



District Department of Transportation

Technical Memorandum #1

Evaluation of Current System

June 4, 2014





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1.0 Introduction

This technical memorandum on system evaluation provides an update to the operations analysis performed in the 2011 Circulator Transit Development Plan (TDP). While DDOT completes regular monitoring of DC Circulator service performance through the Circulator Dashboard (circulatordashboard.dc.gov), it was important to review performance trends over time in the context of the DC Circulator's strategic goals and objectives.

This technical memorandum first describes the service characteristics and fare structure of the existing DC Circulator system, and then summarizes the operational changes and capital improvements since the last TDP. A series of route profiles feature performance measures at both the system and route levels from calendar years 2011 through 2013. DDOT utilizes these components of the system evaluation to identify opportunities for improving the existing system that are described at the end of the memorandum.

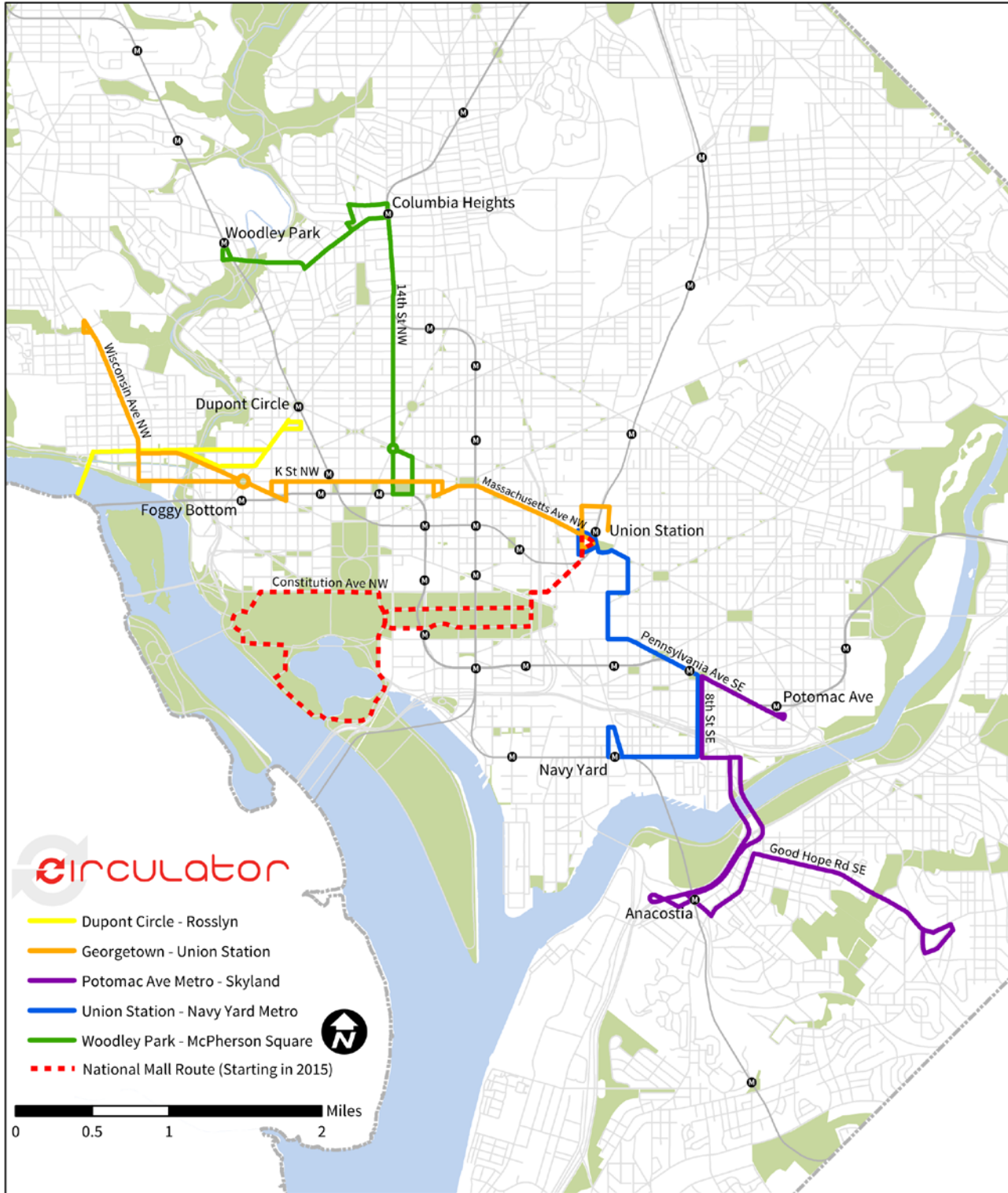
2.0 The Circulator System

The DC Circulator is a five-route bus system with service spanning into each of 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 DC Circulator was conceived as "a simple, inexpensive, and easily navigable surface transit system that complements Metrobus and Metrorail."¹ Circulator services were intended to stimulate economic activity by facilitating visitor access to neighborhoods in the District and to improve mobility for downtown workers around the central core during the workday. In line with these principles, DDOT established the Circulator with a simple \$1.00 fare, all-day 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.

Shown in Figure 2-1, the current Circulator system provided 5.6 million trips in 2013 and is the fourth largest bus system in the region in terms of ridership.

¹ *District of Columbia Downtown Circulator Implementation Plan*, July 2003.

Figure 2-1 | Current Circulator System



2.1. 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. Figure 2-2 depicts the growth of the Circulator system starting with the introduction of the Georgetown-Union Station and Convention Center-SW Waterfront routes in 2005. The Smithsonian-National Gallery of Art route began service the following year, and the Woodley Park-Adams Morgan-McPherson Square Metro and Union Station-Navy Yard Metro routes began operations in 2009. The Dupont Circle-Georgetown-Rosslyn route was added to the Circulator system in 2010. The Circulator's newest route, Potomac Ave Metro-Skyland via Barracks Row, began service in 2011.

2.2. Organization and Fare Structure

The DC Circulator is owned by DDOT, managed by WMATA, and operated by First Transit. 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. Seniors or persons with a disability may utilize the service for half the cost of the general fare. Students may ride the DC Circulator for free with the DC Student Travel Card, and children under the age of five may ride for free when in the company of a paying adult. The three forms of payment options are cash (exact change required), passes, and SmarTrip Card. Passes must be purchased before boarding the bus, either online through CommuterDirect.com or at the Commuter Store in Arlington, VA. The following types of unlimited-trip passes are available: One-Day (\$3), 3-Day (\$7), Weekly (\$11), and Monthly (\$40). Discounts are available for bulk orders of more than 100 passes.

The DC Circulator has been using SmarTrip technology since the beginning of transit operations in 2005. The SmarTrip card allows riders to transfer for free from any DC Circulator vehicle, any Metrobus vehicle, or any Arlington Transit (ART) vehicle within two hours. There is a 50 cent transfer discount when using the SmarTrip card to transfer from Metrorail, except for seniors or persons with a disability. Based on data from the Circulator Dashboard, Figure 2-3 and Figure 2-4 display the use of Circulator fare options during calendar year 2013. Approximately 76% of Circulator riders used the SmarTrip card to pay the fare – an increase of 13 percentage points since the last TDP analysis in 2010. SmarTrip usage accounts for 84% of all trips, when including weekly passes. The share of SmarTrip users transferring from a bus or Metrorail remained the same: about 25% from a bus and about 14% from Metrorail.

Figure 2-2 | Growth of Circulator System

