorough review and analysis of current DC Circulator operations during the 2014 TDP, including analyses of boarding and alighting activity at each stop; route and system productivity; costs; and operational issues. The system evaluation identified several opportunities to improve the DC Circulator. Improvements were identified based on performance data and/or input from stakeholders and the community. Opportunities to improve the existing system include: deploy additional vehicles to meet service commitment; bus stop consolidation; promote a system-wide core service standard; evaluate changes to schedule and span; consider options to adapt to underutilization; and, deploy priority bus treatments. **Chapter 5** describes the results of the operations analysis and describes these potential areas of improvement in more detail.

ES 2.3 Update Activity Center Analysis

The update of activity centers identified in the 2011 TDP was the first step in determining where the Circulator could provide appropriate transit service. For the purposes of this study, activity centers are mixed-use centers of employment, residences, recreational and cultural uses, and retail activities. Activity centers were evaluated in terms of their size, growth rate, and land use characteristics of each activity center. As described in the strategic goals and objectives developed during the 2011 TDP, it is a priority for the DC Circulator to connect mixed-use activity centers in order to improve mobility and foster

economic activity. Because activity centers serve multiple trip purposes, they are likely to generate high ridership demand that warrants all-day ten-minute headways. The size and timing of activity center development also plays a key role in Circulator planning. The results of this evaluation can be found in **Chapter 6**.

ES2.3.1 Growth Corridors

After identifying activity centers, DDOT evaluated the existing transit connections between them to identify transit needs and avoid duplication of existing service. A matrix of existing rail or high-frequency, all-day bus connections between activity centers can be found in **Appendix A**. An initial list of potential growth corridors was developed based on:

- Review of the recommended corridors in the 2011 TDP.
- Gaps in transit services identified among the activity center connections.
- Inputs from existing DDOT and WMATA transit service studies.
- Planned future premium transit investment, such as the Metro Extra, the DC Streetcar, and elements from moveDC.
- Suggestions from the DC Council, Circulator riders, and the public.

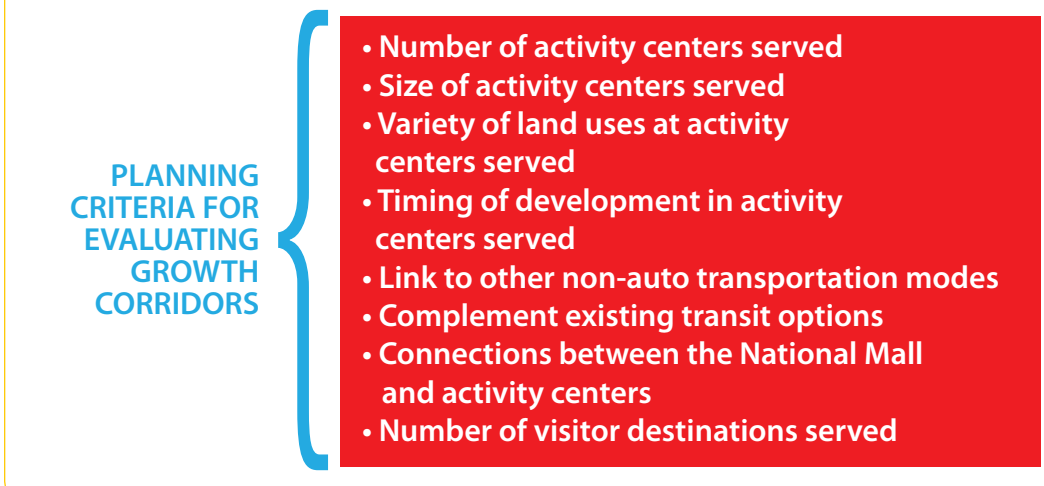
The 2011 TDP's strategic goals and objectives define two types of measures: operational performance measures (OPMs) and service planning measures (SPMs). In determining specific growth corridors, DDOT used the service planning measures to screen an initial set of corridors. **Chapter 6** offers descriptions of the activity centers and **Chapter 7** describes the corridor evaluation and recommended corridors.

ES 3 Corridor Evaluation & Expansion Recommendations

After defining the strategic direction for the system, analyzing operations and needs, and seeking public input, DDOT focused on identifying potential areas for expanded service over the next 10 years, in addition to evaluating the recommendations provided in the 2011 TDP. The development of potential corridors for future Circulator service is at the heart of this study.

These corridors were screened based on service planning measures that reflect the DC Circulator's goals and objectives described in **Chapter 3** and summarized in **Figure ES-2**. After this screening process, DDOT finalized the recommended corridors for the TDP update based on stakeholder and public feedback. The methodology by which the initial corridors were identified, evaluated, and screened down to a reduced set of recommended corridors for future expansion is depicted in **Figure ES-3** on page xvi.

FIGURE ES-2 | DC CIRCULATOR PLANNING CRITERIA FOR EVALUATING GROWTH CORRIDORS



ES 3.1 Potential Service Corridors

The development of potential corridors for future DC Circulator service is a key component of the TDP process. **Table ES-1** lists alphabetically the potential expansion corridors and route extensions that were screened and evaluated against the DC Circulator's planning criteria.

TABLE ES-1 | LIST OF POTENTIAL EXPANSION CORRIDORS IDENTIFIED FOR EVALUATION (IN ALPHABETICAL ORDER)

Adams Morgan – H Street NE	Georgetown – Union Station Extension to National Cathedral
Anacostia – Congress Heights via Skyland	Lincoln Memorial – U Street/Howard University
Columbia Heights – Washington Hospital Center – Brookland – NoMa	Minnesota Avenue – Skyland
Convention Center – Southwest Waterfront	National Cathedral – McPherson Square (Overlap with Shortened Georgetown - Union Station)
Dupont Circle – Georgetown – Rosslyn Extension to U St/ Howard University	National Mall
Dupont – Georgia Ave/Petworth	Anacostia Metro Station – Congress Heights Metro Station
Dupont – Southwest Waterfront	St. Elizabeth's Campus/Congress Heights – H Street NE
Dupont – U Street/Howard University	Tenleytown – Silver Spring
Eastern Market – Anacostia	Tenleytown – Van Ness – Columbia Heights
Fort Totten – Friendship Heights	Union Station – Navy Yard Extension to Southwest Waterfront
Fort Totten – Union Station via NoMa	

This phase of the analysis focused on evaluating potential corridors against the DC Circulator's service planning measures, the details of which can be found in **Table 7-2.** The final corridors were selected based on the evaluation of the corridors using the planning criteria and the results of the semi-annual forum, stakeholder outreach, six pop-up events, and an online survey.

The majority of corridors reviewed do not meet Circulator service criteria in the mid or long-term. Many of these corridors are already served by existing high frequency transit service, or do not have a sufficient mix of land uses and population/employment growth to justify Circulator service (and may be better served by Metro's Metro Extra or local bus services). The reasons for not recommending these corridors are further described in **Table 7-1**.

ES 4 Summary of Corridor Evaluation and Corridor Recommendations

The evaluation of potential expansion corridors for DC Circulator service involved both quantitative and qualitative analyses. The identified corridors and recommendations are based on current projections of demographic and economic development patterns in the District based on the analysis in **Chapter 6**.

ES 4.1 Corridors Carried Forward to Phasing

As a result of the corridor screening summarized in Section 7.1, the following corridors, listed in alphabetical order, are carried forward to phasing, the final step in the Circulator planning process illustrated in Figure ES-3:

- Columbia Heights – Washington Hospital Center – Brookland – NoMa (new route)
- Convention Center – Southwest Waterfront (new route)
- Dupont Circle – Georgetown – Rosslyn Extension to U Street/ Howard University
- Dupont – Southwest Waterfront (new route)
- National Mall Route (new route)
- Rosslyn to Dupont- U Street/Shaw-Howard University Extension

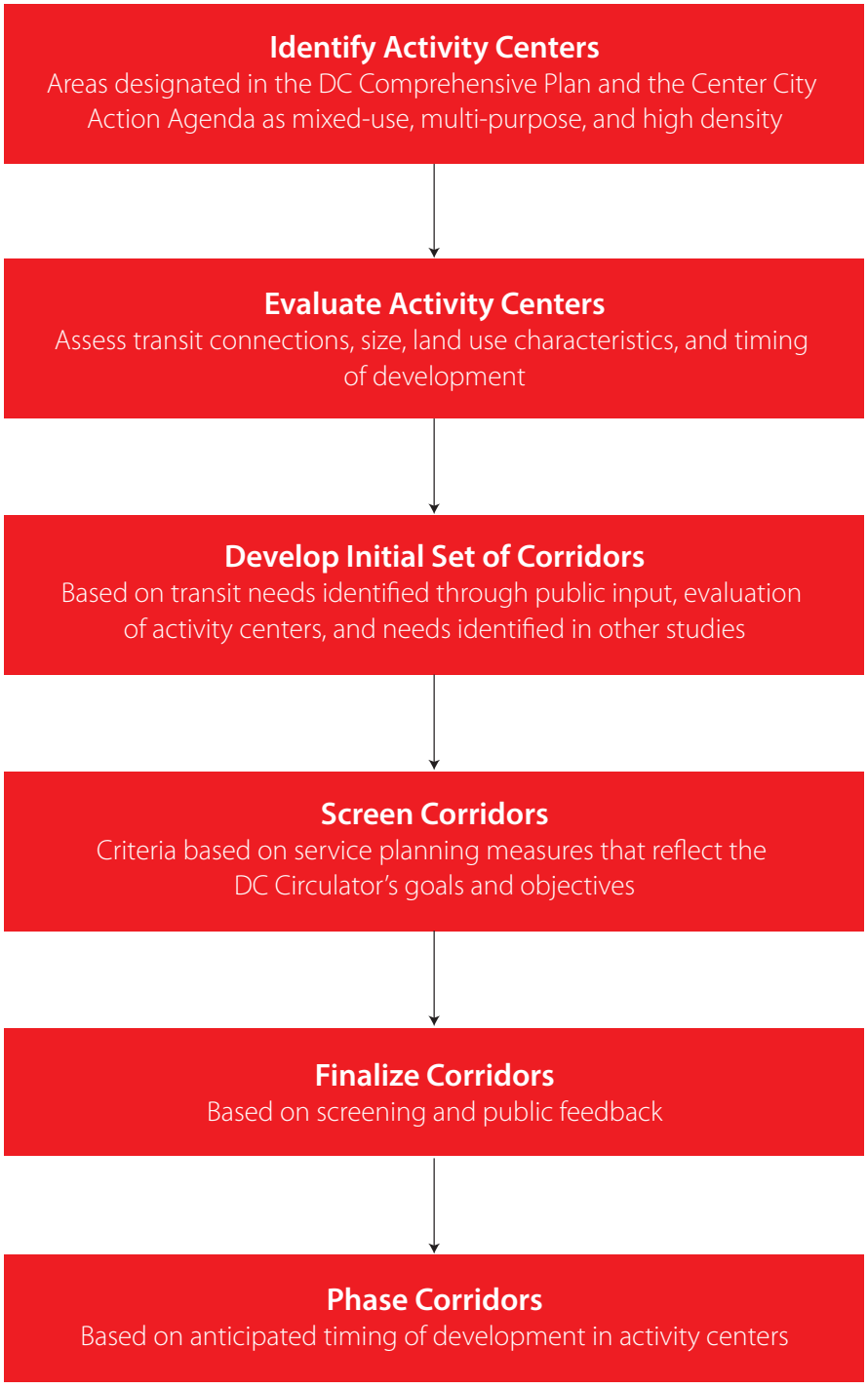
In addition, the following extensions, though they are expected to fall short of several key Circulator performance metrics, are also carried forward into phasing as they have been funded by the DC Council in FY 2013:

- Georgetown-Union Station Extension to National Cathedral
- Potomac Avenue Metro–Skyland Extension to Congress Heights
- Union Station - Navy Yard Extension to Southwest Waterfront

Additionally, there are two new routes that fall under neither of these categories category:

- National Cathedral - McPherson Square Metro via K Street (new route)
- Service to NoMa (new route)

FIGURE ES-3 | DC CIRCULATOR PLANNING



ES 4.2 Corridor Evaluation Summary

Based on the results of the planning process described in **Chapter 2** (and summarized in **Figure ES-3**), the corridor evaluation, and stakeholder and public feedback, the growth plan consists of a network of the following six new recommended Circulator routes, one recommended extension (Dupont Circle – Georgetown – Rosslyn Extension to U St/Howard University), and three additional extensions to existing routes funded by the DC Council. The new routes and extensions are listed in **Table ES-2**.

TABLE ES-2 | 2014 TDP UPDATE GROWTH CORRIDORS

New Routes	Route Extensions
National Mall Route	Georgetown – Union Station Extension to National Cathedral (Council funded)
National Cathedral – McPherson Square (includes reducing service on existing Georgetown – Union Station route to no longer serve Wisconsin Ave above M Street)	Union Station – Navy Yard Extension to Southwest Waterfront (Council funded)
NoMa (route to be determined in a future study)	Rosslyn- Georgetown-Dupont Extension to U St/Howard University
Convention Center – Southwest Waterfront	Potomac Ave Metro – Skyland Extension to Congress Heights (Council funded)
Dupont – Southwest Waterfront	
Columbia Heights – Washington Hospital Center – Brookland – NoMa	

ES 5 Phasing of Corridor Development

An implementation timeline has been developed to update the TDP from 2011. The timing of development illustrated on the Activity Center map (**Figure 8-1**) is a key driver in the phasing of corridor implementation. The timing of development indicates when the activity center will likely have sufficient mixed-use development to support all day high-frequency Circulator service once the activity center is in place and has matured in population to generate 10 minute all day service demand. The phasing of recommended corridors reflects additional mitigating factors including equity considerations, political considerations (and public pressure creating it), and matters related to overall funding and fleet availability. As a result of these other considerations recommendations for the phasing of corridors may not match the phasing of activity centers. **Table ES-3** summarizes the implementation of routes by phase.

TABLE ES-3 | ROUTE PHASING

Phase	New Routes	Extensions
Phase I (FY 2015 – 2017)	• National Mall • National Cathedral – McPherson Square Metro (Overlap with Shortened Georgetown – Union Station Route, dependent on procuring additional required vehicles. If required vehicles cannot be procured the implementation of this route will be deferred to Phase II)	• Georgetown – Union Station Extension to National Cathedral • Union Station – Navy Yard Extension to Southwest Waterfront • Dupont – Georgetown – Rosslyn Extension to U St/Howard University • Potomac Ave Metro – Skyland Extension to Congress Heights
Phase II (FY 2018 – 2020)	• Convention Center – Southwest Waterfront Service (dependent on sufficient development taking place between now and 2018) • NoMa Service (route to be determined based on future study to be conducted in 2014-2015, once the planning is completed if funding is secured this route could potentially be implemented during late Phase I)	None
Phase III (FY 2021 – 2024)	• Dupont – Southwest Waterfront • Columbia Heights - Washington Hospital Center – Brookland – NoMa (If development at the McMillan Reservoir and Brookland/CUA activity centers occurs more rapidly than is currently expected, the Columbia Heights – Washington Hospital Center – Brookland – NoMa route could be moved to the Phase II time period.)	None

ES 6 Implementation Plan

With operational analyses of the current corridors conducted (**Chapter 5**) and future corridors for development determined (**Chapter 7**), an implementation plan to carry out the identified service improvements is a necessary next step. **Chapter 9** provides a multi-year implementation plan, focusing on Phase I service changes and recommended routes. Service improvements include changes to bus operations, consolidation of bus stops, and route extensions that can be accomplished in the near-term. Proposals for new routes are also part of the plan for continued improvements to the Circulator system.

ES 7 Circulator Governance

Evaluation of Circulator governance is an important component of thinking about system-level planning and service provision, and the appropriate governance structure is of critical importance in providing efficient and effective service. DDOT is committed to seeking transparent and open ways to seek public input on decision-making that fits within the other budget and oversight processes of the District.

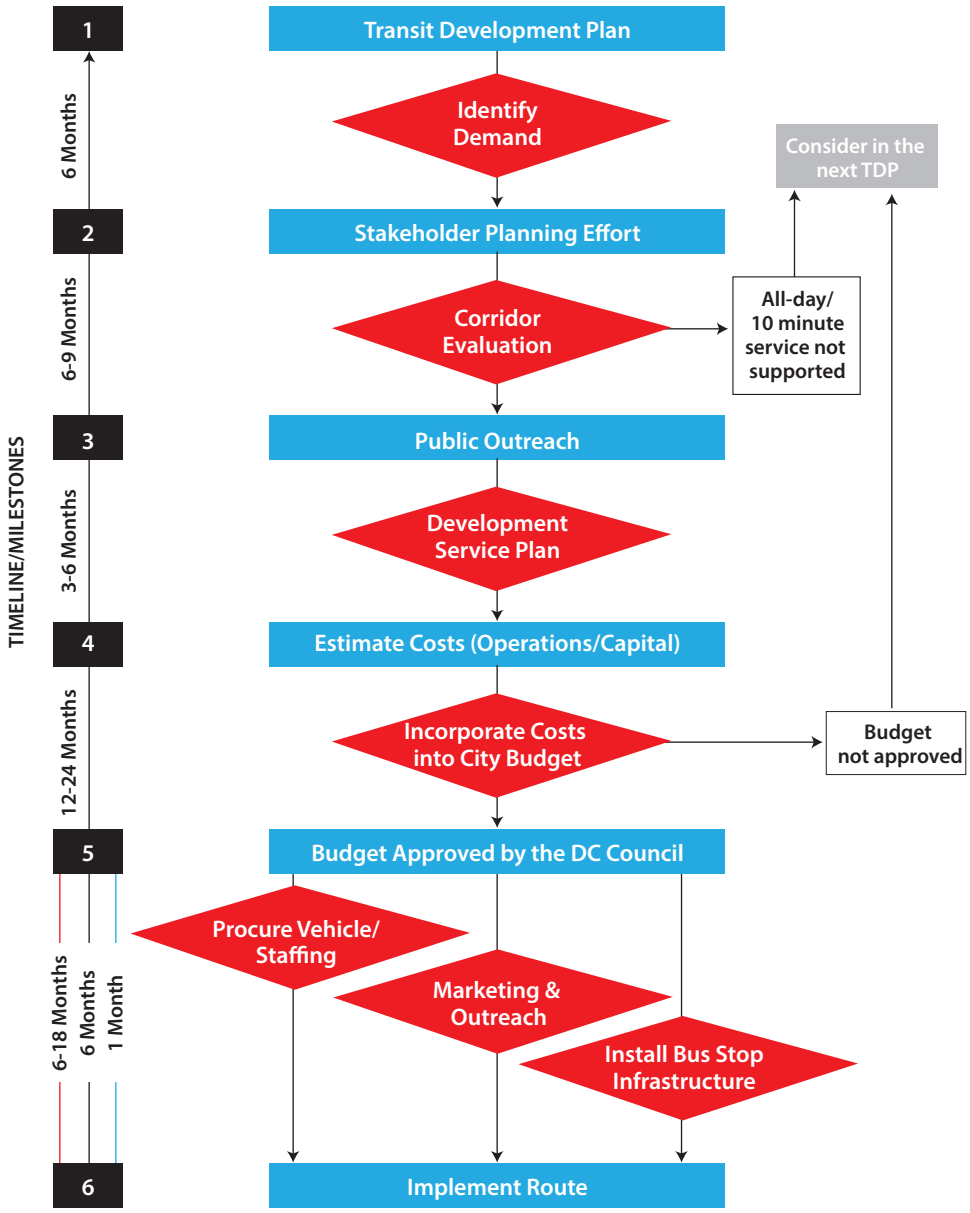
ES 7.1 Decision-Making Procedures and Responsibilities

Decisions about Circulator operations are made at three primary levels: system, corridor, and line. The activities, input methods, and approval process for each of these methods is described in **Chapter 11**. The overall Circulator route development and implementation process is depicted in **Figure ES-4**.

ES 7.2 Public Participation Process

DDOT should continue to provide the public with opportunities to provide feedback on the Circulator. This is accomplished through semi-annual forums, public comment on the DDOT and Circulator websites, and via an annual Circulator survey will also continue to provide valuable feedback. Additional detail regarding the public participation process is provided in **Chapter 11**.

FIGURE ES-4 | CIRCULATOR ROUTE DEVELOPMENT AND IMPLEMENTATION PROCESS



ES 8 Circulator Issues for Further Consideration/Study

There are a number of issues that have arisen over the course of the 2014 TDP Update that should be carried forward for additional consideration and/or study. Many of these issues relate to policies or require detailed operational studies that go beyond the scope of this TDP Update. Issues that were identified as policy considerations are described to facilitate continued dialogue among stakeholders. Additional planning studies are recommended to be conducted to more fully assess needs that were identified by stakeholders, and/or based on transportation deficiencies that were identified during the TDP update. New policies, changes to existing policies, and the results of these studies, if not carried out in the short-term, will be incorporated into the next TDP update.

ES 8.1 Operational Issues

All of the Circulator routes face operational challenges on a daily basis. Typically these occur during the peak periods when vehicular traffic is greatest and delays on the roadway network are most pronounced. As a result many of the routes suffer from poor headway adherence (inability to provide service that arrives at least every 10-minutes) and buses are unable to complete the route in the designated amount of time resulting in missed trips. There are several measures that DDOT can undertake to improve the operating environment in which the buses operate including:

- Bus Priority Treatments
- Intersection Evaluations
- Parking and Enforcement
- Bus Stop Consolidation

The transit plan section of the moveDC Multimodal Long Range Transportation Plan identifies six key transit operational improvement strategies that will benefit all surface transit, including Circulator[1]. They are exclusive transit lanes (dedicated lanes); traffic signal operations enhancements; queue jump and bypass lanes; transit stop consolidation; bus bulb-outs; and, pre-payment of bus fares.

ES 8.2 Additional Studies

The following issues were identified for further study during the 2014 TDP Update:

- New route serving NoMa – Service Study Anticipated to Begin Fall/ Winter 2014.
- Union Station – Navy Yard Schedule and Span Pilot Study.
- Implement a detailed and coordinated marketing strategy and deploy new marketing efforts based on this plan to promote the existing and planned Circulator service.

ES 8.3 Policy Considerations

The following policy considerations have been identified for continued dialogue within DDOT and with key stakeholders.

ES8.3.1 Markets that Support 10 Minute Headways

Although a significant portion of the District presents a dense land use profile and the District population is expanding at a robust pace, there are in fact a limited number of markets that can support a policy headway of 10 minutes key to the DC Circulator brand. A recent analysis of all Circulator service revealed several issues with the existing routes including:

- Overcrowding of some routes during peak periods (primarily the PM peak period).
- Low ridership during non-peak periods (mid-day, evenings).
- Low ridership on weekends.

To address the first issue, overcrowding, a typical response would be to increase service where overcrowding is present; accomplished by adding buses to a route and reducing the time between buses (reducing headways). To address the second issue a typical response would be to decrease service at times when it is underutilized; accomplished by removing buses from a route to expand the time between buses (increasing headways).

As noted in **Chapter 11**, standards for decision-making have not yet been codified. As such, there is no method by which to address the issues noted above, this is, Circulator routes operating in markets that do not support all-day 10-minute service. Moving forward this issue will need to addressed as part of the broader discussion on governance.

ES8.3.2 Fiscal Stewardship

Fare policy, and the fiscal needs of the system, must be considered in the broader discussion of the Circulator's original core goals: improving the quality of the surface transit experience in order to stimulate non-bus riders to use a bus for short trips; demonstrating to other transit operators that a focus on improving the rider's transit experience builds ridership and popularity of bus service; and to contribute to reducing congestion and pollution. Ultimately the District may decide that maintaining a low fare, and accepting a lower than ideal fare recovery ratio, is an acceptable tradeoff in the pursuit of the Circulator's core goals but this will in turn require a greater financial commitment in providing the service. **Appendix B** describes the potential impacts of various fare scenarios. This issue will need to be included in the dialogue on governance, decision-making, and the District budget process.

1 Introduction

1.1 Purpose

The purpose of the DC Circulator Transit Development Plan (TDP) is to guide the future growth of the DC Circulator bus system. The focus of this update of the TDP is to update the data and information already incorporated into the 2011 plan to keep the recommendations current and aligned with demand and development in DC. While the goals, objectives, and planning process from the 2011 TDP remain intact, the recommendations for improvements to the existing system, and recommendations for future expansion, supersede those from the 2011 TDP. The 2011 TDP established the need for a TDP update every three years and this report fulfills that directive.

Since beginning service in 2005, the Circulator has grown from an initial two routes to a more extensive network of five routes. The Circulator is known for its strong brand, identified by:

- Distinctive, comfortable buses.
- High-frequency service (all day, 10-minute headways).
- Connections to key activity centers and transit modes.
- Easy to understand routes.
- Simple, affordable fare structure

In 2013, the DC Circulator provided more than 5.6 million trips and now operates a fleet of 49 buses. It is the fourth largest bus system in the region in terms of ridership. This success has led to increased demand for additional Circulator service, and the purpose of this plan is to provide a basis for directing that growth. The plan was commissioned by the District Department of Transportation (DDOT) in conjunction with DC Surface Transit, Inc. (DCST), a non-profit formed by the business improvement districts (BIDs), Washington Sports and Convention Authority, National Capital Planning Commission, and Destination DC to help market and plan DC Circulator service.

The purpose of the plan is to:

- Provide a transparent planning and decision-making process through a broad outreach and participation process.
- Update citywide land use, demographic, development data, in addition to data and plans for other transit services, in order to identify corridors that support Circulator service and warrant all-day 10-minute headways.
- Apply previously defined measures and criteria to this data to plan new service.
- Develop a usable, living plan for near- and long-term growth.

The DC Circulator was originally conceived as "a simple, inexpensive, and easily navigable surface transit system that complements Metrobus and Metrorail."[2] The goal was to promote economic activity by facilitating visitor access to neighborhoods in the District of Columbia and to improve mobility for downtown workers around the central core during the workday.

1.2 Planned Transit Service

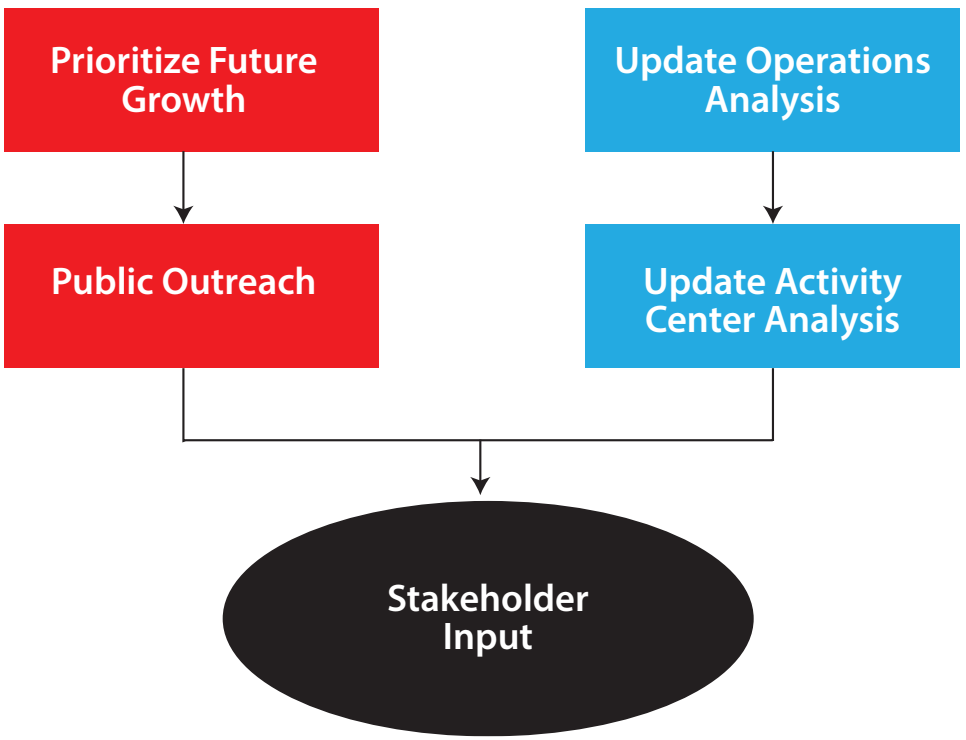
The 2014 TDP Update takes into account previous studies identified in the 2011 TDP and major ongoing efforts, such as moveDC – The District of Columbia's Multimodal Long-Range Transportation Plan, WMATA's Priority Corridor Network Plan, and the DC Streetcar 22-mile Priority Streetcar System. Information in these studies and plans was utilized during the evaluation of transit corridors and when developing recommendations for system expansion described in **Chapter 7**.

2

Planning Process

The DC Circulator 2014 Transit Development Plan Update is the result of a planning process focused on updating the 2011 TDP, a plan that established a robust process for improving existing service and developing new and expanded Circulator service throughout the District. The process aimed to increase transparency by involving a variety of stakeholders and providing opportunities for public input. **Figure 2-1** illustrates the planning process; each of the steps will be elaborated upon in the remainder of the chapter. Although the different steps of the process are described discretely, planning was not strictly linear. Rather, many dynamic parts of the process, such as public input, operations analysis, activity center analysis, and stakeholder feedback, continually informed the development of the Circulator plan update.

FIGURE 2-1 | PLANNING PROCESS FOR THE CIRCULATOR TRANSIT DEVELOPMENT PLAN



2.1 Stakeholder Outreach and Public Involvement

DDOT collected input from a variety of sources to define priorities and inform the future growth of the Circulator. In addition to the semi-annual DC Circulator forum, DDOT met with key stakeholders several times; held a focus group with bus operators and supervisors; hosted an online survey; and held six public pop-up events where surveys were conducted on-site with DDOT and project staff available to answer questions. **Chapter 4** describes in further detail the results of the public engagement efforts.

Information from the 2011 TDP coupled with the results of the online survey, city council input and stakeholder feedback were used to identify an initial set of potential growth corridors. The six pop-up events and the online survey provided an opportunity for over 1,000 individuals to comment on the initial set of corridors.

2.2 Update Operations Analysis

DDOT conducted a thorough review and analysis of current DC Circulator operations during the 2014 TDP, including analyses of boarding and alighting activity at each stop; route and system productivity; costs; and operational issues. **Chapter 5** updates the results of the operations analysis.

The operations analysis consisted of a comprehensive evaluation of the five existing routes based on the operational performance measures defined in the 2011 TDP to reflect the strategic goals and objectives. WMATA and DDOT provided extensive data (available at http://circulatordashboard.dc.gov) for this purpose. Passenger activity data (boardings and alightings) collected as part of the moveDC study in May 2013 were also utilized.

2.3 Update Activity Center Analysis

The update of activity centers identified in the 2011 TDP was the first step in determining where the Circulator could provide appropriate transit service. For the purposes of this study, activity centers are mixed-use centers of employment, residences, recreational and cultural uses, and retail activities. Activity centers were evaluated in terms of their size, growth rate, and land use characteristics of each activity center. As described in the strategic goals and objectives developed during the 2011 TDP, it is a priority for the DC Circulator to connect mixed-use activity centers in order to improve mobility and foster economic activity. Because activity centers serve multiple trip purposes, they are likely to generate high ridership demand that warrants all-day ten-minute headways. The size and timing of activity center development also plays a key role in Circulator planning.

The Center City Action Agenda and the DC Comprehensive Plan provided a foundation for identifying 29 activity centers for possible Circulator expansion. While some of the centers may not be ready to support Circulator's high-frequency service today, they may be in need of such service within five to ten years. To understand the type and timing of development across the District, DDOT evaluated the size, growth rate, and land use characteristics of each activity center (**Appendix C**), pulling information from three primary sources:

1. DC Economic Partnership data on planned development square footage and type.
2. Metropolitan Washington Council of Governments population and employment projections for FY2025.
3. Consultation with the DC Office of Planning and DDOT neighborhood and ward planners.

The results of this evaluation can be found in **Chapter 6**.

2.3.1 Growth Corridors

After identifying activity centers, DDOT evaluated the existing transit connections between them to identify transit needs and avoid duplication of existing service. A matrix of existing rail or high-frequency, all-day bus connections between activity centers can be found in **Appendix A.** An initial list of potential growth corridors was developed based on:

- Review of the recommended corridors in the 2011 TDP.
- Gaps identified among the activity center connections.
- Inputs from existing DDOT and WMATA transit service studies.
- Planned future premium transit investment, such as the Metro Extra, the DC Streetcar, and elements from moveDC. Suggestions from the DC Council, Circulator riders, and the public.

The 2011 TDP's strategic goals and objectives define two types of measures: operational performance measures (OPMs) and service planning measures (SPMs). In determining specific growth corridors, DDOT used the service planning measures to screen an initial set of corridors. DDOT held its semi-annual forum, a bus operator focus group, an online survey, and held six pop-up events to gather feedback on these corridors. **Chapter 6** offers descriptions of the activity centers and **Chapter 7** describes the corridor evaluation and recommended corridors.

2.4 Prioritize Future Growth

After defining the strategic direction for the system, analyzing operations and needs, and seeking public input, DDOT focused on identifying potential areas for expanded service over the next 10 years. The development of potential corridors for future Circulator service is at the heart of this study. The success of the Circulator has led to requests for bus service in many parts of the city; however, there are a limited number of corridors in which Circulator service—with all-day ten-minute frequencies and comprehensible routing — can be provided in a cost-effective manner and where demand warrants it. In addition, the District already has a dense network of transit services, including Metrorail and high-frequency, limited-stop Metrobus. DDOT aims to avoid duplicating service unless there is a need for additional capacity or the Circulator can serve a unique purpose in the corridor.

3 Strategic Goals & Objectives

The 2011 Circulator TDP developed a set of strategic goals and objectives to guide the growth of the Circulator system. The goals defined the purpose of Circulator service in the context of other transit services and the District's demographic and economic growth. Much of the Circulator's success may be attributed to its strong brand, which reflects the principles set forth in the TDP, including:

- Distinctive, comfortable buses.
- High-frequency service (all day 10-minute headways).
- Connections to key activity centers and transit modes.
- Easy to understand routes.
- Complement existing transit options.
- Simple, affordable fare structure.

These principles helped to define the Circulator's role within the greater transit network that includes Metrobus, Metrorail, and the future DC Streetcar. In addition to these principles, the Circulator's original core goals remain to improve the quality of the surface transit experience in order to stimulate non-bus riders to use a bus for short trips; to demonstrate to other transit operators that a focus on improving the rider's transit experience builds ridership and popularity of bus service; and to help reduce congestion and pollution.

Photo by Sam Kittner Photography

3.1 Goals and Objectives

In the 2011 Circulator TDP a clear set of strategic goals and objectives were developed to guide the growth of the Circulator system, these goals and objectives remain in effect for the 2014 Circulator TDP Update. Each strategic goal is a long-term outcome that the DC Circulator aims to achieve. A series of short-term objectives support and dictate measurable actions for each goal. DDOT used the goals, objectives, and measures to analyze existing operations, recommend service changes, and identify and evaluate corridors for new Circulator service.

The strategic goals and objectives provide a framework for the planning process. They also help to define the role of the DC Circulator within the greater transit network that includes Metrobus, Metrorail, and the future DC Streetcar.

Two types of measures are associated with the stated goals and objectives. Operational performance measures (OPMs), Goals 1 and 2, are used to track the success of operations and guide service changes to achieve continually improved performance. Service planning measures (SPMs), Goals 3 and 4, will serve as criteria to guide the expansion of the DC Circulator network. While most measures have specific targets, the performance of each route must be analyzed within its particular context. OPMs and SPMs are provided in **Chapters 5** and **7**, respectively.

GOAL 1: Provide a high-quality transit network

Objectives:

- 1A Provide efficient, reliable, limited-stop, and high frequency service.
- 1B Ensure clean, safe, and courteous operations.
- 1C Design and maintain the system so that it is easy to use and understand.
- 1D Maintain an affordable and simple fare structure.

GOAL 2: Maximize financial and operational return on investment.

Objectives:

- 2A Provide transit priority measures along Circulator routes.
- 2B Maximize the level of service that can be provided with the financial resources available.
- 2C Establish Circulator performance criteria and provide public evaluation reports.
- 2D Identify sustainable financing opportunities.

GOAL 3: Promote economic activity in existing and developing activity centers and support a transit-oriented lifestyle.

Objectives:

- 3A Connect multi-use activity centers that demonstrate significant demand for transit throughout the day.
- 3B Complement existing transit options and link to other non-auto transportation modes.
- 3C Provide connections to ease Metrorail core capacity constraints.
- 3D Ensure widespread awareness and understanding of the Circulator system.
- 3E Maximize real-time information to customers.
- 3F Provide service that addresses multiple trip purposes (work, school, shopping, entertainment, etc.).

GOAL 4: Improve mobility within and access to and from the monumental core.

Objectives:

- 4A Provide transit options between the monumental core and existing activity centers throughout the District.
- 4B Provide transit choices between key visitor destinations.
- 4C Improve mobility of workers to/from employment centers around the Mall and monumental core.
- 4D Increased utilization of the DC Circulator system by visitors.

Photo by Sam Kittner Photography

4 Public Engagement

Public engagement is a fundamental element of successful transit planning and implementation. Building off of the wide-ranging and extensive public outreach performed as part of the 2011 TDP, DDOT sought broad public participation in order to ensure a transparent planning and decision-making process. The development of this study used a variety of public involvement activities, including the semi-annual Circulator forum in February, an online survey, a focus group with drivers and supervisors, six pop-up events, and stakeholder meetings.

For the 2014 update of the TDP, the public outreach goal was to target existing and potential Circulator riders to get feedback on the current system, expansion plans and opportunities, and proposed policies. To meet this goal, DDOT held six pop-up events at targeted locations based on proximity to existing Circulator stops along routes being considered for expansion and areas considered for new Circulator routes. Where possible, the pop-up events were located at a Metrorail station. Summaries for each pop-up event can be found in **Appendix D**. This chapter summarizes the public engagement efforts of the 2014 TDP Update process.

4.1 Survey Summary

A survey was developed to gauge rider use of and satisfaction with the existing system performance, which areas of the District the Circulator should serve next, questions related to specific route recommendations, and a question related to fare policy. This survey was available online during the meeting period as well as the two weeks following the pop-ups to allow people unable to make a pop-up event to provide feedback. The survey was advertised on the Circulator website, through social media, ANC's, list servs, blogs, and local news. Comments were also collected via email and letters to the DDOT project manager directly from residents and neighborhood or business organizations. These comments were compiled between February 25, 2014, when DDOT hosted the Circulator's Bi-annual Meeting, and May 12, 2014, the end of the TDP update public comment period. The results are available in **Appendix D**.

There were a total of 1,043 surveys collected overall at these six locations and online, the distribution of responsive surveys by location is as follows[3]:

- **NoMa-Gallaudet Metrorail Station Pop-Up Event**
  114 responses (11% of total)
- **Waterfront Metrorail Station Pop-Up Event**
  160 responses (15% of total)
- **Eastern Market Metrorail Station Pop-Up Event**
  126 responses (12% of total)
- **Frank D. Reeves Municipal Center Pop-Up Event**
  67 responses[4] (7% of total)
- **Anacostia Metrorail Station Pop-Up Event**
  120 responses (12% of total)
- **Georgetown (M Street & Wisconsin Ave NW) Pop-Up Event**
  97 responses (9% of total)
- **Online Survey**
  358 responses (34% of total)

4.2 General Survey Responses

The following bullets provide a brief summary of Circulator usage by survey respondents and their demographics. For a detailed report of the both the demographics and comments of respondents, please see **Appendix D**.

- Of the 1,043 survey responses, 749 responded with **"Yes"** they do currently ride the Circulator service, this represents almost two-thirds of the total responses.
  - Of those respondents, 50 percent identified the "**Georgetown – Union Station**" as a regular route they used. The "**Union Station – Navy Yard Metrorail**" route was the second most chosen route with almost 35% of responsive respondents identifying this route as a regular route (in part due to the fact that multiple events were held near or on this route).

- Of the respondents who utilize the Circulator service, the majority (65 percent) use this service at least once a week if not more. Almost one-third of those users, or 20 percent of the total respondents, use the Circulator service **"Daily."**
- **"Leisure/recreation"** was the most common trip purpose (46 percent) for riders of the Circulator. **"Commute to Work"** and **"School"** trips, which are generally recurring trips, combined represented 34 percent of the trip purposes.
- Approximately 77 percent of the respondents rode the Circulator 10 blocks or more. Twenty-two percent reported riding 5-10 blocks, and 24 percent 10-15 blocks.
- The majority of Circulator passengers (79 percent) were either **"Satisfied"** or **"Very Satisfied"** with how often the Circulator arrives. Only 1 percent, or 11 respondents, were **"Very Dissatisfied"** with how often the Circulator arrives.
- Forty-one percent (41 percent) of respondents **"Agreed"** or **"Strongly Agreed"** that DDOT should raise fares to expand the Circulator system.[5] Out of the respondents that **"Agreed"** or **"Strongly Agreed,"** approximately 73 percent currently utilize the service. Thirty-six percent of respondents **"Disagreed"** or **"Strongly Disagreed"** with raising fares.

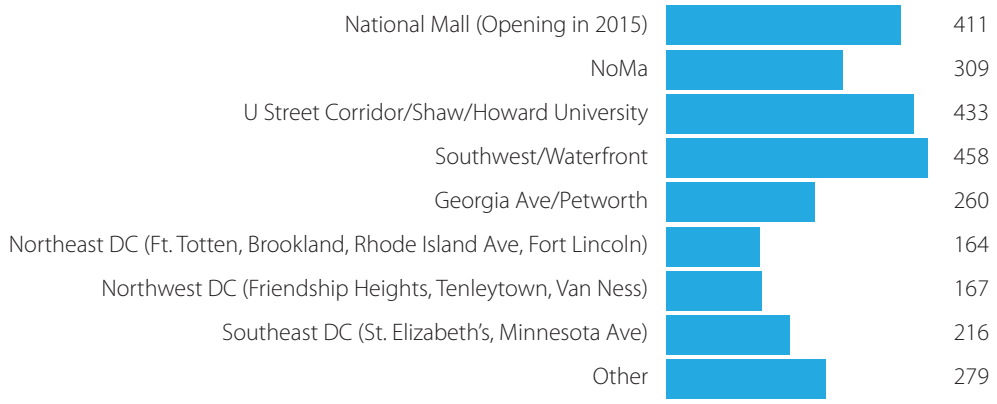
4.3 Key Survey Feedback

The feedback received from the public was used to inform the location of new routes, extension of existing routes, and implementation phasing of new routes or extensions. In particular, questions related to the expansion of the system provide valuable insight when developing service recommendations and phasing. Reponses to a general question regarding Circulator expansion is summarized below.

4.3.1. What District areas should the Circulator serve next?

Over 52 percent of the respondents who answered this question would like to see the Circulator serve the **"Southwest/Waterfront."** The next most desired service areas were the "**U Street Corridor/Shaw/Howard University"** and "**National Mall,"** with 50 percent and 47 percent of the respondents choosing these areas, respectively. The **"Other"** category consisted of write-ins for new locations such as H Street/Benning Road, and various locations in Virginia and Maryland to name a few. **"NoMa," "Georgia Ave/Petworth,"** and **"Other"** had a fair amount of responses as well.

FIGURE 4-1 | SURVEY RESPONSE: WHAT AREAS OF THE DISTRICT SHOULD THE CIRCULATOR SERVE NEXT?



For the results of all of the survey questions see **Appendix D**.

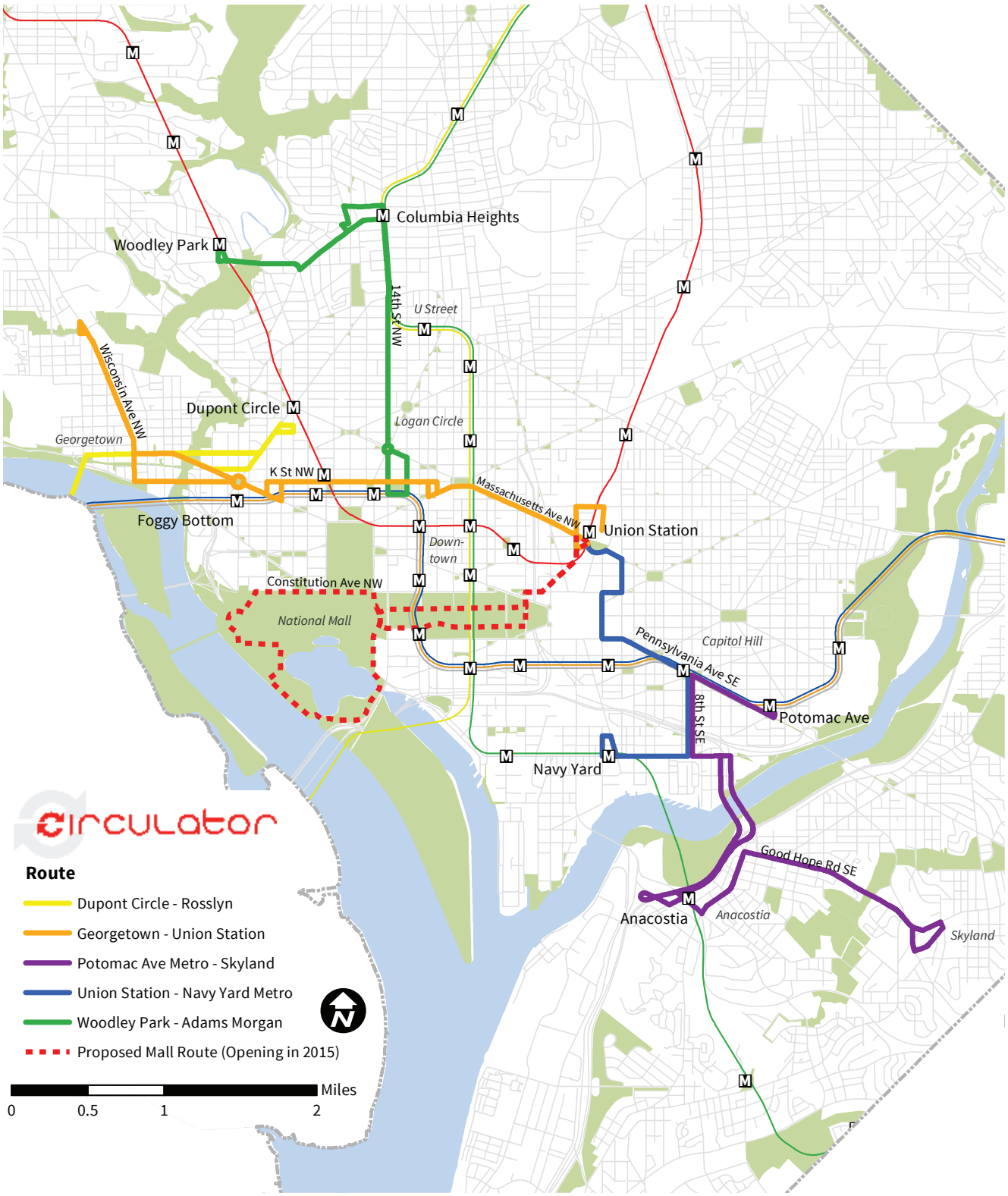
5

Operations Analysis

The DC Circulator is a five-route bus system with service to all four the District of Columbia's quadrants. The current network is a culmination of several route expansions and changes since the system's inception in July 2005. The Circulator has a $1.00 fare, service frequencies of 10 minutes, and long spans of service, six or seven days a week. Similarly DDOT purchased distinctive red buses with unique interiors (different from standard transit buses in the region), designed to promote faster entering and exiting of the vehicles.

The current Circulator network (shown in **Figure 5-1**) provided 5.6 million trips in 2013 and is the fourth largest bus system in the region in terms of ridership.

FIGURE 5-1 | CURRENT CIRCULATOR SYSTEM



5.1 History of the Circulator

In 2003 DDOT, in partnership with the Downtown Business Improvement District, the National Capital Planning Commission, and the Washington Metropolitan Area Transit Authority (WMATA), explored the potential of a new circulation system in the DC core. The system began with the introduction of the Georgetown-Union Station and Convention Center-SW Waterfront routes in 2005. In 2006, the Smithsonian-National Gallery of Art route was added to the system. In 2009, two routes were added: Woodley Park – Adams Morgan – McPherson Square and Union Station – Navy Yard. In 2010, the system expanded beyond the borders of the District with the Dupont Circle – Rosslyn route. Finally, in 2011 the Potomac Ave Metro – Skyland route was introduced.

In 2011, DDOT suspended operation of both the Smithsonian-National Gallery of Art and Convention Center-SW Waterfront routes due to low ridership and a need to reduce expenditures during the recession. The Smithsonian-National Gallery of Art route never performed well due to its part-time operation and sub-optimal routing, which did not serve the front doors of the Smithsonian museums nor the National Mall. At the time of the route discontinuations DDOT indicated that service on the Convention Center-SW Waterfront route would be resumed when activity center growth along the route reached levels sufficient to support the Circulator span and service frequency. WMATA's Metrobus Route 74 replaced the Circulator Convention Center route with seven-day service at a reduced frequency of 12 to 15 minutes on weekdays, 24 minutes at night, and 20 minutes on weekends. Restoration of this north-south Circulator and a new National Mall route is examined in this report.

5.2 Organization and Fare Structure

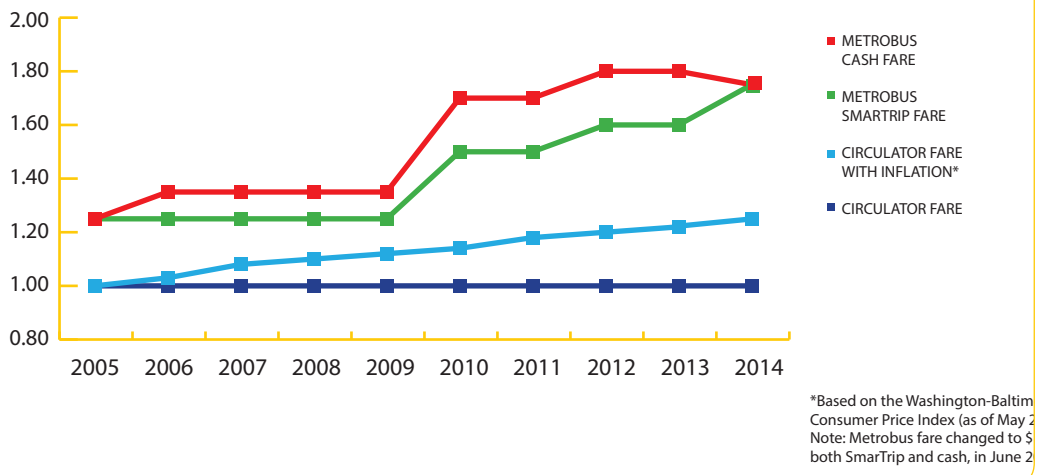
The DC Circulator is owned by DDOT, managed by WMATA, and operated by a private operator. This partnership also includes the non-profit agency, DC Surface Transit Inc., which advises DDOT on marketing and planning for the DC Circulator.

The fare structure for the DC Circulator system is built around a regular fare of $1.00 per trip. The three forms of payment options are cash (exact change required), passes, and SmarTrip Card. The DC Circulator has been using SmarTrip

technology since the beginning of transit operations in 2005. Approximately 76 percent of Circulator riders used the SmarTrip card to pay the fare – an increase of 13 percentage points since the last TDP analysis in 2011. SmarTrip usage accounts for 84 percent of all trips, when including weekly passes. The share of SmarTrip users transferring from a bus or Metrorail remained the same with approximately 25 percent transferring from a bus and 14 percent transferring from Metrorail. Additional detail regarding fares and the breakdown in payment type can be found in **Appendix E**.

The DC Circulator's regular fare of $1.00 has remained unchanged since the system began in 2005. A simple, affordable fare is part of the Circulator brand. **Figure 5-2** compares the Circulator fare with WMATA's regular cash and SmarTrip fares for Metrobus. The fare is $1.00 for Circulator regardless of whether riders pay by cash or SmarTrip card. The chart also portrays how the $1.00 fare would have changed, since the Circulator system began in 2005, had the Washington region's annual inflation rates been applied to the fare.

FIGURE 5-2 | CIRCULATOR AND WMATA METROBUS FARE COMPARISON



*Based on the Washington-Baltim
Consumer Price Index (as of May 2
Note: Metrobus fare changed to $
both SmarTrip and cash, in June 2

5.3 Hours of Operation

Each DC Circulator route has unique hours of operation. While the current five routes operate at least every weekday, from 7am to 7pm, each route differs in its service hours and days.

To date DDOT has set the hours of operation for the routes based on ridership demand. While DDOT has considered standardizing the hours of operation for all DC Circulator routes to help make the system easier to understand, no changes have been implemented since the 2011 TDP. The five DC Circulator routes are listed in **Table 5-1** with their days and hours of operation. It is important to consider these variations in service characteristics when analyzing the operating performance of each route.

TABLE 5-1 | CURRENT CIRCULATOR ROUTES' DAYS AND HOURS OF OPERATION

Circulator Route	Weekdays	Sat.	Sun.	Hours	Total Service Hours
Dupont Circle – Georgetown – Rosslyn	X	X	X	7am-12am (Sun-Th)	17
				7am-2am (Fri-Sat)	19
Georgetown – Union Station Additional Night Service (Whitehaven – McPherson Square)	X	X	X	7am-9pm daily	14
				9pm-12am (Sun-Th)	15
				9pm-2am (Fri-Sat)	17
Union Station – Navy Yard Metro*	X	Summer only	None	6am-7pm (Winter)	13
				6am-9pm (Summer M-F)	15
				7am-9pm (Summer Sat)	14
Woodley Park – Adams Morgan – McPherson Square Metro	X	X	X	7am-12am (Sun-Th)	17
				7am-3:30am (Fri-Sat)	20.5
Potomac Ave Metro – Skyland via Barracks Row*	X	Summer only	None	6am-7pm (Winter)	13
				6am-9pm (Summer M-F)	15
				7am-9pm (Summer Sat)	14

**Hours vary by winter (October 1-March 31) and summer (April 1-September 30) seasons.*
Source: Circulator Website, March 2014.

5.4 Phasing Implementation since 2011 TDP

DDOT has continued to work toward meeting the strategic goals and objectives for the DC Circulator developed during the 2011 TDP. DDOT aims to maximize financial and operational return on investment by boosting the system's productivity. This has involved suspending less productive and cost-efficient routes, planning routes and extensions to ensure they meet the required service demands for all day 10 minute headways, and phasing new service to meet projected demands since the last TDP. The Circulator continues to promote economic activity by connecting multi-use activity centers within the District and complementing other non-auto transportation modes.

The 2011 TDP identified several opportunities for improving the DC Circulator system based on the results of the operations analysis and input from the community. DDOT has implemented several of the TDP recommendations including consolidating bus stops to meet limited-stop guidelines, replacing the Smithsonian-National Gallery of Art route (with the National Mall route starting in 2015), moving the Union Station stop for the Union Station – Navy Yard route from the parking deck to Columbus Circle, and revising the Union Station – Navy Yard route to use Second Street NE. The specific operational and capital changes that DDOT implemented from 2011 through 2013 are summarized below in **Table 5-2**, by year of implementation.

TABLE 5-2 | PHASING IMPLEMENTATION SINCE 2011

Year	Change
2011	• Re-routed the Union Station – Navy Yard Metro route from Louisiana Avenue NW to 2nd Street NE to speed up service around security barriers; Began extended summer evening and Saturday service. • Consolidated and added bus stops on the Georgetown – Union Station route. • Suspended the Smithsonian – National Gallery of Art route. • Suspended the Convention Center – SW Waterfront route. • Implemented the Potomac Ave Metro – Skyland via Barracks Row route.
2012	• Re-routed the two ends of the Union Station – Navy Yard Metro route. The northern terminus was moved from the east side of Columbus Circle to the west side. The southern terminus was moved from Eye Street SE to K Street SE. The Navy Yard Metro bus stop was also moved. • Re-routed the Georgetown – Union Station route from Columbus Circle to North Capitol Street NW. • Added bus stops at Marbury Plaza on the Potomac Ave Metro – Skyland route. • Re-routed Potomac Ave Metro – Skyland route near Anacostia Metro.
2013	• Added one new stop each on the Union Station – Navy Yard Metro and Potomac Ave Metro – Skyland routes.

5.5 Performance Metrics 2011-2013

DDOT conducted an in-depth analysis of the Circulator system using available data from calendar years 2011 through 2013. The 2013 data was compared to the 2010 data evaluated in the 2011 TDP to determine changes in operational performance measures (OPM) over the past three years.

Evaluation Framework

DDOT monitors the following OPMs to track progress towards the DC Circulator's goals and objectives. The 2011 Circulator TDP established targets for each performance measure as seen in **Table 5-3**.

TABLE 5-3 | CIRCULATOR OPERATIONAL PERFORMANCE MEASURES AND TARGETS

Performance Measure	Target
On-time performance	80% of arrivals with headways under 15 minutes
Boardings per revenue hour	20 boardings per revenue hour
Operating cost per revenue hour	No specific target set
Subsidy per rider	$2.75 subsidy per rider
Farebox recovery	25% farebox recovery
Bus stops per mile	Providing limited-stop service with <4 stops per mile
Customer complaints per 10,000 passengers	0.2 complaints per 10,000 riders
Preventable accidents per 10,000 revenue miles	0 preventable accidents per 10,000 revenue miles

It should be noted that although the target for on-time performance is 80 percent of arrivals with headways under 15 minutes, the operational objective of the Circulator service remains to provide 10-minute headways. The following segment profiles depict the operational analyses of the system and each of the five routes. Each segment profile includes 2011-2013 data for the above OPMs and targets, and compares the 2013 data to 2010 data for each performance measure. The exception is the measure of bus stops per mile, for which only 2013 data is shown, as very few bus stop changes occurred in 2011. Additional detail for each existing route is provided in **Appendix E**.

TABLE 5-4 | TARGET LEGEND[6]

For performance measures less than or equal to the target:	
	Actual is at least 85% of target value
	Actual is between 10% and 85% of target value
	Actual is less than 10% of target value
For performance measures greater than the target:	
	Actual is at within 115% of target value
	Actual is between 115% and 190% of target value
	Actual is greater than 190% of target value

5.5.1. Circulator System Profile

Key Characteristics

Total Routes: 5

Total System Length: 36.2 miles

2013 Total Ridership: 5.6 million

Findings

- At the system level, the DC Circulator meets the targets for four of its seven performance measures: on-time performance, boardings per revenue hour, subsidy per passenger, and bus stops per mile. Areas for improvement include the DC Circulator's farebox recovery ratio, complaints per 10,000 passengers, and preventable accidents per 10,000 revenue miles.
- All routes met the metric for on-time performance (80 percent of arrivals with headways under 15 minutes) in 2013 except for the Potomac Ave Metro-Skyland route.
- All routes met the 85 percent target for bus stops per mile in 2013, except for the Georgetown-Union Station route, but additional bus stops could be consolidated to meet the limited-stop guidelines (3 – 4 stops per mile).
- The performance of all routes suffer from traffic congestion (and a lack of transit priority treatments), particularly in the peak periods. This results in poor performance and higher costs.

Recommendations

- Deploy additional vehicles to meet commitment to no more than 10 minute headways.
- Establish a system-wide core service standard.

TABLE 5-5 | OPERATIONAL PERFORMANCE MEASURES FOR THE CIRCULATOR SYSTEM

Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	77.20%	80.86%	82.53%	79.53%	↑	
Boardings per revenue hour	29	30	31	32	↑	
Cost per revenue hour[7]	$83.01	$83.20	$88.26	$95.06	↑	n/a
Subsidy per passenger	$2.31	$2.10	$2.31	$2.48	↑	
Farebox recovery ratio	21.42%	24.13%	23.30%	19.81%	↓	
Bus stops per mile	4.04	--	--	3.76	↓	
Complaints per 10,000 passengers	0.31	0.22	0.17	0.51	↑	
Preventable accidents per 10,000 revenue miles	0.49	0.16	0.42	0.39	↓	

**The 2011 data includes the Convention Center-Southwest Waterfront route, which was suspended in October 2011; no data was available for the Smithsonian-National Gallery of Art route, which was suspended in March 2011. The 2011 data also includes the Potomac Ave Metro-Skyland route, which began operations in October 2011.*

ROUTE PROFILE

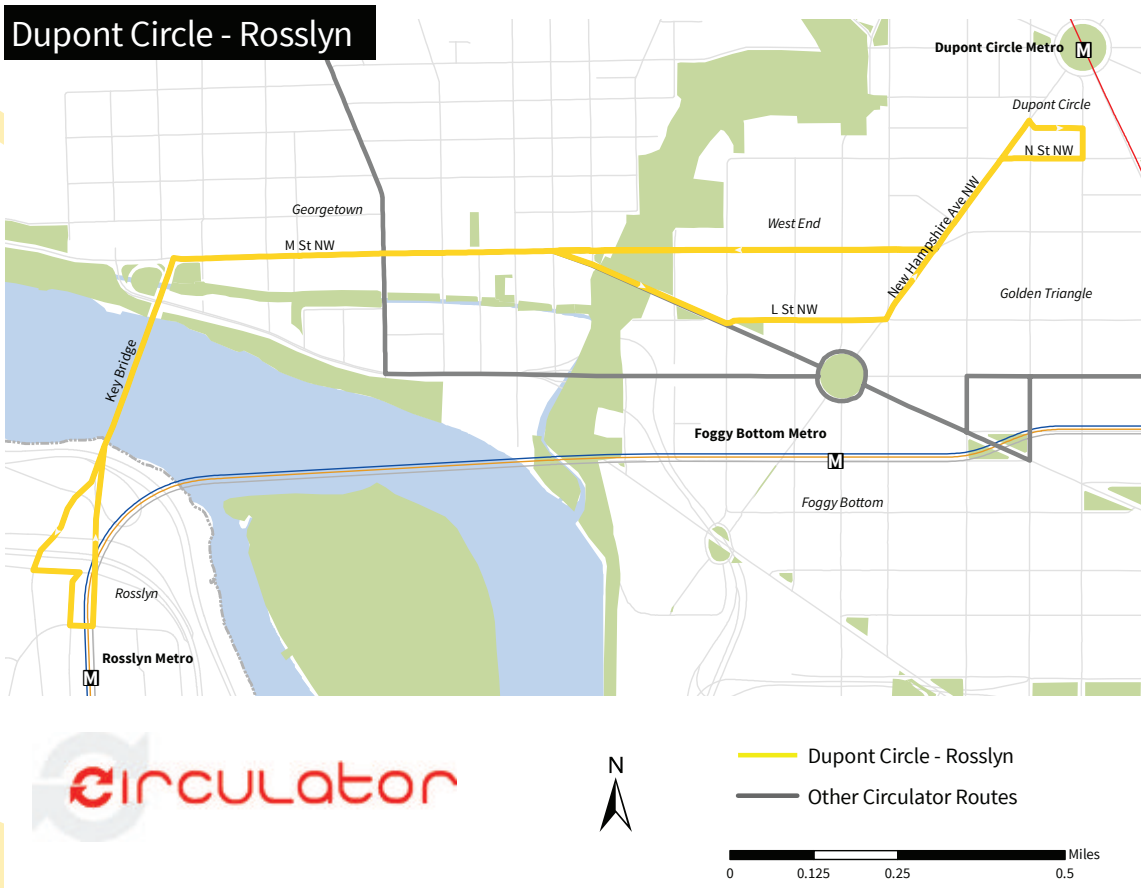
d. delivers

5.5.2 Dupont Circle – Georgetown – Rosslyn

Route Description

The Dupont Circle – Georgetown – Rosslyn Circulator provides unique service between Dupont Circle and Georgetown and between Georgetown and Rosslyn. This route connects one block short of Metrorail stations at each end in an attempt to shorten the route sufficiently to provide service with five buses and to avoid the congestion in Dupont Circle and the Rosslyn Station.

FIGURE 5-3 | DUPONT CIRCLE – ROSSLYN ROUTE



Findings

- On weekdays it serves a very commuter oriented market with strong peak-period demand that diminishes during off-peak periods.
- Weekend demand is particularly strong. Average Saturday ridership is 25 percent higher than daily weekday ridership, and average Sunday ridership represents a high proportion of daily weekday ridership. Georgetown and Dupont are major shopping, entertainment, and recreation destinations, which explains the strong weekend ridership.
- The route's ridership on weekdays falls in the middle of all Circulator routes.

Key Characteristics

Opened for Service: September 2010
Round-trip Route Length: 4.26 miles
Activity Centers Served: Dupont Circle; Foggy Bottom/West End; Georgetown/Lower Wisconsin
Days of Service: Daily
Span of Service:
7:00 am – 12:00 am (S-Th)
7:00 am – 2:00 am (Fri-Sat)
2013 Total Ridership: 895,248

Recommendations

- Actual running times are longer than scheduled, and as a result, actual headways average over 11 minutes, and up to 13 in the PM peak period. Consider deploying additional vehicles to achieve 10-minute headways.

TABLE 5-6 | DUPONT CIRCLE – GEORGETOWN – ROSSLYN OPERATIONAL PERFORMANCE MEASURES

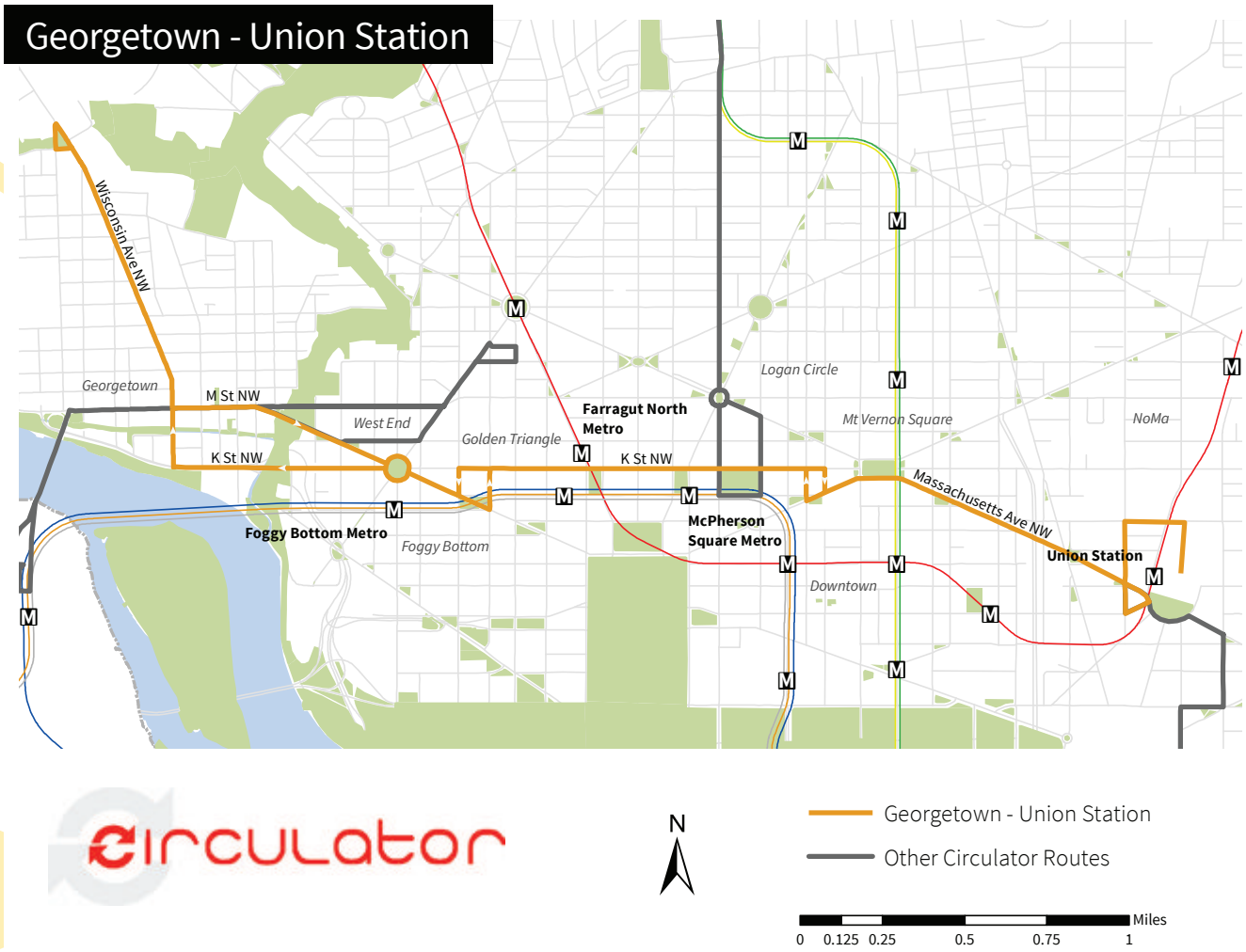
Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	81.35%	81.93%	82.64%	80.63%	↓	
Boardings per revenue hour	27	34	35	34	↑	
Cost per revenue hour	n/a	$82.11	$85.54	$89.59	↑	n/a
Subsidy per passenger	$2.77	$2.22	$2.32	$2.46	↓	
Farebox recovery ratio	21.00%	26.43%	25.76%	23.02%	↑	
Bus stops per mile	3.68 (EB) 3.83 (WB)	--	--	3.98 (EB) 4.50 (WB)	↑ ↑	
Complaints per 10,000 passengers	0.25	0.28	0.09	0.41	↑	
Preventable accidents per 10,000 revenue miles	0.66	0.14	0.36	0.38	↓	

5.5.3 Georgetown - Union Station

Route Description

The Georgetown – Union Station Circulator is the second longest DC Circulator route at 4.5 miles one way, and is the only bus route that runs along the entirety of the K Street NW Corridor from Wisconsin Avenue to Mount Vernon Square, and connects to Union Station via Massachusetts Avenue.

FIGURE 5-4 | GEORGETOWN – UNION STATION ROUTE



Findings

- Late night service (after midnight) on both weekdays and weekends is underutilized.
- On weekdays during peak periods, many trips are overcrowded and more frequent service is needed.
- On Saturdays during the middle of the day, many trips are overcrowded and more frequent service is needed.

Recommendations

- On weekends, and perhaps weekdays, ridership and development point towards extending service to Union Station until midnight.

Key Characteristics

Opened for Service: July 2005
Round-trip Route Length: 9.0 miles
Activity Centers Served: Central Washington; Georgetown / Lower Wisconsin; Foggy Bottom/ West End; Mt. Vernon Square; NoMa/FL-NY Ave Gateway
Days of Service: Daily
Span of Service:
7:00 am – 9:00 pm (Daily)
Additional Night Service between Whitehaven – McPherson Square Metro:
9:00 pm – 12:00 am (S-Th)
9:00 pm – 2:00 am (Fri-Sat)
2013 Total Ridership: 2,168,130

TABLE 5-7 | GEORGETOWN – UNION STATION OPERATIONAL PERFORMANCE MEASURES

Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	80.91%	84.32%	86.43%	83.66%	↑	
Boardings per revenue hour	32	31	31	34	↑	
Cost per revenue hour	$79.51	$78.43	$80.12	$89.17	↑	n/a
Subsidy per passenger	$1.91	$1.83	$2.06	$2.27	↑	
Farebox recovery ratio	25.17%	27.12%	27.05%	22.09%	↓	
Bus stops per mile	4.97 (EB) 5.73 (WB)	--	--	5.10 (EB) 4.79 (WB)	↑ ↓	
Complaints per 10,000 passengers	0.19	0.16	0.16	0.51	↑	
Preventable accidents per 10,000 revenue miles	0.60	0.17	0.50	0.45	↓	

ROUTE PROFILE

d. delivers

5.5.4 Potomac Ave – Skyland

Route Description

The Potomac Avenue – Skyland Circulator, the longest route in the system, provides convenient connections between Skyland, Naylor Gardens, Anacostia, and Eastern Market communities with the Washington Navy Yard and the Potomac Avenue, Eastern Market, and Anacostia Metrorail stations.

FIGURE 5-5 | POTOMAC AVE METRO – SKYLAND ROUTE

Findings/Recommendations

- The route ranks next to last among the DC Circulator routes in weekday and weekend ridership.
- Times of day demand patterns on this route are typical of routes that serve a large proportion of commuters, with higher demand during peak periods than during off-peak periods, illustrating that the activity centers on this route do not yet support all-day 10-minute service.
- Actual running times are too long for the route to provide the advertised 10 minute headways with the existing bus assignments, in some part due to the construction of the 11th Street Bridge and the overall length of the route.
- To a large extent, the route competes with, rather than complements WMATA service. The route operates along the same alignment as WMATA routes for most of its alignment.

Key Characteristics

Opened for Service: October 2011
Round-trip Route Length: 9.6 miles
Activity Centers Served: Penn Ave SE/ Eastern Market/Potomac Ave; Poplar Point; Anacostia; Skyland/Good Hope Rd & Alabama Ave SE
Days of Service: Weekdays (Saturday service during the Summer)
Span of Service:
Winter Hours (October 1 – March 31):
6:00 am – 7:00 pm (Weekdays)
Summer Hours (April 1 – September 30): 6:00 am – 9:00 pm (Weekdays);
7:00 am – 9:00 pm (Sat)
2013 Total Ridership: 466,430

Recommendations

- Consider deploying additional vehicles to achieve 10-minute headways to avoid long running times
- A short extension to Congress Heights Station could provide a much stronger southern anchor with transfer opportunities to Metrorail and other bus routes.
- Due to the route length, further study should be performed in the future to analyze the potential to split the route at Anacostia Metrorail station creating two shorter routes.

TABLE 5-8 | POTOMAC AVENUE – SKYLAND OPERATIONAL PERFORMANCE MEASURES

Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2011 Actual	Vs. Target
On-time performance (headways < 15 min)	n/a	72.20%	71.89%	66.23%	↓	
Boardings per revenue hour	n/a	10	16	21	↑	
Cost per revenue hour	n/a	$90.74	$97.10	$105.04	↑	n/a
Subsidy per passenger	n/a	$8.44	$5.67	$4.67	↓	
Farebox recovery ratio	n/a	4.95%	7.96%	8.83%	↑	
Bus stops per mile	n/a	--	--	2.45 (NB) 2.98 (SB)		
Complaints per 10,000 passengers	n/a	0.35	0.05	0.13	↓	
Preventable accidents per 10,000 revenue miles	n/a	0.65	0.28	0.48	↓	

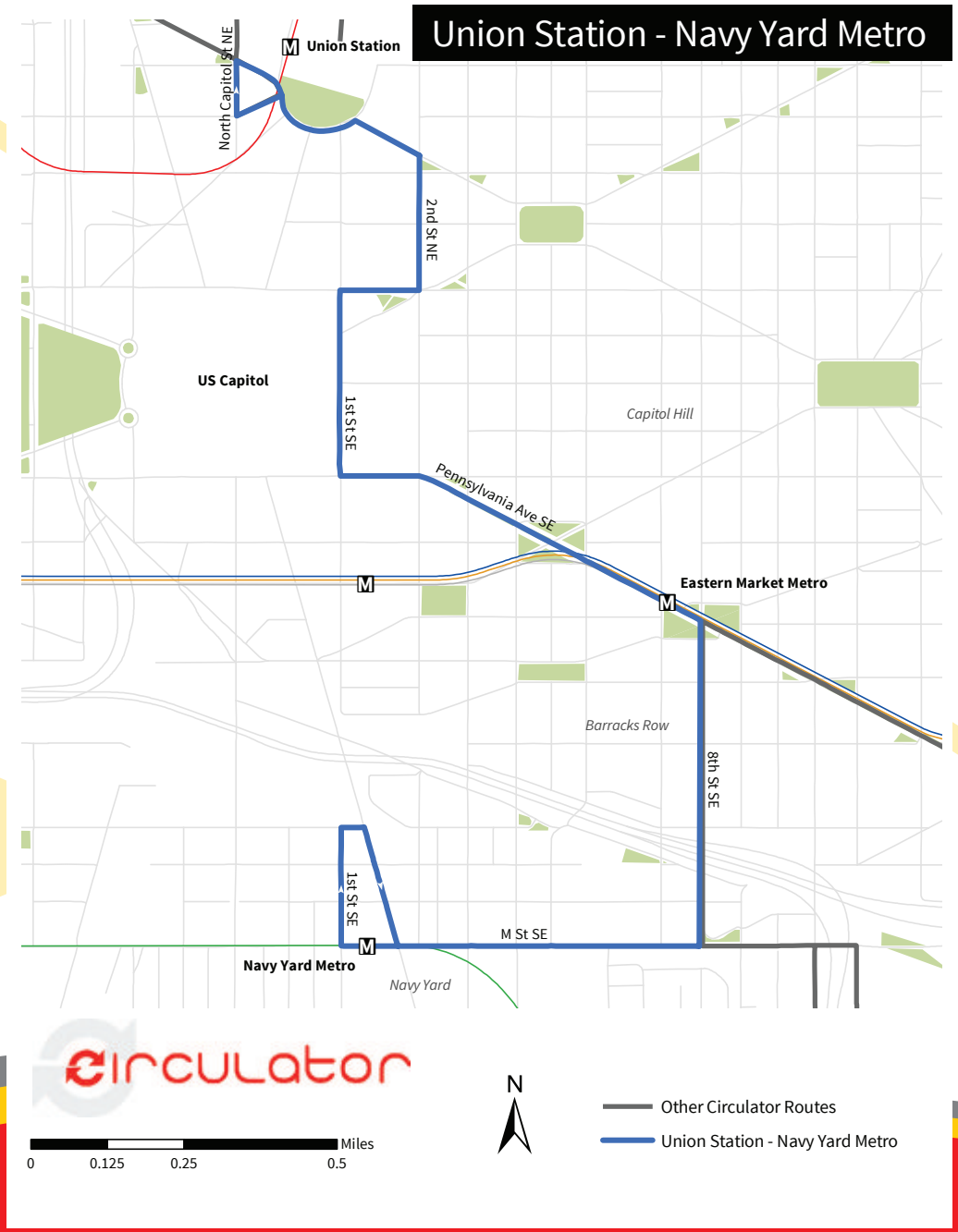
**The 2011 data reflects three months of service, as the Potomac Ave Metro-Skyland route began operations in October 2011.*

5.5.5 Union Station – Navy Yard

Route Description

The Union Station – Navy Yard Circulator operates between Union Station and the developing Navy Yard that includes Nationals Park. First Street, between Columbus Circle and Constitution Avenue, is closed for national security purposes forcing the bus to take a circuitous route between Union Station and Eastern Market.

FIGURE 5-6 | UNION STATION – NAVY YARD METRO ROUTE



Findings

- This route has the lowest ridership of all the Circulator routes and the majority of the existing ridership is during the peak periods illustrating that the activity centers on this route do not yet support all-day 10-minute service.
- The route carries significantly fewer riders per hour than the system average of 32 and below the TDP established performance goal of 20 boardings per hour. The fact that the same trip can be made via Metrorail in less time likely plays a role in this, and in reducing overall ridership.
- Actual running times are longer than scheduled, and as a result, actual headways average 11 minutes rather than the advertised 10. Traffic congestion around Union Station contributes to this issue.
- The number of stops per mile on this route have grown significantly since 2010. This may contribute to the running-time issues that result in poor headway adherence.
- The Union Station-Navy Yard schedule (day of week) and span (hours each day) are inconsistent varying both seasonally and by day of week. This type of service is less attractive to potential riders due to the inherent lack of convenience and could be a factor in the low ridership on this route.

Key Characteristics

Opened for Service: March 2009
Round-trip Route Length: 5.9 miles
Activity Centers Served: NoMa/FL-NY Ave Gateway; Penn Ave SE/Eastern Market/Potomac Ave; Capitol Riverfront/S Cap Corridor/Near SE/ Buzzard Pt.
Days of Service: Weekdays (Saturday service during the Summer)
Span of Service: Winter Hours (October 1 – March 31): 6:00 am – 7:00 pm (Weekdays) Summer Hours (April 1 – September 30): 6:00 am – 9:00 pm (Weekdays); 7:00 am – 9:00 pm (Sat)

*Extended service on Nationals game days

2013 Total Ridership: 454,893

Recommendations

- Consider deploying additional vehicles to achieve 10-minute headways or modifying the termini at Union Station to avoid congestion and reduce trip times as a result.

TABLE 5-9 | UNION STATION – NAVY YARD OPERATIONAL PERFORMANCE MEASURES

Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	76.36%	75.88%	86.40%	81.01%	↑	
Boardings per revenue hour	16	18	19	18	↑	
Cost per revenue hour	$84.83	$84.25	$89.11	$94.95	↑	n/a
Subsidy per passenger	$4.21	$4.02	$4.09	$4.61	↑	
Farebox recovery ratio	12.67%	13.46%	12.56%	9.46%	↓	
Bus stops per mile	2.97 (NB) 2.96 (SB)	--	--	4.33 (NB) 4.48 (SB)	↑ ↑	
Complaints per 10,000 passengers	0.32	0.72	0.42	0.91	↑	
Preventable accidents per 10,000 revenue miles	0.55	0.06	0.42	0.07	↓	

ROUTE PROFILE

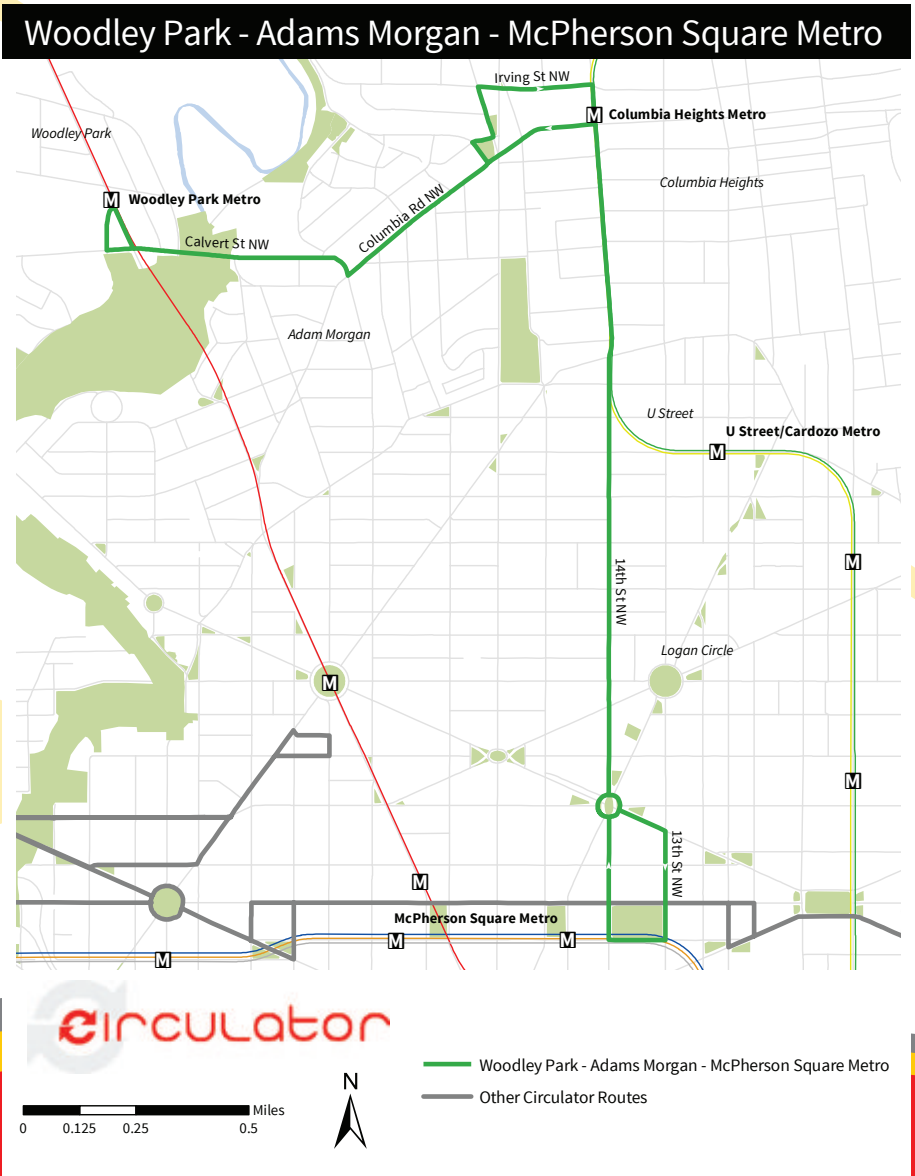
d. delivers

5.5.6 Woodley Park – Adams Morgan – McPherson Square Metro

Route Description

The Woodley Park – Adams Morgan – McPherson Square Metro bus route provides a link from the convention hotels and apartments at Woodley Park to the neighborhoods and nightlife attractions of Adams Morgan and Columbia Heights to the McPherson Square Metro station and the surrounding employment destinations along K Street NW. This predominantly north-south route also serves the 14th Street neighborhoods. In addition to providing a residential-to-employment connection, the route offers valuable connections between three Metrorail stations serving all five Metrorail lines. In addition, the bus stops along K Street offer a transfer opportunity to the Georgetown-Union Station route.

FIGURE 5-7 | WOODLEY PARK – ADAMS MORGAN – MCPHERSON SQUARE METRO ROUTE



Findings

Key Characteristics

Opened for Service: March 2009
Round-trip Route Length: 6.7 miles
Activity Centers Served: Adams Morgan; Central Washington; Columbia Heights; Shaw/ Howard University/14th & U
Days of Service: Daily
Span of Service: 7:00 am – 12:00 am (S-Th) 7:00 am – 3:30 am (Fri-Sat)
2013 Total Ridership: 1,633,134

- Since beginning service in 2009, the route has become the second most popular service in the Circulator system.
- The Woodley Park – Adams Morgan – McPherson Square Circulator duplicates WMATA service for much of length (along 14th Street). However, it attracts very high ridership and is very productive, which indicates that there is strong demand for the premium service that DC Circulator provides, a significant part of which is the limited stop service that provides faster service at a lower price than WMATA's Metrobus Routes 52, 53, and 54.
- Actual running times are longer than scheduled, and as a result, actual headways average 13 minutes rather than the advertised 10.
- Overcrowding, or near overcrowding, on occasional trips southbound in the AM peak period and northbound in the PM peak period on weekdays, and in the PM peak periods on Saturdays.

Recommendations

- Consider deploying additional vehicles to achieve 10-minute headways which will address longer running times and address the overcrowding problems

TABLE 5-10 | WOODLEY PARK – ADAMS MORGAN – MCPHERSON SQUARE METRO OPERATIONAL PERFORMANCE MEASURES

Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	71.67%	83.79%	77.79%	76.99%	↑	
Boardings per revenue hour	38	42	45	44	↑	
Cost per revenue hour	$80.83	$80.16	$87.58	$94.51	↑	n/a
Subsidy per passenger	$1.59	$1.29	$1.39	$1.56	↓	
Farebox recovery ratio	25.75%	32.53%	32.36%	27.57%	↑	
Bus stops per mile	2.36 (NB) 2.36 (SB)	--	--	2.81 (NB) 2.57 (SB)	↑ ↑	
Complaints per 10,000 passengers	0.12	0.07	0.10	0.25	↑	
Preventable accidents per 10,000 revenue miles	0.32	0.17	0.42	0.44	↑	

TABLE 5-11 | SUMMARY OF 2013 CIRCULATOR ROUTE OPERATIONAL PERFORMANCE

	On-time performance	Boardings per revenue hour	Cost per revenue hour	Subsidy per passenger	Farebox recovery ratio	Bus stops per mile	Complaints per 10,000 passengers	Preventable accidents per 10,000 revenue miles
Route	Actual (Target: 80%)	Actual (Target: 20)	Actual (Target: n/a)	Actual (Target: $2.75)	Actual (Target: 25%)	Actual (Target: >3 & <4)	Actual (Target: 0.2)	Actual (Target: 0)
System	79.53%	32	$95.06	$2.48	19.81%	3.76	0.51	0.39
Dupont Circle - Georgetown - Rosslyn	80.63%	34	$89.59	$2.46	23.02%	3.98 (EB) 4.50 (WB)	0.41	0.38
Georgetown - Union Station	83.66%	34	$89.17	$2.27	22.09%	5.10 (EB) 4.79 (WB)	0.51	0.45
Potomac Ave Metro - Skyland via Barracks Row	66.23%	21	$105.04	$4.67	8.83%	2.45 (NB) 2.98 (SB)	0.13	0.48
Union Station - Navy Yard Metro	81.01%	18	$94.95	$4.61	9.46%	4.33 (NB) 4.48 (SB)	0.91	0.07
Woodley Park - Adams Morgan - McPherson Square Metro	76.99%	44	$94.51	$1.56	27.57%	2.81 (NB) 2.57 (SB)	0.25	0.44

5.6 Circulator Costs 2011-2013

In addition to performance metrics, DDOT examined the total system cost of the DC Circulator system between 2011 and 2013. Operating costs grew from $15.9 million in 2011 to $17.1 million in 2013, with annual increases of 2.2 percent in 2012 and 5.2 percent in 2013 and a total increase of 7.6 percent over the three year period. Each route has seen modest increases in operating costs over the three year period, with the largest increase (11.2 percent) on the Woodley Park – Adams Morgan – McPherson Square Metro route and the smallest increase (1.5 percent) on the Dupont Circle – Georgetown – Rosslyn route. In 2013, the Georgetown – Union Station route comprised the largest share of the system operating costs (36.8 percent), followed by the Woodley Park – Adams Morgan – McPherson Square Metro route (20.2 percent). The remaining routes each comprised 13.4 percent to 15.8 percent of the system operating costs. Transit costs vary considerably from one route to the next due to the number of

vehicles deployed and the service hours provided. This is why some routes have seen a greater percentage increase in cost than others between 2011 and 2013.

Each route has seen increases in cost per revenue hour over the three year period, with the largest increase (16.9 percent) on the Woodley Park – Adams Morgan – McPherson Square Metro route and the smallest increase (9.1 percent) on the Dupont Circle – Georgetown – Rosslyn route. In 2013 the Potomac Ave Metro – Skyland route had the highest cost per revenue hour ($105.04), followed by Union Station – Navy Yard ($94.95) and Woodley Park – Adams Morgan – McPherson Square ($94.51). The Georgetown – Union Station route had the lowest cost per revenue hour ($89.17), an indication that it is the most productive, yet cost effective, route in the system. Dupont – Georgetown – Rosslyn was only slightly higher at $89.59 per revenue hour. The system-wide cost per revenue hour has increased by 14.3 percent over the three year period, from $83.20 in 2011 to $95.06 in 2013. The system's total revenue hours has actually declined slightly, by 2-3 percent each year, from 2011 to 2013. The increased cost per revenue hour is a factor of annual increases in DDOT's contract rate with WMATA for their management support with the private operator each year. Additional details related to costs can be found in **Appendix E**.

5.7 Key Findings

- The DC Circulator's most successful routes (Georgetown-Union Station, Woodley Park-Adams Morgan-McPherson Square, and Dupont Circle-Georgetown-Rosslyn) are also those that are best aligned with the Circulator brand. All three routes serve dense activity centers that are able to support multiple trip purposes throughout the day.
  - These three routes all successfully meet the targets for boardings per revenue hour, subsidy per passenger, and farebox recovery ratio.
  - Georgetown-Union Station and Woodley Park-Adams Morgan-McPherson Square have the lowest costs per revenue hour.
- The DC Circulator's least successful routes (Union Station-Navy Yard Metro and Potomac Ave Metro-Skyland) have high subsidies per passenger and low farebox recovery ratios.

- At the system level, the DC Circulator meets the targets for four of its seven performance measures: on-time performance, boardings per revenue hour, subsidy per passenger, and bus stops per mile. Areas for improvement include the DC Circulator's farebox recovery ratio, complaints per 10,000 passengers, and preventable accidents per 10,000 revenue miles.
- All routes met the metric for on-time performance (80 percent of arrivals with headways under 15 minutes) in 2013 except for the Potomac Ave Metro-Skyland route.
- All routes met the target for bus stops per mile in 2013 except for the Georgetown-Union Station route.
- System-wide operating costs per revenue hour increased 6 percent to 7 percent annually from 2011 to 2013 (although no target has been developed for this performance measure it is worth noting).
  - Georgetown-Union Station, Dupont – Georgetown – Rosslyn, and Woodley Park-Adams Morgan-McPherson Square had the lowest costs per revenue hour in 2013, while Potomac Ave Metro-Skyland had the highest.
- The original fleet is showing wear on interiors and minor body damage. As the fleet continues to age, maintenance costs will rise and more vehicles will be out of service for repair.

5.8 Opportunities for Improving the Existing System

The system evaluation identified several opportunities to improve the DC Circulator. Improvements were identified based on performance data and/or input from stakeholders and the community.

Deploy Additional Vehicles to Meet Service Commitment. All of the existing routes are operating running times that are longer than scheduled, particularly in the peak periods, and customers are not experiencing the advertised 10 minute headways on these routes. At least one additional vehicle needs to be deployed on all routes to meet the DC Circulator's commitment to no more than 10 minute headways. Doing so will increase operating costs per revenue hour as well as capital costs and potentially lower the farebox recovery ratio until such time as ridership increases to offset the additional costs.

Bus stop consolidation. Consolidate bus stops on routes to meet the limited-stop guidelines (3 – 4 stops per mile). Doing so may improve productivity, running time, and reliability, particularly for low boarding/alighting stops within close proximity. Bus stop consolidation will only provide small improvements along routes that face high traffic congestion (e.g., Georgetown – Union Station).

Relocate bus stop locations for Circulator at Union Station. Relocate the final Georgetown – Union Station bus stop location from the Union Station parking deck to Columbus Circle or a nearby on-street location easily accessible to riders coming to and from Union Station. Stop and transfer locations in the parking deck at Union Station are inconvenient, remote, and essentially invisible unless a rider already knows about them. Efforts at wayfinding signage in Union Station attempt to address this, but the stop is far from the Metro station and signage is sparse. The stops adjacent to Columbus Circle are already the busiest boarding and alighting point for two Circulator routes (Georgetown – Union Station and Union Station – Navy Yard). Dedicating space for the DC Circulator adjacent to First Street, NW, outside of the Union Station Metro Rail Station could be considered as an alternative location. Circulator buses would then only utilize the parking deck as a layover location for the route.

Promote a system-wide core service standard. Currently the routes vary in terms of the span of service and days of service. Each DC Circulator route has

unique days and hours of operation. Anecdotal evidence indicates that some people have waited at Circulator bus stops unaware that the service was not running. However, all of the existing routes operate at least from 7 a.m. to 7 p.m. on weekdays. In an effort to enhance the Circulator's brand of "simple" and "easy to understand," DDOT should consider promoting and marketing these core service hours systemwide, and then conduct additional marketing to assist current and potential passengers in understanding the evening and weekend variations among routes. Span of service and days of service information appropriate for each route should also be provided at Circulator bus stops and via smartphone apps.

Evaluate Changes to Schedule and Span. As development occurs in the District at a rapid pace opportunities arise to expand or adjust the span on multiple routes. An analysis of boardings and alightings revealed that service on the Georgetown – Union Station route should likely start earlier based on demand and end at midnight. In addition, growth in the Capitol Riverfront area may now support year-round Saturday service and year-round evening service beyond 7pm. A pilot study in coordination with advanced marketing could reveal if the growth in this area is ready to support additional service on the Union Station – Navy Yard route.

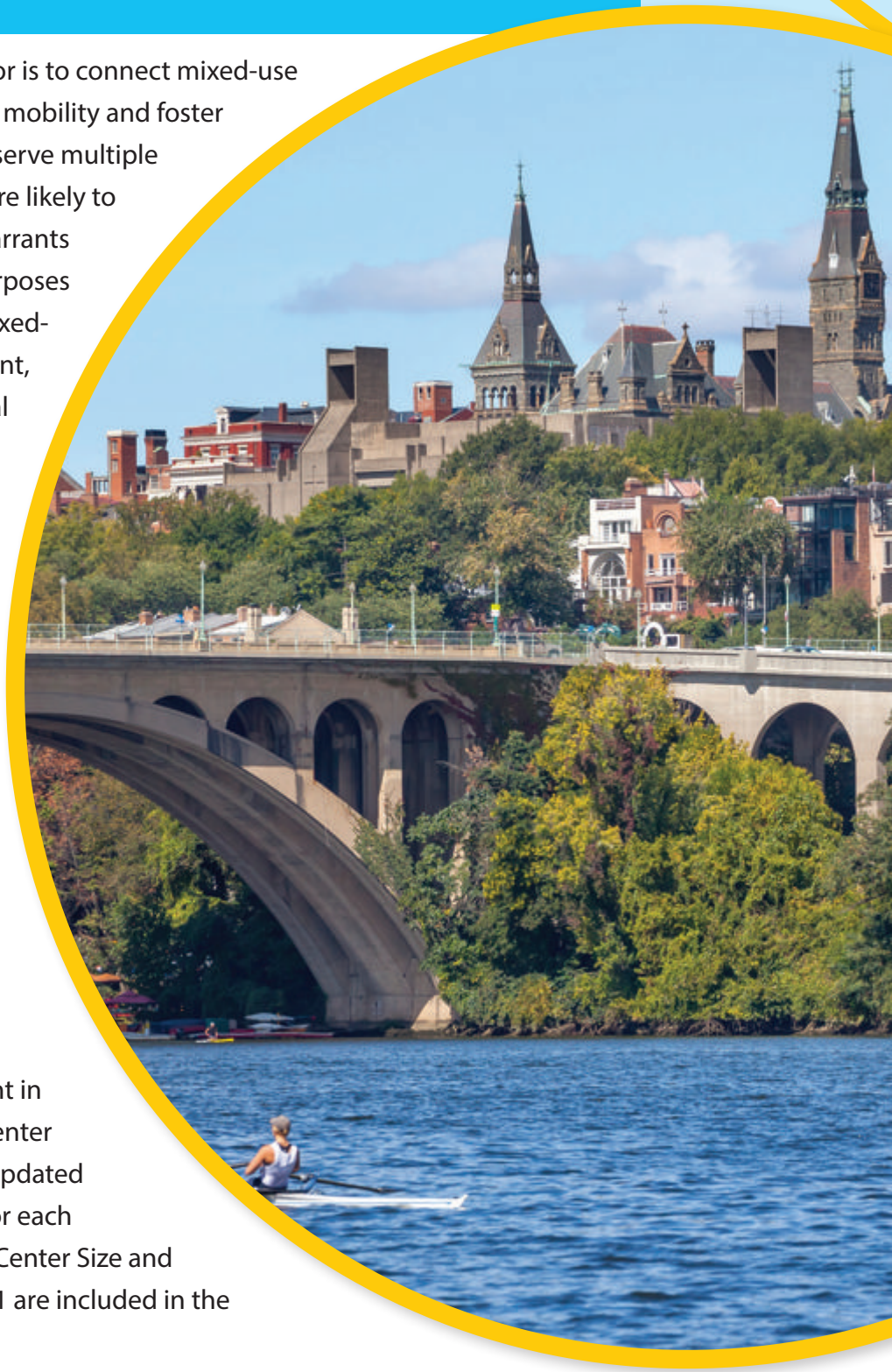
Consider options to adapt to underutilization. A limited number of markets in the District can support a headway of 10 minutes for large portions of the day. Some of the existing routes experience low ridership during non-peak periods including the mid-day, evenings, and weekends. DDOT might consider options to adapt to these periods of underutilization, such as modifying the current 10-minute headway policy to allow for variable headways that would better match demand, converting DC Circulator routes to WMATA non-regional routes, or creating different levels of Circulator service that are branded differently.

Deploy Priority Bus Treatments. Priority transit treatments are needed along these routes to significantly improve reliability. These might include transit signal priority, bus only lanes (both permanent and peak only), queue jump lanes at key congestion hotspot locations, re-timing of key intersection signals and prioritized parking enforcement. For more detail, see **Section 12.1**.

6

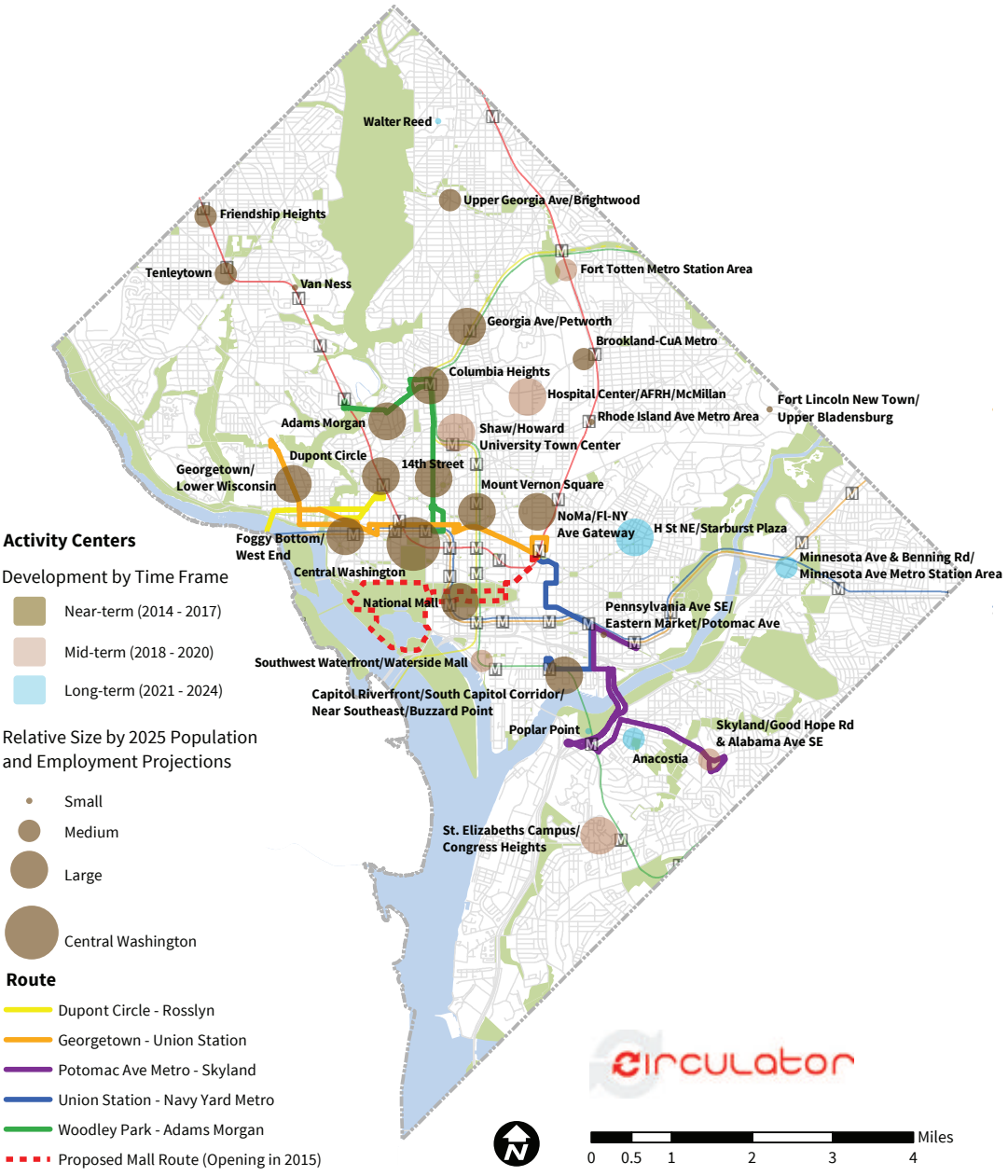
Activity Center Analysis

One of the goals of the DC Circulator is to connect mixed-use activity centers in order to improve mobility and foster economic activity. Activity centers serve multiple trip purposes and are therefore more likely to generate ridership demand that warrants all-day frequent service. For the purposes of this study, activity centers are mixed-use centers that include employment, residences, recreational and cultural uses, and retail activities. The evaluation of activity centers is defined in **Table 7-3**.



For the TDP Update, DDOT reassessed all activity centers to determine if their size and growth have changed since 2011, or is expected to change within five to ten years. DDOT reviewed the *DC Comprehensive Plan*, which was amended in 2011 following completion of the DC Circulator TDP. DDOT planners and business improvement district partners also reviewed current and planned land uses and development in the District to update the activity center analysis. **Figure 6-1** illustrates the updated size and development timeframe for each activity center. Changes in Activity Center Size and Development Timeframe since 2011 are included in the **Appendix C**.

FIGURE 6-1 | ACTIVITY CENTERS CONSIDERED FOR CIRCULATOR SERVICE



6.1 Activity Center Connections

After updating the activity centers, DDOT evaluated the existing transit connections between them to identify transit needs and avoid duplication of existing service. A matrix of existing rail and high-frequency, all-day bus connections between activity centers can be found in the **Appendix A**. The results of this transit connections analysis were used in screening potential expansion corridors. Since DDOT aims to avoid duplicating service unless there is a need for additional capacity, corridors that already experience all day, frequent service through Metrobus or Metrorail were weaker candidates for DC Circulator service. Where DDOT identified gaps in transit connections between activity centers, the corridors were considered as candidates for new DC Circulator routes or extensions of existing routes.

7

Corridor Evaluation & Expansion Recommendations

DDOT utilized the results of the activity center update described in **Chapter 6** to evaluate potential new corridors for DC Circulator service. An initial list of potential expansion corridors and route extensions was developed based on:

- Review of the recommended corridors in the 2011 TDP.
- Gaps identified among the activity center connections.
- Inputs from existing DDOT and WMATA transit service studies.
- Planned future premium transit investment, such as the Metro Extra and the DC Streetcar.
- Suggestions from the DC Council, Circulator riders, and the public.

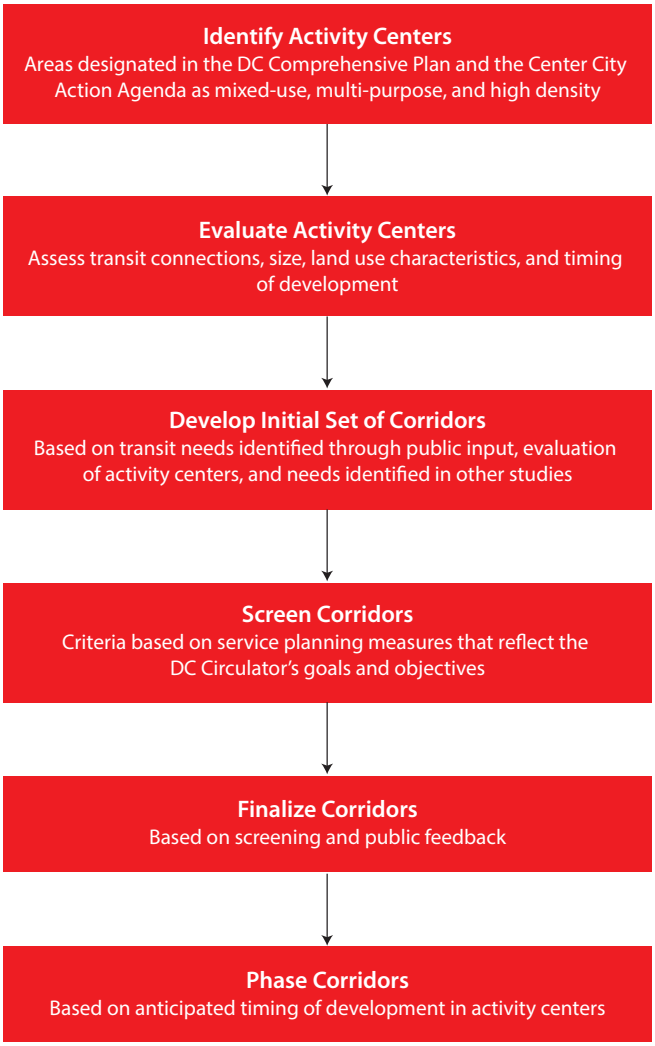
These corridors were screened based on service planning measures that reflect the DC Circulator's goals and objectives described in **Chapter 3** and summarized again in **Figure 7-1**. After this screening process, DDOT finalized the recommended corridors for the TDP update based on stakeholder and public feedback. The methodology by which the initial corridors were identified, evaluated, and screened down to a reduced set of recommended corridors for future expansion is depicted in **Figure 7-2** on the following page.

FIGURE 7-1 | DC CIRCULATOR PLANNING CRITERIA FOR EVALUATING GROWTH CORRIDORS

PLANNING CRITERIA FOR EVALUATING GROWTH CORRIDORS

- Number of activity centers served
- Size of activity centers served
- Variety of land uses at activity centers served
- Timing of development in activity centers served
- Link to other non-auto transportation modes
- Complement existing transit options
- Connections between the National Mall and activity centers
- Number of visitor destinations served

FIGURE 7-2 | DC CIRCULATOR PLANNING



7.1 Potential Expansion Corridors

The development of potential corridors for future DC Circulator service is a key component of the TDP process. Over the past three years, the DC Circulator's positive reputation has led to numerous requests for new service in many parts of the city. However, there are a limited number of corridors in which Circulator service – supporting ten-minute frequency all day, six or seven days per week,

limited stops, and an understandable route structure – can be provided in a cost effective-manner. In addition, the District is already served by a dense network of transit services, including both high-frequency and limited stop Metrobus service (Metro Extra Service) and Metrorail. In some cases the best approach may be to introduce Metro Extra service to a corridor to meet the demand for more service during the peak periods, in advance of all day Circulator service. As part of the planning process, DDOT endeavors to avoid duplicating service unless there is a need for additional capacity or the Circulator can serve a unique purpose in the corridor.

It should also be noted that the phasing of recommended corridors reflects additional factors including equity considerations, Council recommendations and requirements , and matters related to overall funding and fleet availability. As a result of these other considerations, recommendations for the phasing of corridors may not match the phasing of activity centers and some resources may not be allocated to areas of highest need.

Table 7-1 lists alphabetically the potential expansion corridors and route extensions that were screened and evaluated against the DC Circulator's planning criteria.

TABLE 7-1 | LIST OF POTENTIAL EXPANSION CORRIDORS IDENTIFIED FOR EVALUATION (IN ALPHABETICAL ORDER)

Adams Morgan – H Street NE	Georgetown – Union Station Extension to National Cathedral
Anacostia – Congress Heights via Skyland	Lincoln Memorial – U Street/Howard University
Columbia Heights – Washington Hospital Center – Brookland – NoMa	Minnesota Avenue – Skyland
Convention Center – Southwest Waterfront	National Cathedral – McPherson Square (Overlap with Shortened Georgetown - Union Station)
Dupont Circle – Georgetown – Rosslyn Extension to U St/ Howard University	National Mall
Dupont – Georgia Ave/Petworth	Anacostia Metro Station – Congress Heights Metro Station
Dupont – Southwest Waterfront	St. Elizabeth's Campus/Congress Heights – H Street NE
Dupont – U Street/Howard University	Tenleytown – Silver Spring
Eastern Market – Anacostia	Tenleytown – Van Ness – Columbia Heights
Fort Totten – Friendship Heights	Union Station – Navy Yard Extension to Southwest Waterfront
Fort Totten – Union Station via NoMa	

This phase of the analysis focused on evaluating potential corridors against the DC Circulator's service planning measures, taking into account stakeholder and public input. The detailed results of the evaluation of expansion corridors can be found in the **Appendix F**. DDOT also took into consideration operational issues including route length and directness in evaluating route options for the final set of corridors. However, more detailed route planning, as well as targeted public outreach, will be completed before specific routings for the recommended connections above are planned and implemented. The final corridors were selected based on the evaluation of the corridors using the planning criteria and the results of the semi-annual forum, stakeholder outreach, six pop-up events, and an online survey.

The majority of corridors reviewed do not meet Circulator service criteria in the mid or long-term. Many of these corridors are already served by existing high frequency transit service, or do not have a sufficient mix of land uses and population/employment growth to justify Circulator service (and may be better served by Metrobus). The reasons for not recommending these corridors are further described in **Table 7-2**.

TABLE 7-2 | CORRIDORS NOT MEETING CIRCULATOR SERVICE CRITERIA

Corridor	Justification
Adams Morgan – H St NE	Streetcar service on H Street NE is set to be introduced in 2014. This corridor is also served by the Metrobus 90s routes that make this connection.
Dupont – Georgia Ave/Petworth	Metrobus 79 already provides all day, limited-stop service, six days a week, on Georgia Avenue. In addition, the Georgia Ave/Petworth activity center does not generate strong all-day demand. There is limited demand for people to travel to this activity center during the morning peak and midday. A lower frequency Metrobus service between the two activity centers to gauge demand should be considered prior to implementing Circulator.
Dupont – U Street/Howard University	Served through Dupont – Georgetown – Rosslyn Extension to U St/Howard University, instead of standalone route, to provide a one-seat ride over the length of the route.
Eastern Market – Anacostia Metro Station	This route was evaluated as part of an analysis examining the potential to split the existing Potomac Ave – Skyland Route into two routes. The analysis revealed that this shorter route would experience lower ridership as it would connect fewer activity centers. However, it is assumed that on-time performance would improve and fewer missed trips would occur during the day as a result of the shorter route length.
Fort Totten – Friendship Heights	Duplicates Metrobus E Line, which already provides all day frequent service during the week and 20 minute frequencies during the weekend. Service modifications to the E service being considered by WMATA should be implemented to improve service. Consideration for a Metro Extra Service during peak hours was evaluated in the study. In addition, the Fort Totten activity center does not offer a strong variety of land uses as an anchor.
Fort Totten – Union Station via NoMa	Duplicates Metrorail Red Line and overlaps with the Metrobus 80 Line. In addition, the Fort Totten activity center does not offer a strong variety of land uses as an anchor.
Lincoln Memorial – U Street/Howard University (Abe to Ben's)	Metrobus already provides service in this corridor. The area south of Foggy Bottom, near the Lincoln Memorial, does not generate strong all-day demand. The limited demand better fits 20 minute headway Metrobus service, which the H1 route currently provides from Adams Morgan to the State Department. Rerouting the H1 could be studied in the future once the National Mall Route is established to gauge demand prior to implementing a Circulator. In addition, this route would duplicate a larger section of the Dupont Circle – Georgetown – Rosslyn route and its proposed extension to U St/Howard University.
Minnesota Avenue – Skyland	Only connects two activity centers that do not have a strong mix of uses and thus does not provide sufficient demand for all-day, 10-minute bus service. Duplicates a corridor with frequent Metrobus service. Partial duplication by proposed Streetcar Phase 3.
Anacostia Metro Station – Congress Heights Metro Station	This route was evaluated as part of an analysis examining the potential to split the existing Potomac Ave – Skyland Route into two routes. The analysis revealed that this shorter route would experience lower ridership as it would connect fewer activity centers. However, it is assumed that on-time performance would improve and fewer missed trips would occur during the day as a result of the shorter route length.
St. Elizabeth's Campus/ Congress Heights – H St NE	Streetcar service on H Street NE is set to be introduced in 2014. This corridor is also served by the Metrobus 90s routes. Among low scoring corridors when evaluated against service planning criteria.
Tenleytown – Silver Spring	Duplicates Metrobus E Line for a significant portion of the route on Military Road. Does not generate enough demand to support all day 10 minute headway. Among low scoring corridors when evaluated against service planning criteria. Service modifications to the E service being considered by WMATA should be implemented to improve service.
Tenleytown – Van Ness – Columbia Heights	Duplicates Metrobus H Line. Does not generate enough demand to support all day 10 minute headway according to the Metrobus Service Evaluation Study of the H Line.

7.2 Summary of Corridor Evaluation and Corridor Recommendations

The evaluation of potential expansion corridors for DC Circulator service involved both quantitative and qualitative analyses. The corridor profiles in this section summarize this evaluation, and describe the characteristics and possible operational requirements of the corridors recommended for development.

Photo by Sam Kittner Photography

The identified corridors and recommendations are based on current projections of demographic and economic development patterns in the District based on the analysis in **Chapter 6**. However, long-term planning requires continuous re-evaluation of current land use patterns to ensure that new routes and service changes meet the needs of District residents, workers, and visitors. As described in **Chapter 11**, DDOT will update the ten-year plan every three years and re-evaluate recommendations as land use patterns change and new activity centers emerge.

Additionally, all recommendations for new routes and route extensions must undergo further more detailed operations analysis to evaluate the viability of the route to ensure that it can meet the Circulator standards. Factors such as traffic congestion, roadway width, parking, turning radius, and potential layover locations may ultimately render a route or extension infeasible as currently proposed.

The following corridor profiles analyze each corridor, including their proposed extensions, against service planning measures (SPMs) in Table 7-3 that evaluate the effectiveness of the route in achieving Circulator Service Planning Goals 3 and 4 described in **Chapter 3**. As a reference, Goal's 3 and 4 are restated here:

- Goal 3: Promote economic activity in existing and developing activity centers and support a transit-oriented lifestyle.
- Goal 4: Improve mobility within and access to and from the monumental core.

TABLE 7-3 | SERVICE PLANNING MEASURES AND TARGETS

Planning Measure	2011 TDP Targets	Evaluation Measure	Goal the Measure Addresses
Number of activity centers served	3+ Per Route	Low: 0 to 2 activity centers served Medium: 3 activity centers served High: 4 or more activity centers served	Goal 3
Size of activity centers served	At least one large or medium	Low: Only one medium or small activity center served. Medium: At least one large activity center; or one medium and one small activity center served High: At least one large and one medium activity center existing at the time	Goal 3
Variety of land uses at activity centers served	High density with at least four uses	Low: Activity centers served lack a mix of land uses that support multiple trip purposes. Medium: Activity centers served have some variety of land uses that support multiple trip purposes. High: Activity centers served have a diverse variety of land uses that supports multiple trip purposes.	Goal 3
Timing of development in activity centers served	None	Low: Serves 0 to 1 near-term activity centers Medium: Serves 2 to 3 near-term activity centers High: Serves 4 or more near-term activity centers	Goal 3
Complement existing transit options	Connect major activity centers without duplication	Low: Does not create new one-seat connections between activity centers served. Medium: Greatly enhances one-seat connections between activity centers served. High: Creates a new one-seat connection between activity centers served.	Goal 3
Link to other non-auto transportation modes	Connect Metrorail stations	Low: 0 to 1 connections to Metrorail stations. Frequent Metrobus service through less than 2 activity centers. Lack of frequent transit service for the majority of the route. Medium: 2 to 3 connections to Metrorail stations. Frequent Metrobus service through 2 to 3 activity centers. High: 4 or more connections to Metrorail stations. Frequent Metrobus service through 4 or more activity centers	Goal 3
Connections between National Mall and Activity Centers	NA	Low: 0 connections made between National Mall/monumental core and existing activity centers Medium: 1 connection made between National Mall/monumental core and existing activity centers High: 2 or more connections made between National Mall/monumental core and existing activity centers	Goal 4
Number of visitor destinations served	At least four destinations	Low: 0 to 1 visitor destinations served Medium: 2 to 3 visitor destinations served High: 4 or more visitor destinations served	Goal 4

7.3 Corridor Profiles for Recommended Corridors

The following section provides a profile for each of the recommended corridors or extensions and a summary table with key metrics is provided in **Section 7.3.10.** It should be noted however that the 2011 TDP developed planning measures and performance measures for new routes, not extensions. As a result for some of the profiles in this section the extension may be described in the beginning, but the analysis that follows is for the entire route, the existing route *plus* the extension.

As a result of the corridor screening summarized in **Section 7.1**, the following corridors, listed in alphabetical order, are carried forward to phasing, the final step in the Circulator planning process illustrated in **Figure 7-2**:

- Columbia Heights – Washington Hospital Center – Brookland – NoMa (new route)
- Convention Center – Southwest Waterfront (new route)
- Dupont Circle – Georgetown – Rosslyn Extension to U Street/Howard University
- Dupont – Southwest Waterfront (new route)
- National Mall Route (new route)

In addition, the following extensions, though they are expected to fall short of several key Circulator performance metrics, are also carried forward into phasing as they have been funded by the DC Council:

- Georgetown-Union Station Extension to National Cathedral
- Potomac Avenue Metro - Skyland Extension to Congress Heights
- Union Station - Navy Yard Extension to Southwest Waterfront

Additionally, there are two new routes that fall under neither of these categories category:

- National Cathedral - McPherson Square Metro via K Street (new route)
- Service to NoMa (new route)

The new route from National Cathedral to McPherson Square Metro via K Street will operate in concert with a modification to the National Cathedral to Union Station route that will be truncated in Georgetown. The new route will operate between the National Cathedral and McPherson Square Metrorail Station and the truncated route will operate between Georgetown and Union Station, depicted in **Figure 7-7** later in this chapter. As a result they will overlap between Georgetown and the McPherson Square Metrorail Station, a segment that currently experiences overcrowding during peak times. The two shorter routes will be able to operate more efficiently with improved on-time performance.

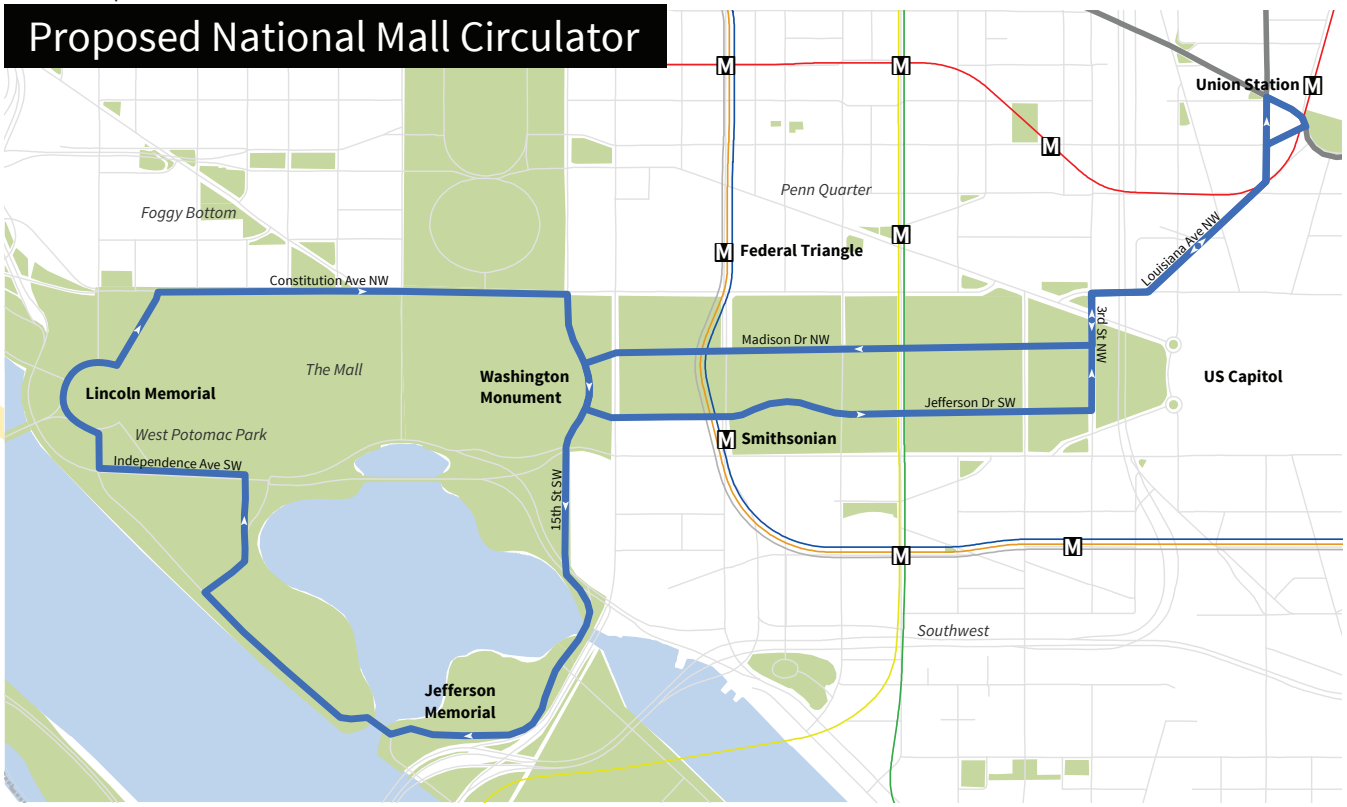
The second is a new route serving NoMa, the largest activity center in the District without Circulator service. A standalone study is expected to be completed in the coming year that will identify this route and its phasing. The implementation of the route is expected to take place sometime in Phase II.

Following the route profiles in this section, **Table 7-13** summarizes key performance metrics for all of the new routes and extensions carried forward into phasing. This table evaluates the extensions independent of the full routes to give a more detailed picture of their expected performance.

Photo by Sam Kittner Photography

7.3.1 National Mall

FIGURE 7-3 | NATIONAL MALL PROPOSED ROUTE



Corridor Description

Multiple options for the National Mall Route were analyzed as part of the 2011 Circulator TDP and again as part of the Circulator Implementation Plan for National Mall Service in 2013. The results of these analyses were used to develop a final route that connects all parts of the National Mall, with internal circulation via Madison Drive NW and Jefferson Drive SW, a loop around the Tidal Basin, and connection up to Union Station via Louisiana Avenue NW. A service plan was developed in 2014 to implement the route, scheduled for operations in 2015. Of the 1,041 people who took the 2014 TDP Update survey 411 (39 percent) indicated that the National Mall as one of three top areas to serve next.

TABLE 7-4 | NATIONAL MALL SERVICE PLANNING MEASURES

Service Planning Measure	Vs. Target
Number of activity centers served	Low
Size of activity centers served	High
Variety of land uses at activity centers served	Medium
Link to other non-auto transportation modes	Medium
Complement existing transit options	Medium
Connections between National Mall and Activity Centers	Medium
Number of visitor destinations served	High
Timing of development in activity centers served	Medium

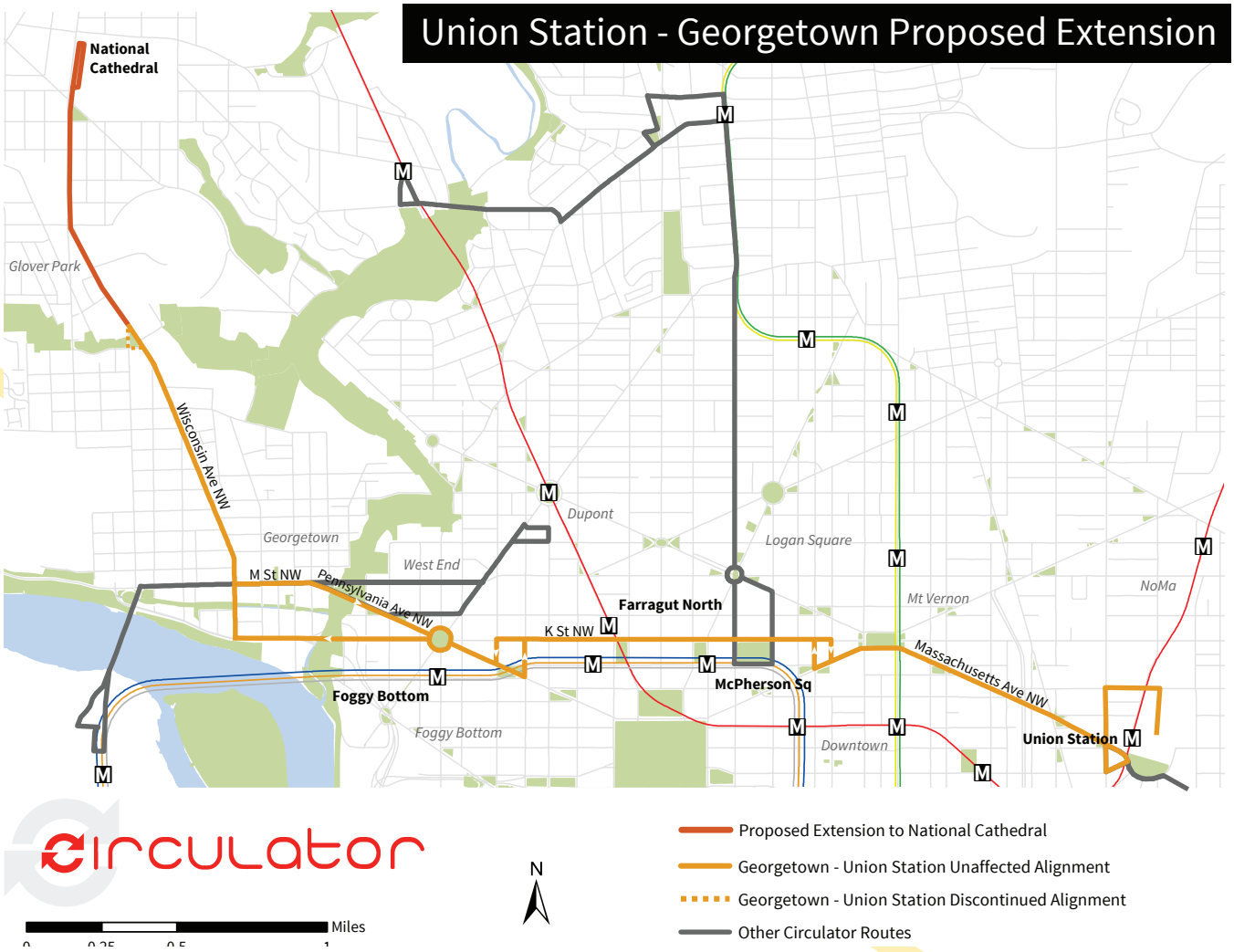
Key Characteristics

Round-trip Route Length: 6.9 miles
Estimated Annual Revenue Hours: 36,501
Estimated Annual Operating Cost: $3,770,000 (first 12 months)
Number of Buses Required: 7 to 11 buses depending on season demand
Capital Cost: $11,000,000 (FY 2014, includes 11 vehicles, 2 spare vehicles, parts, and stop improvements)
Estimated Productivity (Boardings/hour): 24 (first 12 months)
Estimated Annual Ridership: 880,900 (first 12 months)
Estimated Fare Revenue: $811,200 (first 12 months)
Estimated Operating Subsidy Required: $2,958,300 (first 12 months)
Estimated Subsidy per Passenger: $2.85
Estimated Farebox Recovery Ratio: 26.7%
Activity Centers Served: National Mall; Central Washington

Note: The ridership is expected to increase significantly year over year between opening year (2015) and 2019. As a result the fare revenue will also increase over time reducing the operating subsidy required.

7.3.2 Georgetown – Union Station Extension to National Cathedral

FIGURE 7-4 | UNION STATION – GEORGETOWN PROPOSED EXTENSION



Corridor Description

The Georgetown – Union Station extension to National Cathedral would continue the current route north on Wisconsin Avenue, and turn around using the National Cathedral underground bus parking garage[8]. This connection to National Cathedral would bring Circulator service to one of the District's most visited destinations at a lower incremental cost than an overlay option, though still at significant cost. It should be noted that once the Cathedral to McPherson Square overlay route is implemented (later in Phase I if additional fleet can be procured) this extension will be eliminated, as the existing route no long serve Wisconsin Ave above M Street.

During the 2014 TDP Update survey approximately 30 percent of 455 respondents to a question on this extension found it **"Important"** or **"Extremely Important"** for the Circulator to be extended to serve Glover Park and the National Cathedral. Overall 60 percent of respondents indicated this extension was important at some level, while 40 percent felt it was not very important. The following analysis reflects the entire route, the existing route plus the extension. However, as shown in **Table 7-12** at the end of this section, the extension itself performs very poorly, with only 13 boardings per hour, high subsidy per passenger, and low farebox recovery ratio. In addition it will compete with rather than complement the existing 30's bus service.

TABLE 7-5 | GEORGETOWN – UNION STATION SERVICE PLANNING MEASURES

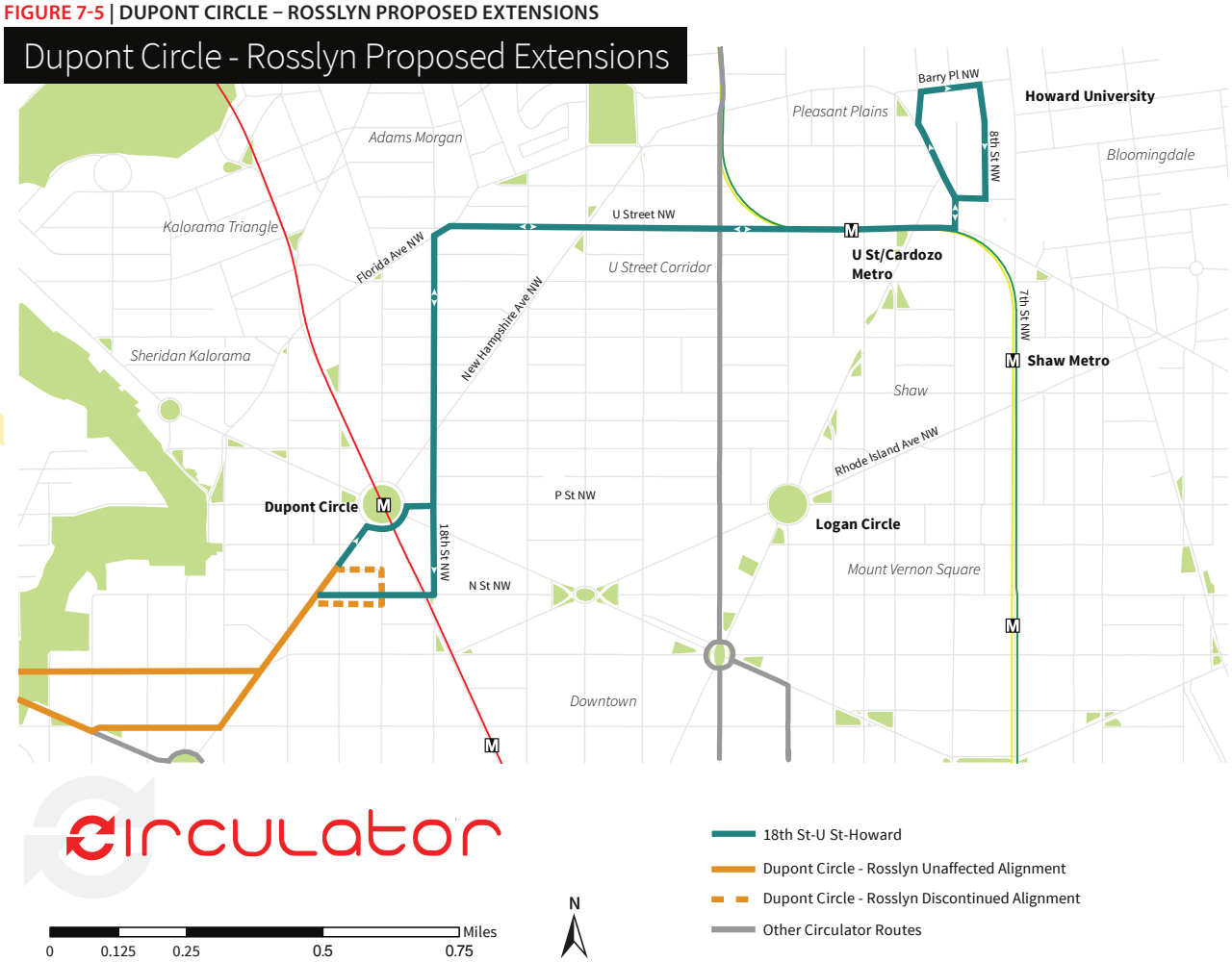
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	High
Link to other non-auto transportation modes	High
Complement existing transit options	Medium
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	High
Timing of development in activity centers served	High

Key Characteristics

Round-trip Route Length: 11.1 miles (9 miles for existing route plus 2.1 mile extension)
Estimated Annual Revenue Hours: 96,900
Estimated Annual Operating Cost: $9,092,000 (FY 2015)
Number of Buses Required: 2 extra buses required
Estimated Capital Cost: $1,491,000 (FY 2015)
Estimated Productivity (Boardings/hour): 31
Estimated Annual Ridership: 3,005,000
Estimated Fare Revenue: $3,119,000
Estimated Operating Subsidy Required: $5,973,000
Estimated Subsidy per Passenger: $1.99
Estimated Farebox Recovery Ratio: 34.3%
Activity Centers Served: No additional activity centers added but the Cathedral is a major tourist destination.
**Note: The above estimates do not include the additional night service from Whitehaven to McPherson Square Metro (Sunday-Thursday, 9pm to midnight, and Friday/Saturday, 9pm-2am).*

7.3.3 Dupont Circle – Georgetown – Rosslyn Extension to U Street/Howard University

FIGURE 7-5 | DUPONT CIRCLE – ROSSLYN PROPOSED EXTENSIONS



Corridor Description

This corridor would extend the existing Dupont Circle-Georgetown-Rosslyn route from Dupont Circle to U Street NW and Howard University. The extension would incorporate U Street's commercial and nightlife district into a corridor that includes similar destinations in DuPont Circle and Georgetown. The corridor would provide a midtown direct connection to all five Metrorail lines. During the 2014 TDP Update survey approximately 50 percent of 426 respondents to a question on this extension were either "**Likely**" or "**Very Likely**" to use a new route from Howard University to Dupont Circle using U Street NW. Almost 19 percent of the respondents who would "**Likely**" or "**Very Likely**" use this new route do not currently use the Circulator service. Of the 1,041 people who took the 2014 TDP Update survey 433 (42 percent) indicated that the U Street Corridor/Shaw/Howard University as one of three top areas to serve next. The following analysis reflects the entire route, the existing route plus the extension.

TABLE 7-6 | DUPONT CIRCLE – GEORGETOWN - ROSSLYN SERVICE PLANNING MEASURES

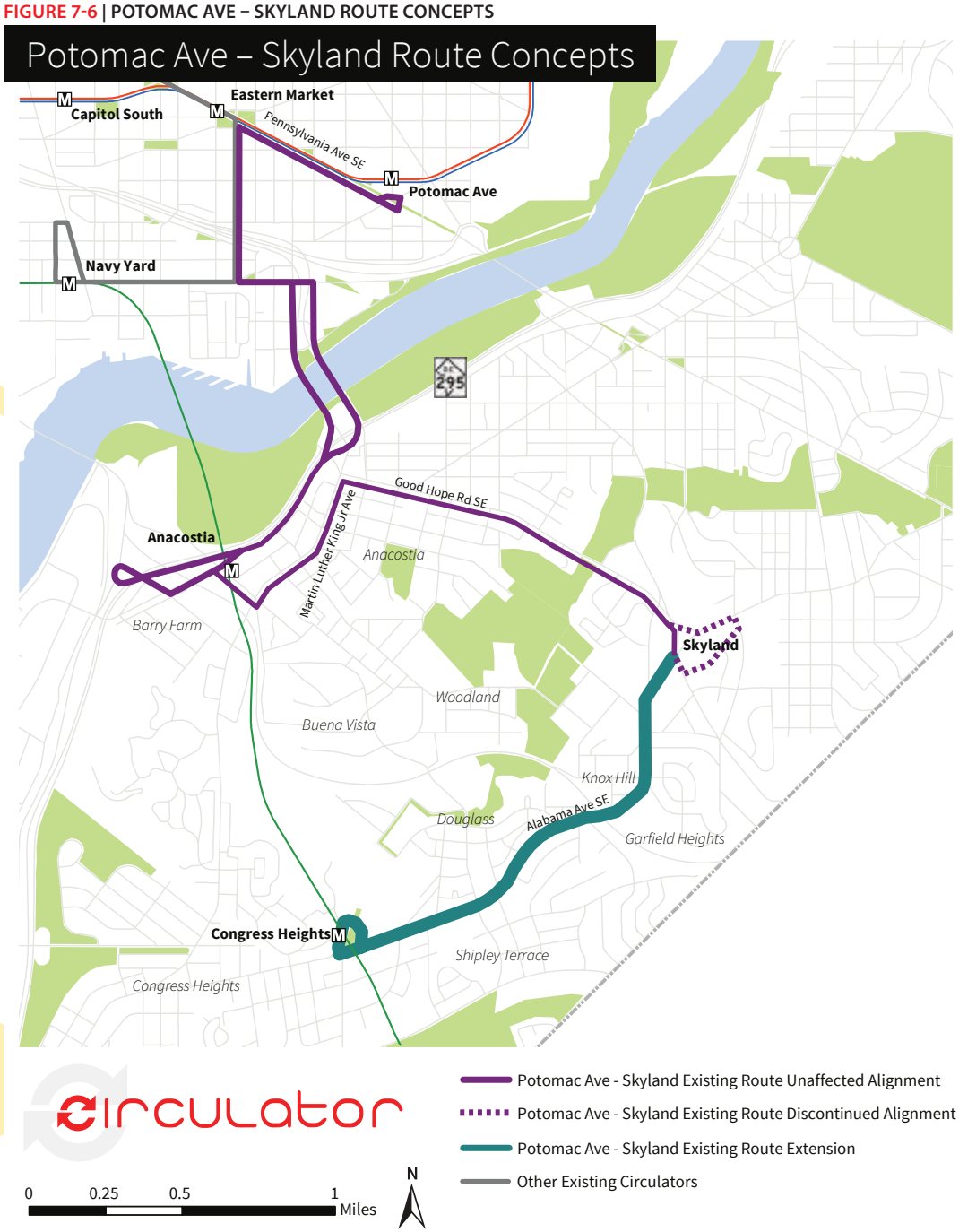
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	High
Link to other non-auto transportation modes	High
Complement existing transit options	High
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	High
Timing of development in activity centers served	High

Key Characteristics

Round-trip Route Length: 8.26 miles (4.26 miles for existing route plus 4 mile extension)
Estimated Annual Revenue Hours: 52,700 hours
Estimated Annual Operating Cost: $5,178,000 (FY 2016)
Number of Buses Required: 4 extra buses
Estimated Capital Cost: $3,131,000 (FY 2016)
Estimated Productivity (Boardings/hour): 34
Estimated Annual Ridership: 1,790,000
Estimated Fare Revenue: $1,858,000
Estimated Operating Subsidy Required: $3,320,000
Estimated Subsidy per Passenger: $1.85
Estimated Farebox Recovery Ratio: 35.9%
Activity Centers Served: Adams Morgan, 14th & U St, and Shaw/Howard U. activity centers added.

7.3.4 Potomac Ave Metro – Skyland Extension to Congress Heights

FIGURE 7-6 | POTOMAC AVE – SKYLAND ROUTE CONCEPTS



Corridor Description

This corridor would extend the current Potomac Ave Metro – Skyland route further south along Alabama Ave SE to Congress Heights where it would turn around for its return trip via the same route to the Potomac Ave Metrorail Station. The corridor could provide a stronger southern anchor with transfer opportunities to Metrorail and other bus routes. Of the 1,041 people who took the 2014 TDP Update survey 216 (21 percent) indicated that Southeast DC (including St. Elizabeth's) as one of three top areas to serve next. The following analysis reflects the entire route, the existing route plus the extension.

TABLE 7-7 | POTOMAC AVE METRO - SKYLAND SERVICE PLANNING MEASURES

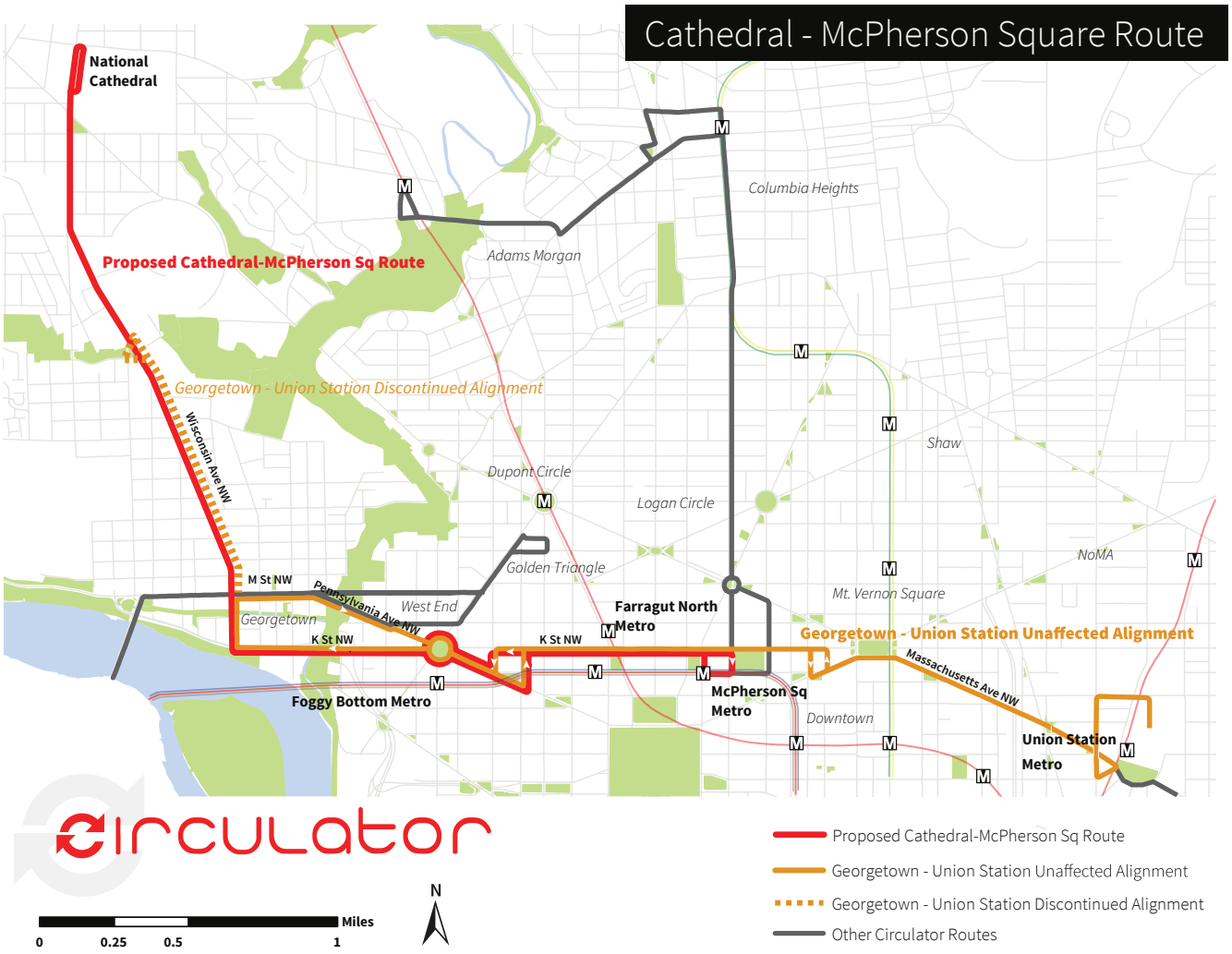
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	Medium
Link to other non-auto transportation modes	Medium
Complement existing transit options	Low
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	Low
Timing of development in activity centers served	Medium

Key Characteristics

Round-trip Route Length: 12.6 miles (9.6 miles for existing route plus 3 mile extension)
Estimated Annual Revenue Hours: 32,200
Estimated Annual Operating Cost: $3,157,000 (FY 2016)
Number of Buses Required: 2 extra buses
Estimated Capital Cost: $1,566,000 (FY 2016)
Estimated Productivity (Boardings/hour): 19
Estimated Annual Ridership: 621,200
Estimated Fare Revenue: $644,000
Estimated Operating Subsidy Required: $2,513,000
Estimated Subsidy per Passenger: $4.05
Estimated Farebox Recovery Ratio: 20.4%
Activity Centers Served: St. Elizabeth's Campus/Congress Heights activity center added.

7.3.5 National Cathedral - McPherson Square Metro (Overlap with Shortened Georgetown – Union Station) via K Street

FIGURE 7-7 | CATHEDRAL – MCPHERSON SQUARE ROUTE



Corridor Description

When this route is implemented the National Cathedral Extension described in **section 7.3.2** will be eliminated. Coupled with the shortening of the existing Georgetown to Union Station route by having it no longer serve Wisconsin Ave above M Street, a new route in this corridor would begin at McPherson Square Metro and follow the existing route path to Wisconsin Avenue, where it would continue past the current terminus to the National Cathedral, before turning around and following the existing route path back to McPherson Square Metro. However, this option would greatly increase reliability on the route compared to the extension option due to its shorter route length. In addition, this new route would increase frequency on the segment overlapping (from the West End to McPherson Square Metro) a shortened Georgetown – Union Station route, and meet the need for additional service on K Street NW.

During the 2014 TDP Update survey approximately 30 percent of 455 respondents to a question on this extension found it **"Important"** or **"Extremely Important"** for the Circulator to be extended to serve Glover Park and the National Cathedral. Overall 60 percent of respondents indicated this extension was important at some level, while 40 percent felt it was not very important. It should be noted however that this route performs poorly when compared to the existing route with only 18 boardings per hour, high subsidy per rider, and low farebox recovery ratio, in addition to competing with rather than complementing existing 30's service.

Additional Evaluation

For the National Cathedral - McPherson Square overlay, the route and stop options need to be developed further into a detailed service plan to allow for quick implementation when additional vehicles become available.

TABLE 7-8 | CATHEDRAL – MCPHERSON SQUARE SERVICE PLANNING MEASURES

Service Planning Measure	Vs. Target
Number of activity centers served	Medium
Size of activity centers served	High
Variety of land uses at activity centers served	High
Link to other non-auto transportation modes	Medium
Complement existing transit options	Medium
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	High
Timing of development in activity centers served	Medium

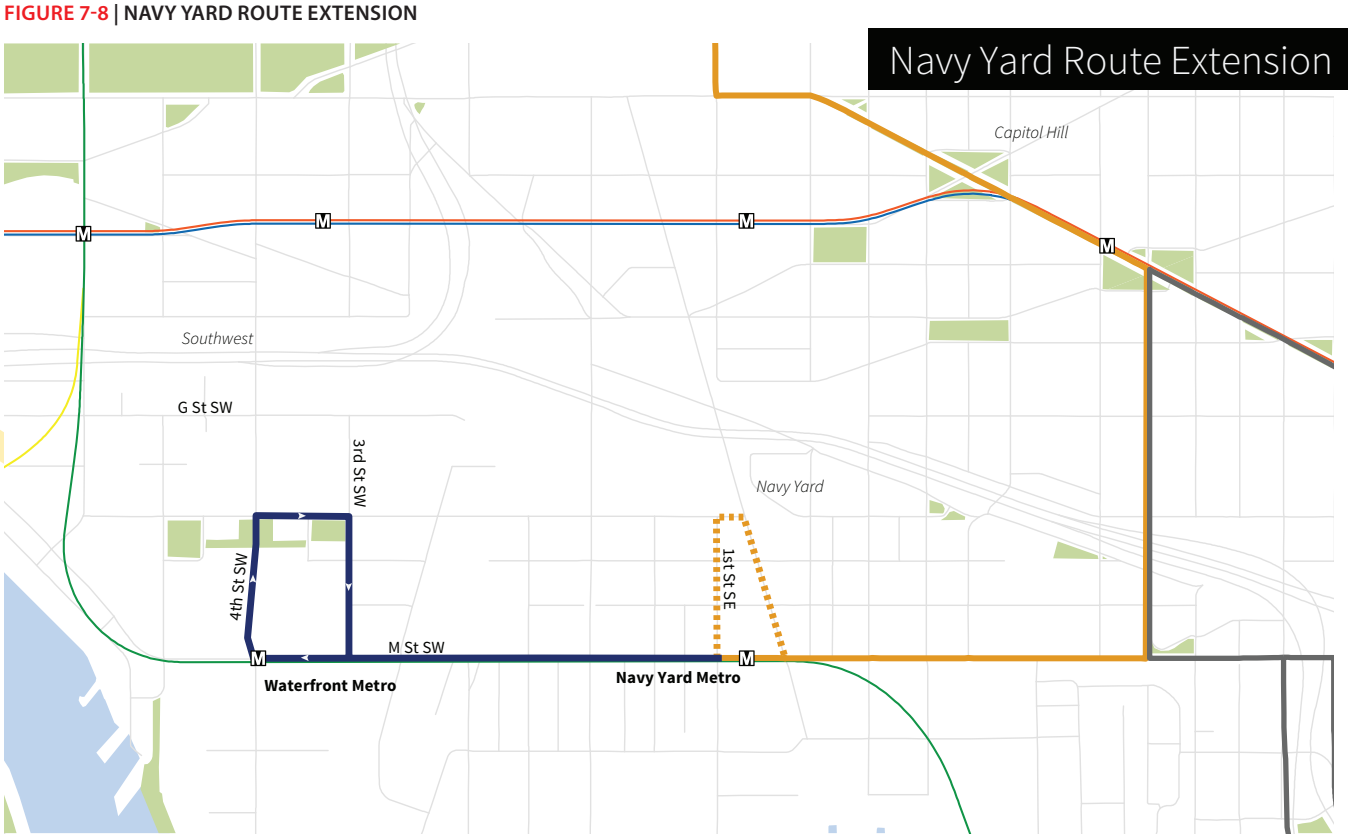
Key Characteristics

Round-trip Route Length: 8 miles
Estimated Annual Revenue Hours: 45,900
Estimated Annual Operating Cost: $4,711,000 (FY 2017)
Number of Buses Required: 9
Estimated Capital Cost: $7,397,000 (FY 2017)
Estimated Productivity (Boardings/hour): 18
Estimated Annual Ridership: 825,600
Estimated Fare Revenue: $857,000
Estimated Operating Subsidy Required: $3,854,000
Estimated Subsidy per Passenger: $4.67
Estimated Farebox Recovery Ratio: 18.2%
Activity Centers Served: Georgetown/Lower Wisconsin; Foggy Bottom/West End; Central Washington

**Note: The above estimates do not include the additional night service from Whitehaven to McPherson Square Metro (Sunday-Thursday, 9pm to midnight, and Friday/Saturday, 9pm-2am).*

7.3.6 Union Station – Navy Yard Extension to Southwest Waterfront

FIGURE 7-8 | NAVY YARD ROUTE EXTENSION



Corridor Description

This corridor extends the current Union Station-Navy Yard route several blocks west in order to better serve the growing Southwest Waterfront. The service would provide residents and workers in the Southwest Waterfront with an easy connection to Eastern Market, Union Station, and NoMa. Of the 1,041 people who took the 2014 TDP Update survey 458 (44 percent) indicated that the Southwest/Waterfront as one of three top areas to serve next. In addition, approximately 70 percent of the 641 respondents were either **"Likely"** or **"Very Likely"** to use an extension of the Union Station - Navy Yard route to the Waterfront Metrorail. Almost 32 percent of the respondents who would **"Likely"** or **"Very Likely"** use this extension do not currently use the Circulator service. The following analysis reflects the entire route, the existing route plus the extension.

TABLE 7-9 | UNION STATION – NAVY YARD SQUARE SERVICE PLANNING MEASURES

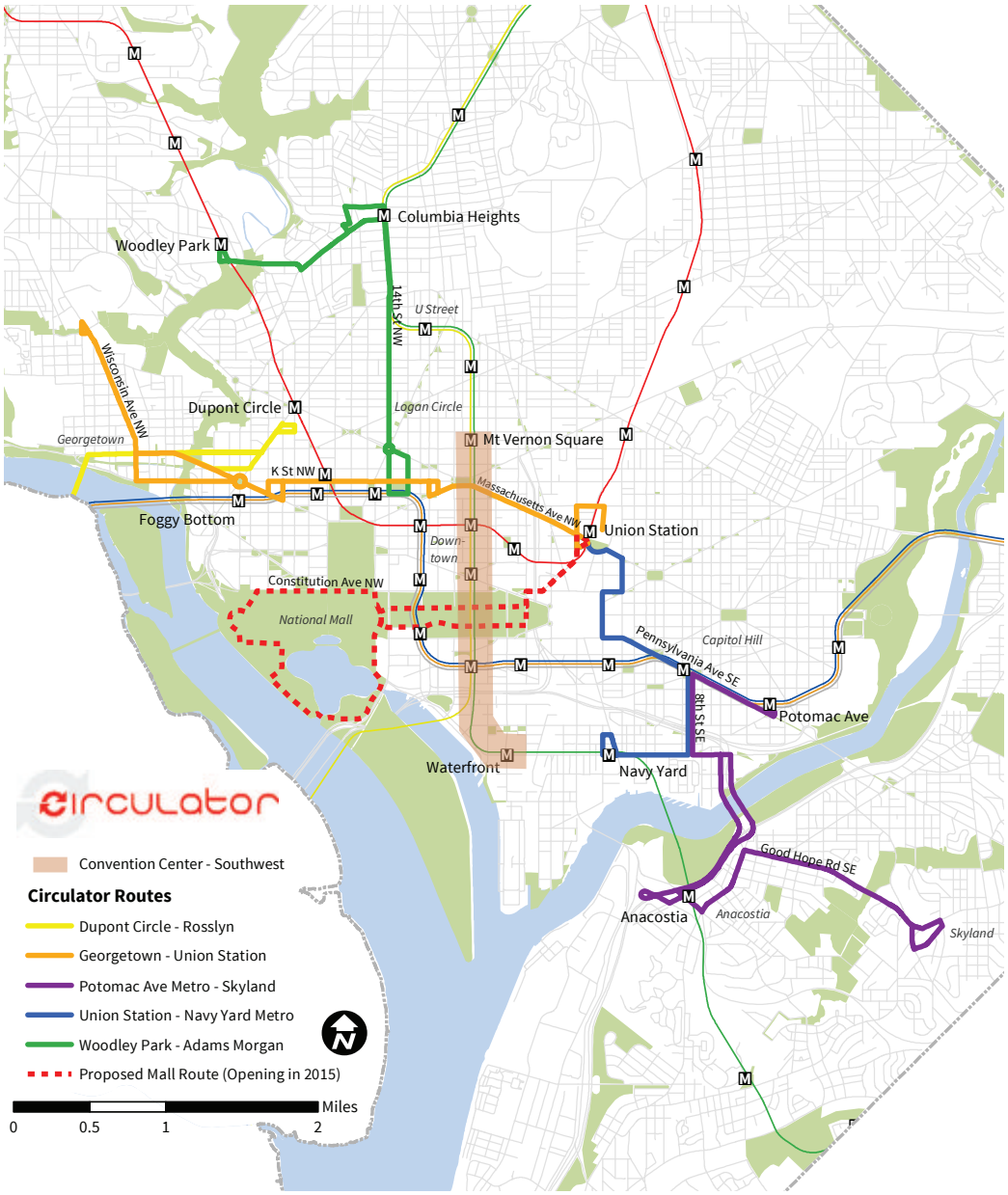
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	Medium
Link to other non-auto transportation modes	High
Complement existing transit options	High
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	High
Timing of development in activity centers served	Medium

Key Characteristics

Round-trip Route Length: 8.4 miles (7 miles for existing route plus 1.4 mile extension)
Estimated Annual Revenue Hours: 33,700
Estimated Annual Operating Cost: $3,464,000 (FY 2017)
Number of Buses Required: 2 extra buses for the extension
Estimated Capital Cost: $1,644,000 (FY 2017)
Estimated Productivity (Boardings/hour): 16
Estimated Annual Ridership: 532,600
Estimated Fare Revenue: $555,000
Estimated Operating Subsidy Required: $2,909,000
Estimated Subsidy per Passenger: $5.46
Estimated Farebox Recovery Ratio: 16.0%
Activity Centers Served: SW Waterfront activity center added.

7.3.7 Convention Center – Southwest Waterfront

FIGURE 7-9 | CONVENTION CENTER – SOUTHWEST ROUTE



Corridor Description

This corridor was once served by Circulator from 2005 through September 2011. The previous route provided a north-south connection from the Washington Convention Center to the emerging Southwest Waterfront district, serving Mount Vernon Square, Chinatown, Penn Quarter, and the National Mall along the way. Recent development around the Convention Center and Southwest Waterfront, along with the introduction of the National Mall Circulator route, increases the market and demand for the return of Circulator in this corridor. Of the 1,041 people who took the 2014 TDP Update survey 458 (44 percent) indicated that the Southwest/Waterfront as one of three top areas to serve next.

Additional Evaluation

After the Convention Center - Southwest Waterfront route is re-instated, additional analysis should be conducted to determine the potential of extending the Convention Center – Southwest route to the Navy Yard in lieu of extending the Union Station – Navy Yard route to Southwest.

TABLE 7-10 | CONVENTION CENTER – SOUTHWEST WATERFRONT SERVICE PLANNING MEASURES

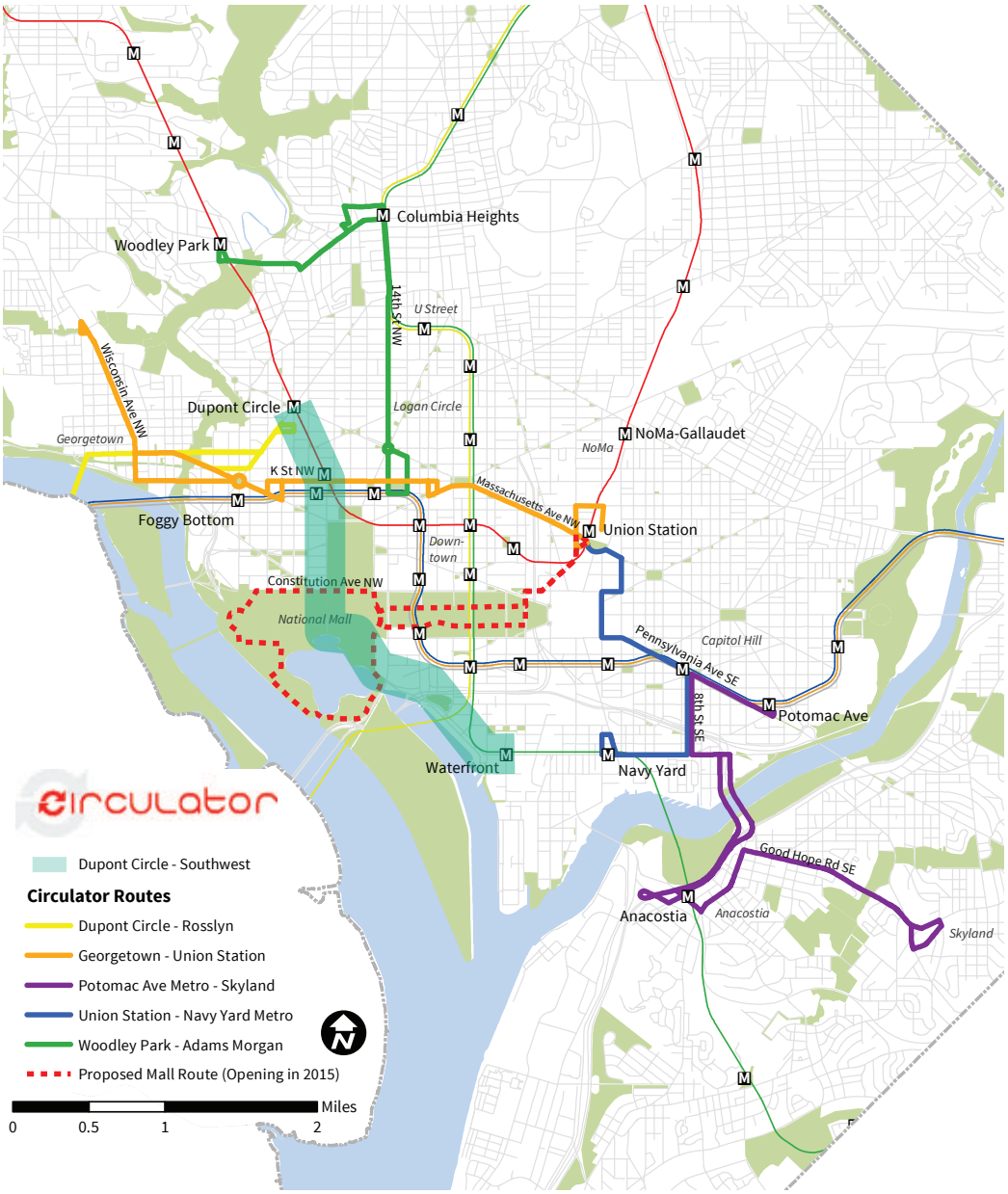
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	Medium
Link to other non-auto transportation modes	High
Complement existing transit options	Low
Connections between National Mall and Activity Centers	High
Number of visitor destinations served	High
Timing of development in activity centers served	Medium

Key Characteristics

Round-trip Route Length: 4.95 miles
Estimated Annual Revenue Hours: 30,700
Estimated Annual Operating Cost: $3,449,000 (FY 2019)
Number of Buses Required: 6
Estimated Capital Cost: $5,437,000 (FY 2019)
Estimated Productivity (Boardings/hour): 25
Estimated Annual Ridership: 762,000
Estimated Fare Revenue: $791,000
Estimated Operating Subsidy Required: $2,658,000
Estimated Subsidy per Passenger: $3.49
Estimated Farebox Recovery Ratio: 22.9%
Activity Centers Served: Mt. Vernon Square; Central Washington; National Mall; SW Waterfront

7.3.8 Dupont – Southwest Waterfront

FIGURE 7-10 | DUPONT CIRCLE – SOUTHWEST ROUTE



Corridor Description

This corridor will create a new direct connection between Dupont Circle and the growing Southwest Waterfront. Starting in Dupont, the corridor provides a new connection across downtown via Farragut Square and the White House. From there, it would continue south across the Mall, skirt the edge of the Tidal Basin and connect along Maine Avenue to the Waterfront Metro station (Green Line). The corridor links existing and emerging employment and entertainment areas with popular tourist destinations near the National Mall. It is also anchored by Metro connections in the south (Green) and north (Red, Orange, and Blue). Of the 1,041 people who took the 2014 TDP Update survey 458 (44 percent) indicated that the Southwest/Waterfront as one of three top areas to serve next.

TABLE 7-11 | DUPONT – SOUTHWEST WATERFRONT SERVICE PLANNING MEASURES

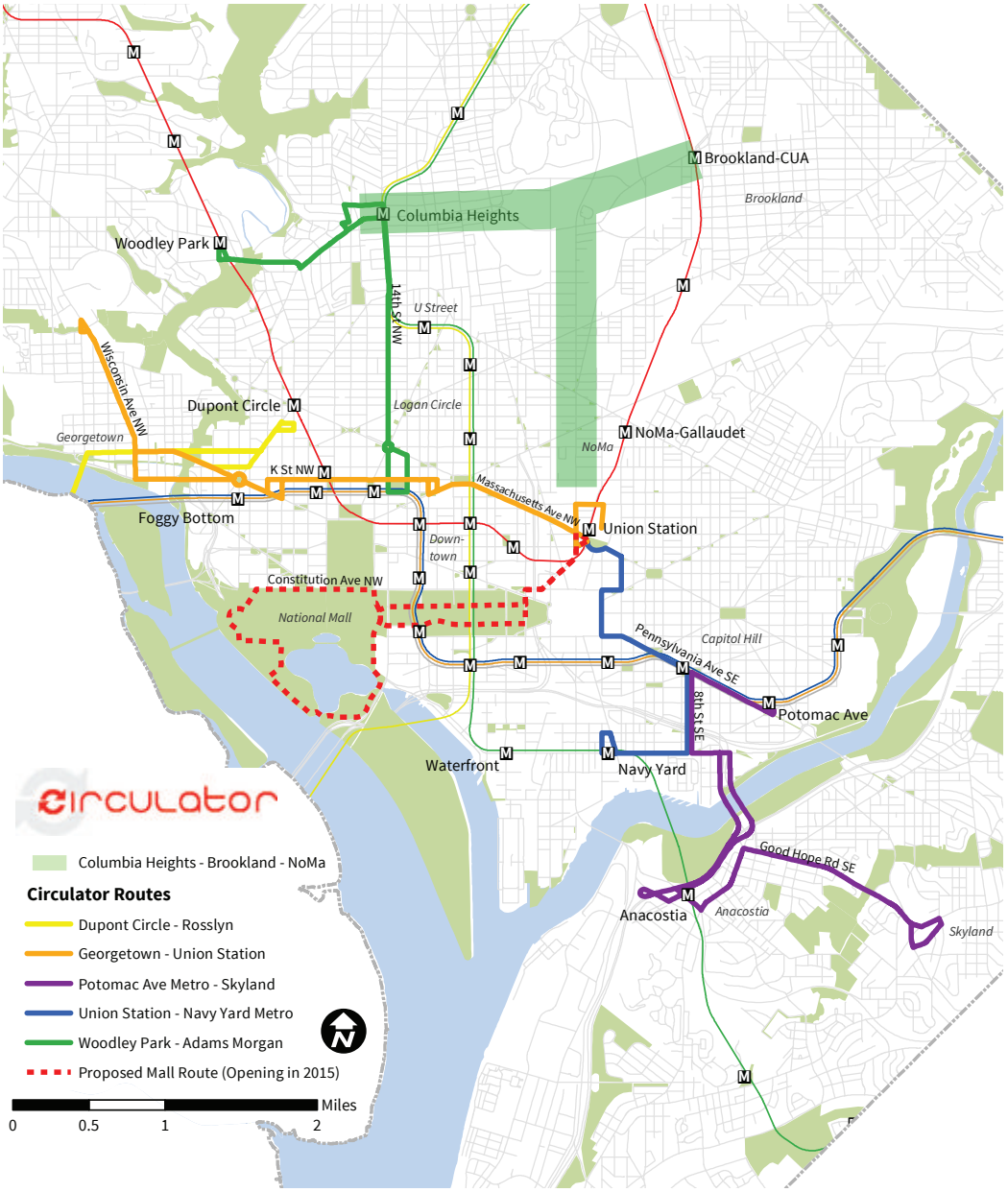
Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	High
Link to other non-auto transportation modes	High
Complement existing transit options	High
Connections between National Mall and Activity Centers	High
Number of visitor destinations served	High
Timing of development in activity centers served	Medium

Key Characteristics

Round-trip Route Length: 7 miles
Estimated Annual Revenue Hours: 35,800
Estimated Annual Operating Cost: $4,409,000 (FY 2021)
Number of Buses Required: 7
Estimated Capital Cost: $6,993,000 (FY 2021)
Estimated Productivity (Boardings/hour): 34
Estimated Annual Ridership: 1,216,000
Estimated Fare Revenue: $1,263,000
Estimated Operating Subsidy Required: $3,146,000
Estimated Subsidy per Passenger: $2.59
Estimated Farebox Recovery Ratio: 28.6%
Activity Centers Served: Dupont Circle; Central Washington; National Mall; SW Waterfront

7.3.9 Columbia Heights – Washington Hospital Center – Brookland – NoMa

FIGURE 7-11 | COLUMBIA HEIGHTS – BROOKLAND – NOMA ROUTE



Corridor Description

This corridor would provide high frequency cross-town transit service between the Green/Yellow and Red Metrorail lines. Starting near the Columbia Heights Metro Station and the DC USA retail development, a route on this corridor would continue east to the Washington Hospital Center, the largest employment center in Northeast DC. From the Washington Hospital Center, the route would continue east to Catholic University and the Brookland Metro Station. The route would then continue to the NoMa – Gallaudet U Metro Station via North Capitol Street, before making the return trip to Columbia Heights. Emerging mixed-use development at the McMillan Reservoir and Armed Forces Retirement Home would also be served by Circulator in this corridor. Of the 1,041 people who took the 2014 TDP Update survey 164 (16 percent) indicated that the Northeast DC as one of three top areas to serve next. Additionally, 146 (31 percent) of 467 respondents to another question indicated Columbia Heights and NoMa should be connected via Circulator.

TABLE 7-12 | COLUMBIA HEIGHTS – WASHINGTON HOSPITAL CENTER – BROOKLAND - NOMA SERVICE PLANNING MEASURES

Service Planning Measure	Vs. Target
Number of activity centers served	High
Size of activity centers served	High
Variety of land uses at activity centers served	High
Link to other non-auto transportation modes	Medium
Complement existing transit options	Medium
Connections between National Mall and Activity Centers	Low
Number of visitor destinations served	Low
Timing of development in activity centers served	Medium

Key Characteristics

Round-trip Route Length: 10.5 miles
Estimated Annual Revenue Hours: 56,200
Estimated Annual Operating Cost: $7,596,000 (FY 2023)
Estimated Number of Buses Required: 11
Estimated Capital Cost: $12,115,000 (FY 2023)
Estimated Productivity (Boardings/hour): 36
Estimated Annual Ridership: 2,024,000
Estimated Fare Revenue: $2,101,000
Estimated Operating Subsidy Required: $5,495,000
Estimated Subsidy per Passenger: $2.72
Estimated Farebox Recovery Ratio: 27.7%
Activity Centers Served: Columbia Heights; Brookland Metro; Hospital Center/AFRH/ McMillan; NoMa/FL-NY Ave Gateway

7.3.10 Recommended Corridor Profile Summary

Table 7-13 summarizes key metrics for the recommended new routes and extensions, and extensions funded by the DC Council. Note that for the extensions, the values shown below represent those for the extensions only, not the full route.

TABLE 7-13 | NEW ROUTES/EXTENSIONS KEY METRICS SUMMARY

Proposed Extension/Route	Estimated Ridership	Boardings Per Hour	Estimated Subsidy	Subsidy per Passenger	Farebox Recovery Ratio
National Mall Route	880,900	24	$2,511,714	$2.85	26.7%
Georgetown-Union Station Extension to National Cathedral	132,860	13	$821,454	$6.18	14.4%
Rosslyn-Georgetown-Dupont Extension to U Street/Howard University	865,696	34	$1,613,349	$1.86	35.8%
Potomac Avenue Metro - Skyland Extension to Congress Heights	125,696	19	$658,332	$5.24	16.6%
National Cathedral - McPherson Square Metro via K Street	825,552	18	$3,855,067	$4.67	18.2%
Modification to Union Station - Georgetown existing route	2,364,544	36	$4,874,883	$2.06	33.5%
Union Station - Navy Yard Extension to Southwest Waterfront	64,304	16	$758,824	$11.80	8.1%
Future NoMa Service	TBD	TBD	TBD	TBD	TBD
Convention Center - Southwest Waterfront	762,000	25	$2,658,250	$3.49	22.9%
Dupont - Southwest Waterfront	1,216,180	34	$3,146,010	$2.59	28.6%
Columbia Heights - Hospital Center - Brookland - NoMa	2,023,560	36	$5,494,657	$2.72	27.7%

The route profiles illustrate that the corridors carried forward to phasing scored highly against the majority of the DC Circulator's service planning measures with the exception was the Potomac Ave Metro – Skyland Extension to Congress Heights, which met fewer of the service planning measures, but fulfills DDOT's aspiration for parity in providing DC Circulator service throughout the District including east of the river. Additionally the Potomac Ave Metro – Skyland is the newest Circulator route and has potential to improve its performance, especially with a stronger anchor at Congress Heights linking to the future St. Elizabeth Campus. From 2012 to 2013 ridership on this route grew 25 percent. A summary of the recommended corridors key characteristics is provided in **Appendix G**.

Recommended growth corridors also address stakeholder and public feedback, including the desired reinstatement of the Convention Center – Southwest Waterfront route, providing a new connection between Dupont Circle and Southwest Waterfront, and service to NoMa. The Columbia Heights – Washington Hospital Center – Brookland – NoMa corridor serves activity centers that have a strong mix of land uses and activity at the termini in the near-term, and the activity centers in the middle of this route are expected to see notable growth in the long-term. A connection between NoMa and Columbia Heights was also identified as a key priority by respondents to the survey at the NoMa pop-up event.

As shown in **Table 7-13**, the three extensions funded by the DC Council fall short of several key Circulator performance metrics including boardings per hour (target is 20 or more), subsidy per passenger (target is $2.75 or less), and farebox recovery ratio (target is 25%).

7.4 Corridor Evaluation Summary

The corridors listed below in **Table 7-14** are recommended to be carried forward into phasing for Circulator expansion over the next 10 years. There is minimal overlap between the recommended corridors and Metrorail or the Metrobus Priority Corridor Network. The moveDC effort and the Circulator TDP were carefully coordinated and information from the moveDC effort was used to develop the Circulator TDP to ensure the two plans were inherently linked. In addition, the recommended corridors have significant overlap with the "High Capacity Transit" and "High Frequency Local and Regional Bus" corridors identified in the moveDC plan[9], which is a long-term plan for the District. This indicates a high level of synergy between the corridors developed for this TDP and the moveDC corridors. As such the Circulator bus will be able to take advantage of high-capacity infrastructure and other priority treatments identified in moveDC. Many of the activity centers along these corridors are served by Metrorail but most require a transfer, so these new services will provide new one seat rides in many cases. Some of the corridors do overlap with existing local Metrobus service and proposed DC Streetcar alignments. Along most corridors, DDOT will phase out Circulator service as Streetcar service is implemented.

Based on the results of the planning process described in **Chapter 2** (and summarized in **Figure 7-1**), the corridor evaluation, and stakeholder and public feedback, the growth plan consists of a network of the following six new recommended Circulator routes, one recommended extension (Dupont Circle – Georgetown – Rosslyn Extension to U St/Howard University, and three additional extensions to existing routes funded by the DC Council. The new routes and extensions are listed in **Table 7-12** and depicted in **Figure 7-12**.

TABLE 7-14 | 2014 TDP UPDATE GROWTH CORRIDORS

New Routes	Route Extensions
National Mall Route	Georgetown – Union Station Extension to National Cathedral (Council-funded)
National Cathedral – McPherson Square (includes reducing service on existing Georgetown – Union Station route to no longer serve Wisconsin Ave above M Street)	Union Station – Navy Yard Extension to Southwest Waterfront (Council-funded)
NoMa (route to be determined in a future study)	Dupont Circle – Georgetown – Rosslyn Extension to U St/Howard University
Convention Center – Southwest Waterfront	Potomac Ave Metro – Skyland Extension to Congress Heights (Council-funded)
Dupont – Southwest Waterfront	
Columbia Heights – Washington Hospital Center – Brookland – NoMa	

Table 7-15 summarizes the evaluation of the growth corridors.

TABLE 7-15 | SERVICE PLANNING MEASURING SUMMARIES

Service Planning Measures (results are versus targets)	National Mall	Georgetown – Union Station: Cathedral Extension	Dupont - Rosslyn: U St / Howard U Extension	Potomac Ave - Skyland: Congress Heights Extension	National Cathedral - McPherson Square	Union Station - Navy Yard: Southwest Waterfront Extension	Convention Center - Southwest Waterfront	Dupont - Southwest Waterfront	Columbia Heights - Brookland - NoMa
Number of activity centers served	Low	High	High	High	Medium	High	High	High	High
Size of activity centers served	High	High	High	High	High	High	High	High	High
Variety of land uses at activity centers served	Medium	High	High	Medium	High	Medium	Medium	High	High
Link to other non-auto transportation modes	Medium	High	High	Medium	Medium	High	High	High	Medium
Complement existing transit options	Medium	Medium	High	Low	Medium	High	Low	High	Medium
Connections between National Mall and Activity Centers	Medium	Low	Low	Low	Low	Low	High	High	Low
Number of visitor destinations served	High	High	High	Low	High	High	High	High	Low
Timing of development in activity centers served	Medium	High	High	Medium	Medium	Medium	Medium	Medium	Medium
Current Stage Of Development	Implementation	Implementation	Service Planning	Service Planning	Corridor Evaluation	Implementation	Corridor Evaluation	Corridor Evaluation	Corridor Evaluation

FIGURE 7-12 | 2014 TDP UPDATE GROWTH CORRIDORS

8 Phasing of Corridor Development

An implementation timeline has been developed to update the TDP from 2011. The timing of development illustrated on the Activity Center map (**Figure 6-1**) is a key driver in the phasing of corridor implementation. The timing of development indicates when the activity center will likely have sufficient mixed-use development to support all day high-frequency Circulator service. As previously noted, the phasing of recommended corridors reflects additional mitigating factors including equity considerations, political considerations (and public pressure creating it), and matters related to overall funding and fleet availability. As a result of these other considerations recommendations for the phasing of corridors may not match the phasing of activity centers.

The corridor profiles that summarize the characteristics and possible operational requirements of the corridors recommended for development were provided in **Section 7.2**. The remainder of this section summarizes the corridors by phase and provides figures illustrating the same.

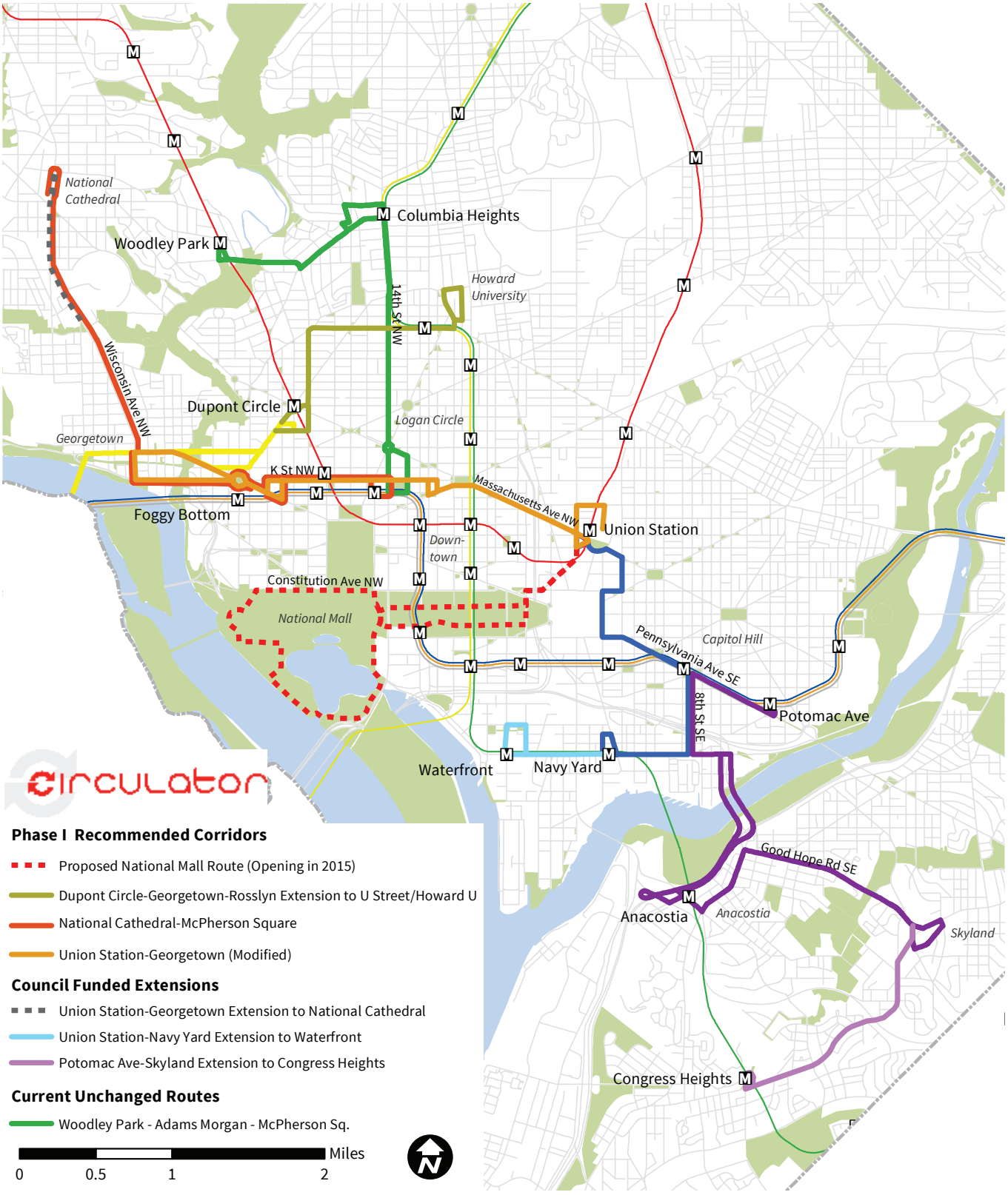
8.1 Phase I Summary: Near-Term (FY 2015-2017)

In the near-term, DDOT plans to provide new DC Circulator service on the National Mall and expand connections provided through existing routes, that were considered during the Phases I and II of the 2011 TDP. In addition, DDOT will work with WMATA to promote the use of the existing 30's, 70's, and 53 WMATA bus route service that connects the National Mall route to the central District with north-south service. The corridors recommended for implementation during Phase I are listed below and shown in **Figure 8-1**.

- National Mall
- Georgetown – Union Station Extension to National Cathedral
- Union Station – Navy Yard Extension to Southwest Waterfront

- Dupont – Georgetown – Rosslyn Extension to U St/Howard University
- Potomac Ave Metro – Skyland Extension to Congress Heights
- National Cathedral – McPherson Square Metro (Overlap with Shortened Georgetown – Union Station Route, dependent on procuring additional required vehicles. If required vehicles cannot be procured the implementation of this route will be deferred to Phase II)

FIGURE 8-1 | PHASE I RECOMMENDED CORRIDORS (FY 2014-2017)



8.2 Phase II: Mid-Term (FY 2018-2020)

In Phase II, an expansion of DC Circulator service to the Southwest Waterfront is recommended to coincide with the completion of significant mixed-use developments. Reinstating the Convention Center – Southwest Waterfront route is proposed to provide a north-south connection that complements Circulator service on the National Mall. The Phase II recommendations are listed below and shown in **Figure 8-2**.

- Convention Center – Southwest Waterfront Service (dependent on sufficient development taking place between now and 2018)
- NoMa Service (route to be determined based on future study to be conducted in 2014-2015, once the planning is completed if funding is secured this route could potentially be implemented during late Phase I)

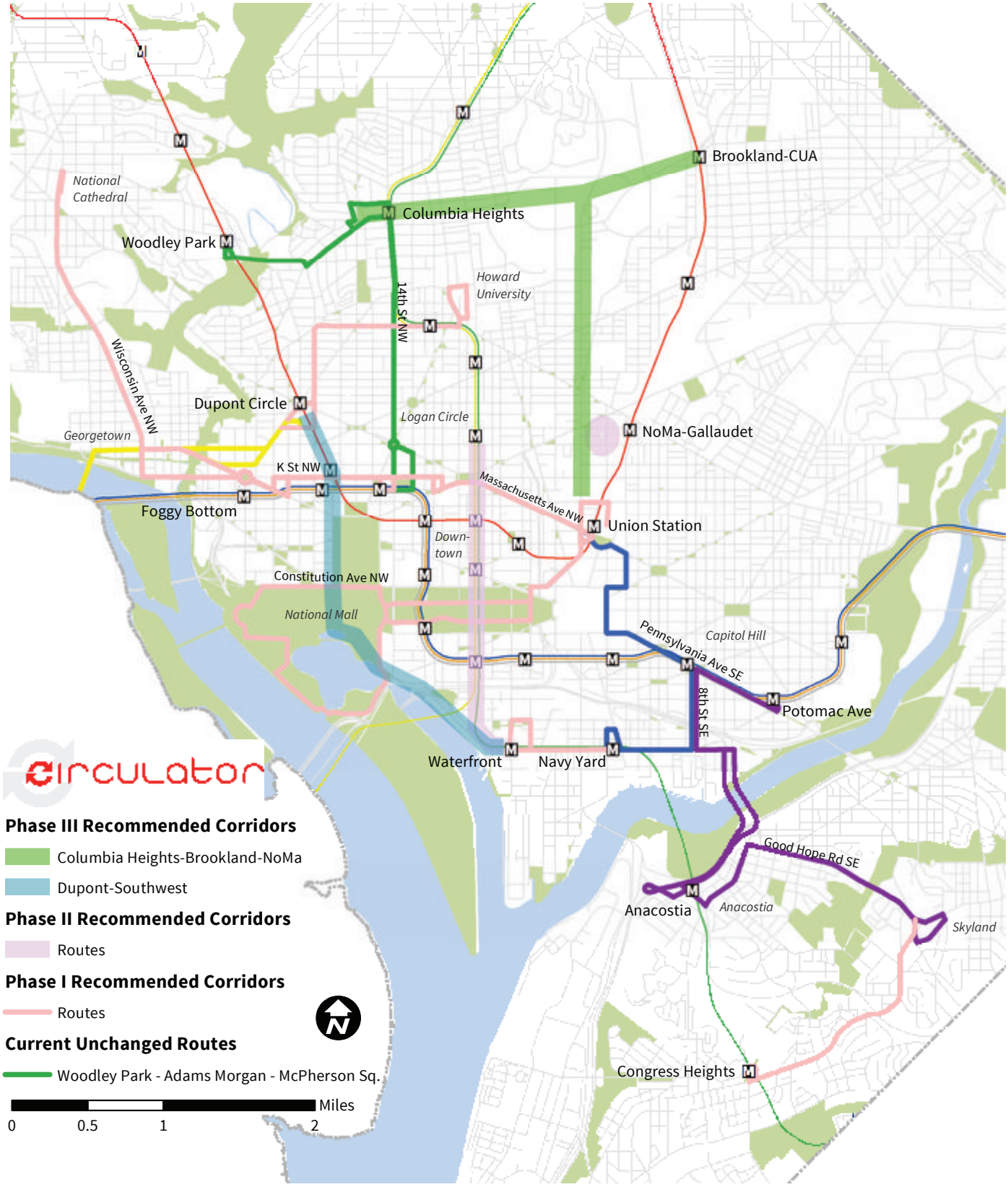
FIGURE 8-2 | PHASE II RECOMMENDED CORRIDORS (FY 2018-2020)

8.3 Phase III: Long-Term (FY 2021-2024)

In Phase III, two new corridors are recommended to expand the DC Circulator network. The Dupont – Southwest Waterfront corridor will create a new connection across downtown between Dupont Circle and the growing Southwest Waterfront, via Farragut Square and the National Mall. The Columbia Heights – Washington Hospital Center – Brookland – NoMa route will provide a new one-seat ride from Columbia Heights to H Street NE, and serve transit demands at the Armed Forces Retirement Home and McMillan Reservoir sites once redevelopment is completed. The Phase III recommendations are listed below and shown in **Figure 8-3.**

- Dupont – Southwest Waterfront
- Columbia Heights - Washington Hospital Center – Brookland – NoMa
  (If development at the McMillan Reservoir and Brookland/CUA activity centers occurs more rapidly than is currently expected, the Columbia Heights – Washington Hospital Center – Brookland – NoMa route could be moved to the Phase II time period.)
  - DDOT is currently performing (initiating in FY15) an east-west connectivity study in this corridor that will examine potential methods by which to increase transit connectivity in this part of the District for Metrobus and potential Circulator service in the future. This study, in addition to the timing of development, are key drivers for placing this route in this phase.

FIGURE 8-3 | PHASE III RECOMMENDED CORRIDORS (FY 2021-2024)



9

Implementation Plan

With operational analyses of the current corridors conducted (**Chapter 5**) and future corridors for development determined (**Chapter 7**), an implementation plan to carry out the identified service improvements is a necessary next step. This chapter provides a multi-year implementation plan, focusing on Phase I service changes and recommended routes. Service improvements include changes to bus operations, consolidation of bus stops, and route extensions that can be accomplished in the near-term. Proposals for new routes are also part of the plan for continued improvements to the Circulator system.

DDOT is committed to involving the public in route and service changes. The improvements discussed in this chapter are recommendations that have been refined through a public outreach process.

The system evaluation identified several opportunities to improve the existing DC Circulator routes. Improvements were identified based on performance data and/or input from stakeholders and the community as follows:

Deploy Additional Vehicles to Meet Service Commitment. All of the existing routes have running times that are longer than scheduled, particularly in the peak periods, and customers are not experiencing the advertised 10 minute headways on these routes. At least one additional vehicle needs to be deployed on all of the routes to meet the DC Circulator's commitment to no more than 10 minute headways. However, it should be noted that other strategies described in this report may reduce or eliminate the need for additional vehicles on some routes.

Priority Treatments. Priority transit treatments are needed along these routes to significantly improve reliability. These might include transit signal priority, bus only lanes (both permanent and peak only), queue jump lanes at key congestion hotspot locations, re-timing of key intersection signals and prioritized parking enforcement. For more detail, see **Section 12.1**.

Evaluation Modifications to Routes and Stop Consolidation. All of the routes suffer from peak period congestion hot-spots and DDOT is constantly evaluating options to improve service. The Union Station – Navy Yard route in particular suffers from severe congestion around Union Station. Opportunities exist to re-route this route to avoid congestion and improve route performance that DDOT is currently pursuing. For multiple routes the number of stops-per-mile exceeds the Circulator target of no more than four. DDOT will continue to evaluate opportunities for stop consolidation on all routes to improve route performance.

Evaluate Changes to Schedule and Span. As development occurs in the District at a rapid pace opportunities arise to expand or adjust the span on multiple routes. An analysis of boardings and alightings revealed that service on the Georgetown – Union Station route should likely start earlier based on demand and end at midnight. In addition, growth in the Capitol Riverfront area may now support year-round Saturday service and year-round evening service beyond 7pm. A pilot study in coordination with advanced marketing could reveal if the growth in this area is ready to support additional service on the Union Station – Navy Yard route.

Consider options to adapt to underutilization. Only a limited number of markets (combinations of activity centers) in the District can support a headway of 10 minutes for large portions of the day. Some of the existing routes experience low ridership during non-peak periods including the mid-day, evenings, and weekends. DDOT might consider options to adapt to these periods of underutilization, such as modifying the current 10-minute headway policy to allow for variable headways that would better match demand, converting DC Circulator routes to WMATA non-regional routes, or creating different levels of Circulator service that are branded differently.

9.1 Phase I Recommendations

In addition to improvements to the existing routes identified in the previous section, DDOT plans to provide new DC Circulator service on the National Mall and expand connections provided through existing routes that were considered during Phases I and II of the 2011 TDP. The corridors recommended for implementation during Phase I are listed in **Table 9-1**. All values shown reflect the anticipated implementation year ridership, revenue, and costs, and also reflect an increase in fare to $1.50 SmarTrip and $2.00 cash.

Photo by Sam Kittner Photography

TABLE 9-1 | PHASE I RECOMMENDED CORRIDORS (FY 2015-2017)

Corridor	Segment	Estimated Annual Metrics[10]
National Mall[11]	Total	Implementation - FY15 Ridership - 880,900 Revenue - $811,200 Operating Costs - $3,770,000[12] Operating Subsidy - $2,958,800 Buses Required: 11
Georgetown – Union Station Extension to National Cathedral	Extension	Implementation - FY15 Ridership - 132,860 Revenue - $138,000 Operating Costs - $959,000 Operating Subsidy - $821,000 Buses Required: 2
	Existing	Ridership - 2,871,232 Revenue - $2,981,000 Operating Costs - $8,133,012 Operating Subsidy - $5,152,012 Buses Required: 17
	Total	Ridership - 3,004,092 Revenue - $3,119,000 Operating Costs - $9,092,012 Operating Subsidy - $5,973,012 Buses Required: 19
Dupont – Georgetown – Rosslyn Extension to U St/ Howard University	Extension	Implementation - FY15 Ridership - 865,696 Revenue - $899,000 Operating Costs - $2,512,000 Operating Subsidy - $1,613,000 Buses Required: 4
	Existing	Ridership - 924,768 Revenue - $959,000 Operating Costs - $2,665,541 Operating Subsidy - $1,706,541 Buses Required: 5
	Total	Ridership - 1,790,464 Revenue - $1,858,000 Operating Costs - $5,177,541 Operating Subsidy - $3,319,541 Buses Required: 9 *Note: Buses required does not include spares.*
Union Station – Navy Yard Extension to Southwest Waterfront	Extension	Implementation - FY15 Ridership - 64,304 Revenue - $67,000 Operating Costs - $826,000 Operating Subsidy - $759,000 Buses Required: 2
	Existing	Ridership - 468,264 Revenue - $488,000 Operating Costs - $2,638,000 Operating Subsidy - $2,150,000 Buses Required: 7
	Total	Ridership - 532,568 Revenue - $555,000 Operating Costs - $3,464,000 Operating Subsidy - $2,909,000 Buses Required: 9
Potomac Ave Metro – Skyland Extension to Congress Heights	Extension	Implementation - FY16 Ridership - 125,696 Revenue - $130,000 Operating Costs - $789,000 Operating Subsidy - $659,000 Buses Required: 2
	Existing	Ridership - 495,474 Revenue - $514,000 Operating Costs - $2,368,000 Operating Subsidy - $1,854,000 Buses Required: 6
	Total	Ridership - 621,170 Revenue - $644,000 Operating Costs - $3,157,000 Operating Subsidy - $2,513,000 Buses Required: 8
National Cathedral – McPherson Square Metro (Overlap with Shortened Georgetown – Union Station Route)	New Route	Implementation - FY17 Ridership - 825,552 Revenue - $857,000 Operating Costs - $4,711,000 Operating Subsidy - $3,854,000 Estimated Buses Required: 9
	Modified Existing Route	Implementation - FY17 Ridership - 2,364,544 Revenue - $2,454,000 Operating Costs - $7,330,000 Operating Subsidy - $4,876,000 Estimated Buses Required: 14
	Total	Ridership -3,190,096 Revenue - $3,311,000 Operating Costs - $12,041,000 Operating Subsidy - $8,730,000 Estimated Buses Required: 23

Total operational costs for Phase I (FY2015 – FY2017) are estimated at $84,590,141, total revenue expected to be generated from the Circulator system including the expansion is estimated at $25,735,000. This results in a net operating cost of $58,855,141.

Table 9-2 summarizes the financial estimates for the complete 10-year plan. Operating costs are derived from the existing and future estimated revenue hours multiplied by the hourly operating costs that assumes a five percent increase in operating cost annually. Replacement, expansion and stabilization vehicle costs were assumed to be $745,500 in FY2015 with a five percent increase in capital cost annually. Annual revenue is derived from estimated ridership and assumes an increase in fare of $1.50 SmarTrip and $2.00 cash in 2015.

TABLE 9-2 | 10-YEAR PLAN TOTAL COSTS, FUNDING, AND REVENUE

Costs, Funding, and Subsidy	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
OPERATING									
Existing Services	$19,468,126	$20,365,655	$12,408,299	$12,984,888	$13,590,539	$14,224,444	$14,893,911	$15,594,891	$16,331,705
Proposed Enhancements	$4,386,167	$7,889,683	$20,072,211	$21,002,168	$25,428,263	$26,610,972	$32,269,345	$33,784,363	$42,972,556
Total Operating Costs	$23,854,294	$28,255,337	$32,480,510	$33,987,056	$39,018,801	$40,835,417	$47,163,256	$49,379,253	$59,304,261
CAPITAL									
Purchase Replacement Vehicles		$14,872,725	$8,219,138	---	---	---	$19,980,826	---	---
Purchase Expansion Vehicles	$7,455,000	$1,565,550	$9,041,054	---	$6,343,119	---	$8,991,372	---	$14,318,759
Purchase Stabilization Vehicles	$5,218,500								
Total Capital Costs	$12,673,500	$16,438,275	$17,260,192	$0	$6,343,119	$0	$28,972,198	$0	$14,318,759
PLANNING									
10 Year Plan Update	---	---	$300,000	---	---	$315,000	---	---	$330,750
Total Planning Costs	$0	$0	$300,000	$0	$0	$315,000	$0	$0	$330,750
Total Annual Costs	$36,527,794	$44,693,612	$50,040,702	$33,987,056	$45,361,920	$41,150,417	$76,135,454	$49,379,253	$73,953,770
REVENUE									
Total Estimated Ridership	7,517,890	8,509,282	8,759,590	8,759,590	9,521,590	9,521,590	10,737,770	10,737,770	12,761,330
Projected Farebox Revenue	$7,805,000	$8,835,000	$9,095,000	$9,095,000	$9,886,000	$9,886,000	$11,148,000	$11,148,000	$13,249,000
Total Annual Revenue	$7,805,000	$8,835,000	$9,095,000	$9,095,000	$9,886,000	$9,886,000	$11,148,000	$11,148,000	$13,249,000
SUMMARY									
DC Government Operating Funding	$16,049,294	$19,420,337	$23,385,510	$24,892,056	$29,132,801	$30,949,417	$36,015,256	$38,231,253	$46,055,261
DC Government Capital and Planning Funding	$12,673,500	$16,438,275	$17,560,192	$0	$6,343,119	$315,000	$28,972,198	$0	$14,649,509
DC Government Total Annual Subsidy	$28,722,794	$35,858,612	$40,945,702	$24,892,056	$35,475,920	$31,264,417	$64,987,454	$38,231,253	$60,704,770

Does not include expansion vehicles for the National Mall route, these have already been purchased.

10 Resource Management

The resource management plan was developed to ensure that the Circulator can continue to provide high quality service and meet its future goals. As a first step, DDOT analyzed its transit assets for current and future Circulator service: an assessment of the existing fleet and facilities inventory complements anticipated needs from planned service changes. The high-level financial plan in **Section 9.2** for the ten-year planning period provides cost and revenue estimates through FY2024. A marketing plan will provide information on how the Circulator will further leverage its resources as it continues delivering high-quality transit service in the District.

10.1 Fleet and Facilities Management

10.1.1 Fleet Inventory

According to information provided by First Transit in January 2013, the Circulator fleet consists of 35 40-foot buses and 14 30-foot buses (See **Table 10-1**). All vehicles are low-floor, diesel buses, with deployable ramps for wheelchair accessibility, manufactured by Van Hool of Belgium. There are two models of 40-foot, three-door buses. Both 40-foot models have seating for 27 passengers, 54 standing; the A330 models were purchased in 2003 and 2004, and the A300 L models were purchased in 2009. The 30-foot, two-door buses hold 21 seated passengers and 50 standing passengers, the A300K model was purchased in 2009.

A review of the fleet age shows that most of the 40-foot buses are 2004 models and all of the 30-foot buses are 2009 models. According to FTA guidance, the minimum retirement age for heavy-duty large buses (35-48 feet) is 12 years or 500,000 miles. The requirement is a little less for heavy-duty small buses (30 feet) at 10 years or 350,000 miles. Based on this guidance the two vehicles from 2003 could potentially be retired in 2015 depending on vehicle condition. Many agencies carry their vehicles past the service-age requirement. It should be noted that DDOT is currently evaluating the potential to utilize many other

forms of propulsion (e.g. hybrid diesel-electric, natural gas, electric) for future fleet acquisition contracts.

TABLE 10-1 | CIRCULATOR'S CURRENT FLEET BREAKDOWN

Size	Make	Model	Year	Quantity
40-foot	Van Hool	A 330	2003	2
40-foot	Van Hool	A 330	2004	27
40-foot	Van Hool	A 300 L	2009	6
30-foot	Van Hool	A 300 K	2009	14

10.1.2 Fleet Replacement, Expansion and Stabilization

Tables 8-2 and **8-3** depict anticipated fleet needs, including vehicle replacements, expansion vehicles for each phase of the planned Circulator expansion, as described in **Chapter 7**, and the additional stabilization vehicles needed to provide 10-minute service on existing routes. The fleet replacement, expansion and stabilization plan assumes:

- A 12-year service life.
- A 15 percent spare ratio.
- An increase in the unit price of buses of 5 percent per year.

Assuming a 12-year service life, the original fleet will need to be replaced during Phases 1 and 2 (see **Table 10-2**). Because the buses were not purchased using federal funding, they do not have to meet federal life-cycle requirements before replacement. Therefore, DDOT can spread the replacement of the original vehicles out over several fiscal years.

TABLE 10-2 | REPLACEMENT VEHICLE NEEDS[13]

Year	Unit Cost[14]	Replacement Vehicles	
		Estimated Total Number of Vehicles[15]	Total Cost
2015	$745,500	0	$0
2016	$782,775	19	$14,872,725
2017	$821,914	10	$8,219,138
2018	$863,009	0	$0
2019	$906,160	0	$0
2020	$951,468	0	$0
2021	$999,041	20	$19,980,826
2022	$1,048,993	0	$0
2023	$1,101,443	0	$0
Total		49	$43,072,689

Total fleet expansion under the proposed growth plan is estimated at 119 vehicles, including 63 new vehicles, 49 replacements and 7 stabilization vehicles (see **Table 10-3**).

TABLE 10-3 | EXPANSION/STABILIZATION VEHICLE NEEDS

Year	Unit Cost[16]	Expansion Vehicles		Stabilization Vehicles		Estimated Total Number of Vehicles	Total Cost
		Revenue Vehicles	Spares	Revenue Vehicles	Spares		
2015	$745,500	18	3	6	1	28	$12,673,500[17]
2016	$782,775	2	0	0	0	2	$1,565,550
2017	$821,914	9	2	0	0	11	$9,041,054
2018	$863,009	0	0	0	0	0	$0
2019	$906,160	6	1	0	0	7	$6,343,119
2020	$951,468	0	0	0	0	0	$0
2021	$999,041	7	2	0	0	9	$8,991,372
2022	$1,048,993	0	0	0	0	0	$0
2023	$1,101,443	11	2	0	0	13	$14,318,759
Total		53	10	6	1	63	$52,933,354

10.1.3 Facility Needs

As the DC Circulator system grows, so too will its physical space needs. The Circulator's Operator will require not only space to park additional vehicles, but also added space to support growing administrative and maintenance functions. The Operator is required through the Circulator's service contract, to be awarded

in fall 2014, to provide a facility that has adequate space for storage of 80 vehicles and maintenance of the current fleet as well as expansion by up to 15 buses per year through the life of the new contract. The facility needs beyond 80 vehicles will need to be considered and planned for in the future. To that end the current District budget includes funding for planning, design, and construction of a Circulator bus storage and maintenance facility in the future. Still to be determined is how this facility will fit into plans for the District's Integrated Premium Transit operator.

10.1.4 Capital Funding Mechanisms

The capital cost associated with vehicles and future facilities is significant, and under current federal funding arrangements in the national capital region no Federal Transit Administration (FTA) formula funding would be available for this purpose. By regional agreement, WMATA is the direct recipient for all FTA formula funding, and it uses these federal capital dollars to meet the capital needs of the services it provides to the region. As is apparent from previous studies and planning efforts, this amount is insufficient to meet the on-going replacement/repair needs of the existing WMATA services and it is unlikely that the Council of Governments would change the allocation arrangement to meet the capital needs of the local bus systems, including DC Circulator.

In addition, federal funding for capital investments would require the DC Circulator to comply with a variety of federal requirements, including "Buy America." The "Buy America" requirements set thresholds for the amount of U.S. content that a federally funded transit vehicle must have and typically require final assembly in the U.S. The DC Circulator's current fleet of Van Hool buses are built in Belgium and do not meet these requirements. The benefits of seeking a U.S. manufacturer for vehicles include lower parts and maintenance costs and faster parts delivery.

To date DDOT has exclusively used local funds, allocated through the District of Columbia budget process, to fund both operations and capital expenditures. Given the aforementioned complexities in receiving non-local funds, DDOT intends to continue using local funds for all Circulator expenses.

11

Circulator Governance

Since its inception, the Circulator has been operated under an "agency model" of providing transit service, with DDOT, on behalf of the Mayor, responsible for decisions about routes and schedules. Legislative and budget oversight is provided by the DC Council. This is consistent with nearly all of the local bus services operated by jurisdictions in the Washington, DC region. Unique to the District and the Circulator, DC Surface Transit Inc. (DCST) provides planning, marketing, and operations advisory services to DDOT.

In recent years, with the popularity of the service, the DC Council has appropriated funding for specific routes or extensions. Council and some stakeholders have also expressed concerns about the transparency of agency decision-making on issues from fares to routes to schedules.

Evaluation of Circulator governance is an important component of thinking about system-level planning and service provision, and the appropriate governance structure is of critical importance in providing efficient and effective service. DDOT is committed to seeking transparent and open ways to seek public input on decision-making that fits within the other budget and oversight processes of the District.

11.1 Decision-Making Procedures and Responsibilities

Decisions about Circulator operations are made at three primary levels. The table below outlines each level, key activities, input methods, and processes at each level. Items denoted with an asterisk (*) are new activities that DDOT has identified to improve transparency of decision-making. The specific steps in Circulator Route development and implementation are provided in **Figure 11-1**.

TABLE 11-1 | DECISION MAKING LEVELS

Planning level	Key Activity	Input methods	Approval Processes
System	Transit Development Plan	• Public engagement in TDP • Semi-annual Circulator public meetings • Council oversight and annual funding appropriation	• Public comment periods on draft TDP and budget actions • (*) Fare modification proposal and public hearing.
Corridor	Corridor/Line Evaluation	• Public engagement and feedback in line evaluation.	• DDOT approval of system expansion. • Council approval of annual Circulator budget.
Line	Service Plan Service Adjustments	• Public engagement in service plan.	• (*) Public comment, Notice of Intent, and hearing on Service Plan or Service Adjustments.

11.2 Public Participation Process

DDOT should continue to provide the public with opportunities for system-level, informal discussions about the Circulator twice each year. These semi-annual forums will provide an opportunity for DDOT to receive feedback on decisions that have been made and changes that have been implemented. Ongoing opportunities for public comment would be maintained on the DDOT and Circulator websites. An annual Circulator survey will also continue to provide valuable feedback. DDOT should conduct public outreach to engage a broad cross-section of the Circulator riders, and meetings and printed material should conform to District and Federal Transit Administration requirements for multiple languages.

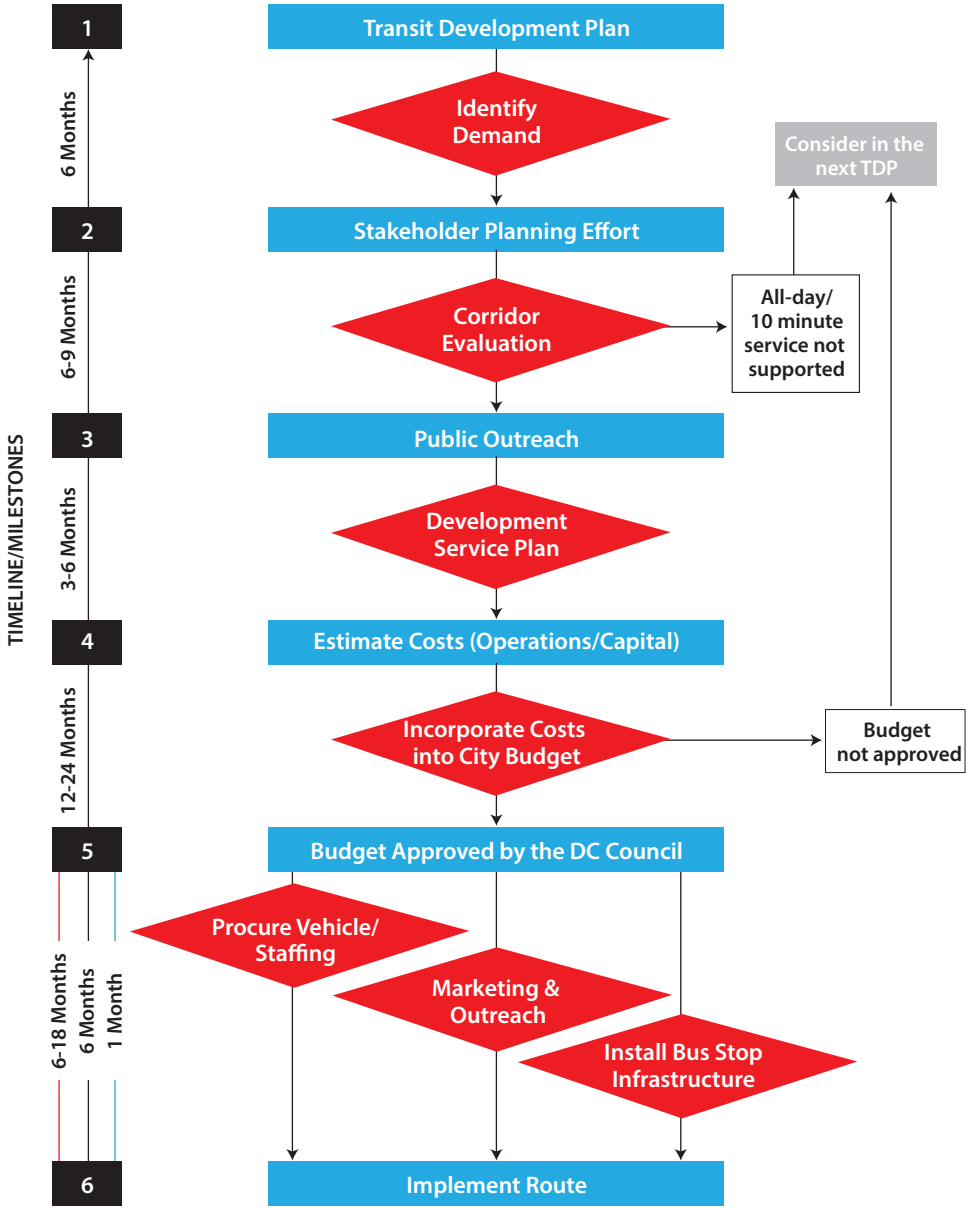
DDOT should implement two new processes in order to improve the transparency of the Circulator system:

1. Provide for a public comment period and public hearing on proposed fare modifications, and
2. Provide for a public comment period and public hearing on the initiation of new service or major adjustments to existing service, such as decisions about schedules and routing.

In order to provide clarity around the expectations for these processes, DDOT should publish regulations in the DCMR to codify the process for each.

In addition to these formal processes, following onto this TDP, in collaboration with DCST, DDOT should conduct a comprehensive assessment of appropriate service standards, including hours of operation, branding, and minimum service standards for Circulator service. This assessment would help in developing triennial updates to the TDP and in beginning corridor evaluations. The assessment process should include opportunities for public input, including a public hearing.

FIGURE ES-4 | CIRCULATOR ROUTE DEVELOPMENT AND IMPLEMENTATION PROCESS



12 Circulator Issues for Further Consideration/Study

There are a number of issues that have arisen over the course of the 2014 TDP Update that should be carried forward for additional consideration and/or study. Many of these issues relate to policies or require detailed operational studies that go beyond the scope of this TDP Update. Issues that were identified as policy considerations are described to facilitate continued dialogue among stakeholders. Additional planning studies are recommended to be conducted to more fully assess needs that were identified by stakeholders, and/or based on transportation deficiencies that were identified during the TDP update. New policies, changes to existing policies, and the results of these studies, if not carried out in the short-term, will be incorporated into the next TDP update.

12.1 Operational Issues

All of the Circulator routes face operational challenges on a daily basis. Typically these occur during the peak periods when vehicular traffic is greatest and delays on the roadway network are most pronounced. As a result many of the routes suffer from poor headway adherence (inability to provide service that arrives at least every 10-minutes) and buses are unable to complete the route in the designated amount of time resulting in missed trips. There are several measures that DDOT can undertake to improve the operating environment in which the buses operate including:

- **Bus Priority Treatments:** Transit signal priority, bus only lanes (both permanent and peak only), and queue jump lanes at key congestion hotspot locations to improve citywide transit system performance.
- **Intersection Evaluation:** Modify intersection signal timing based on an analysis of person throughput to potentially give more green time to the movements that serve the highest number of persons (using vehicle, pedestrian, bicycle, and bus passenger load data), regardless of resulting intersection LOS.
- **Parking and Enforcement:** Work with DDOT's traffic control officers (TCOs) and Department of Public Works Parking Enforcement (DPW) to

identify enforcement hotspots where illegal parking results in bus delay, e.g., the inability for buses to make specific turning movements or serve stops when other vehicles are illegally parked.

- **Bus stop consolidation.** Consolidate bus stops on routes to meet the limited-stop guidelines (3 – 4 stops per mile). Doing so may improve productivity, running time, and reliability, particularly for low boarding/alighting stops within close proximity. Bus stop consolidation will only provide small improvements along routes that face high traffic congestion (e.g., Georgetown – Union Station).

The transit plan section of the moveDC Multimodal Long Range Transportation Plan identifies six key transit operational improvement strategies that will benefit all surface transit, including Circulator.[18] They are exclusive transit lanes (dedicated lanes); traffic signal operations enhancements; queue jump and bypass lanes; transit stop consolidation; bus bulb-outs; and, pre-payment of bus fares.

12.2 Additional Studies

The following issues were identified for further study during the 2014 TDP Update:

- New route serving NoMa – Service Study Anticipated to Begin Fall/Winter 2014
  - In close coordination with the NoMa BID, DCST and other stakeholders; study options for a new Circulator route that would serve NoMa and develop a detailed service plan for a preferred route. This study would take place between Fall/Winter 2014 and Summer 2015.

- Union Station – Navy Yard Schedule and Span Pilot Study
  - In close coordination with DCST will develop and implement a pilot study to provide additional evening and weekend service on this route and evaluate the response to determine if ridership demand is sufficient to implement the changes long-term. This area will add 1,400 employees and 1,800 residential units in the short-term.
- Implement a detailed and coordinated marketing strategy and deploy new marketing efforts based on this plan to promote the existing and planned Circulator service.
  - DDOT is working within the framework of the goDCgo efforts to develop a comprehensive marketing strategy and approach for Circulator. The strategy will unify and focus the marketing plan and present a clear message to the public and promote Circulator use by residents and visitors.
  - A comprehensive marketing plan will improve awareness and strengthen the Circulator brand resulting in increased ridership.
  - A funded marketing program will be a regular component of the annual Circulator budget.

12.3 Policy Considerations

The following policy considerations have been identified for continued dialogue within DDOT and with key stakeholders.

12.3.1. Markets that Support 10 Minute Headways

Although a significant portion of the District presents a dense land use profile and the District population is expanding at a robust pace, there are in fact a limited number of markets that can support a policy headway of 10 minutes key to the DC Circulator brand. This is due to several factors including:

- The wide range of trip purposes in the District.
- The limited number of Activity Centers outside of the dense central core of the District that represent truly large higher density multi-purpose activity centers.
- The extensive nature of the existing WMATA bus and rail service that connects many of these activity centers.

When reviewing the performance of the existing Circulator system only three of the existing routes clearly meet the requirements to justify Circulator service at 10 minute headways. These routes connect multiple activity centers and are useful for many trip purposes including: tourism; shopping; entertainment; and commuting among others. They also serve markets that are not directly served by Metrorail, or provide a one-seat ride[19] that Metrorail does not. Their success is evident based on their high ridership both in the morning and afternoon commuter periods as well as the mid-day and weekends.

The other two routes have much lower ridership. While they do have strong peak period use, they are generally severely underutilized during the mid-day/ evening periods and on weekends.

A recent analysis of all Circulator service revealed several issues with the existing routes including:

- Overcrowding of some routes during peak periods (primarily the PM peak period).
- Low ridership during non-peak periods (mid-day, evenings).
- Low ridership on weekends.

To address the first issue, overcrowding, a typical response would be to increase service where overcrowding is present; accomplished by adding buses to a route and reducing the time between buses (reducing headways). To address the second issue a typical response would be to decrease service at times when it is underutilized; accomplished by removing buses from a route to expand the time between buses (increasing headways).

As noted in **Chapter 11**, standards for decision-making have not yet been codified. As such, there is no method by which to address the issues noted above, this is, Circulator routes operating in markets that do not support all-day 10-minute service. Moving forward this issue will need to addressed as part of the broader discussion on governance.

12.3.2 Fiscal Stewardship

When the Circulator was established the base boarding charge (fare) was set at $1.00 and the transfer charge from Metrorail at $0.50. While various adjustments have taken place regarding transfers on SmarTrip cards versus paper transfers, no changes to the fare have otherwise been enacted in the past eight years. Meanwhile, WMATA Metrobus fares have steadily increased from $1.20 in 2004 to $1.80 in 2012 (with a 20 cent discount for using SmarTrip beginning in 2010). Recently WMATA modified the Metrobus fare to be $1.75 for both cash and SmarTrip. As it stands, the fare on Metrobus is 75 percent higher than that of the Circulator.

Many bus transit operators realize a fare recovery ratio of 25 to 35 percent meaning that fare revenues cover between 25 and 35 percent of operating costs. Fare increases are one method by which to increase revenue. However, several decades of research has shown that increasing fares results in a decrease in ridership. Thus any policy change related to fares must be carefully considered.

Photo by Sam Kittner Photography

Furthermore, fare policy, and the fiscal needs of the system, must be considered in the broader discussion of the Circulator's original core goals: improving the quality of the surface transit experience in order to stimulate non-bus riders to use a bus for short trips; demonstrating to other transit operators that a focus on improving the rider's transit experience builds ridership and popularity of bus service; and to contribute to reducing congestion and pollution. Ultimately the District may decide that maintaining a low fare, and accepting a lower than ideal fare recovery ratio, is an acceptable tradeoff in the pursuit of the Circulator's core goals but this will in turn require a greater financial commitment in providing the service. **Appendix B** describes the potential impacts of various fare scenarios. This issue will need to be included in the dialogue on governance, decision-making, and the District budget process.

Endnotes

1 http://www.wemovedc.org/resources/DraftPlan/T-Transit_Element.pdf#page=27

2 District of Columbia Downtown Circulator Implementation Plan, July 2003

3 One response had no location associated with it.

4 Inclement weather limited public participation at this event.

5 The survey question did not specify if raising the fares would be used to improve existing routes or for expansion.

6 2011 TDP

7 Transit costs vary considerably from one route to the next due to the number of vehicles deployed and the service hours provided. This is why some routes have seen a greater percentage increase in cost than others between 2011 and 2013.

8 The National Cathedral has indicated a willingness to let DDOT utilize this garage for Circulator service if needed.

9 http://www.wemovedc.org/resources/DraftPlan/T-Transit_Element.pdf#page=25

10 Buses required do not include spares

11 Based on first 12 months

12 Includes a 10% operating contingency

13 Assumed 40' buses for all replacement and expansion vehicles

14 Assumed 40' buses for all replacement and expansion vehicles

15 Assumes a 2015 base cost of $745,500 for 40' buses with an annual 5% increase in bus unit cost. Depending on how DDOT procures vehicles there are likely to be a variety of additional costs associated with vehicle procurement such as preparation of vehicle specifications and vehicle inspection costs.

16 Based on a 12 year service life, this does not take into account mileage on each vehicle

17 Final cost does not include the 13 vehicles already purchased for the National Mall route

18 http://www.wemovedc.org/resources/DraftPlan/T-Transit_Element.pdf#page=27

19 A trip that doesn't not require a transfer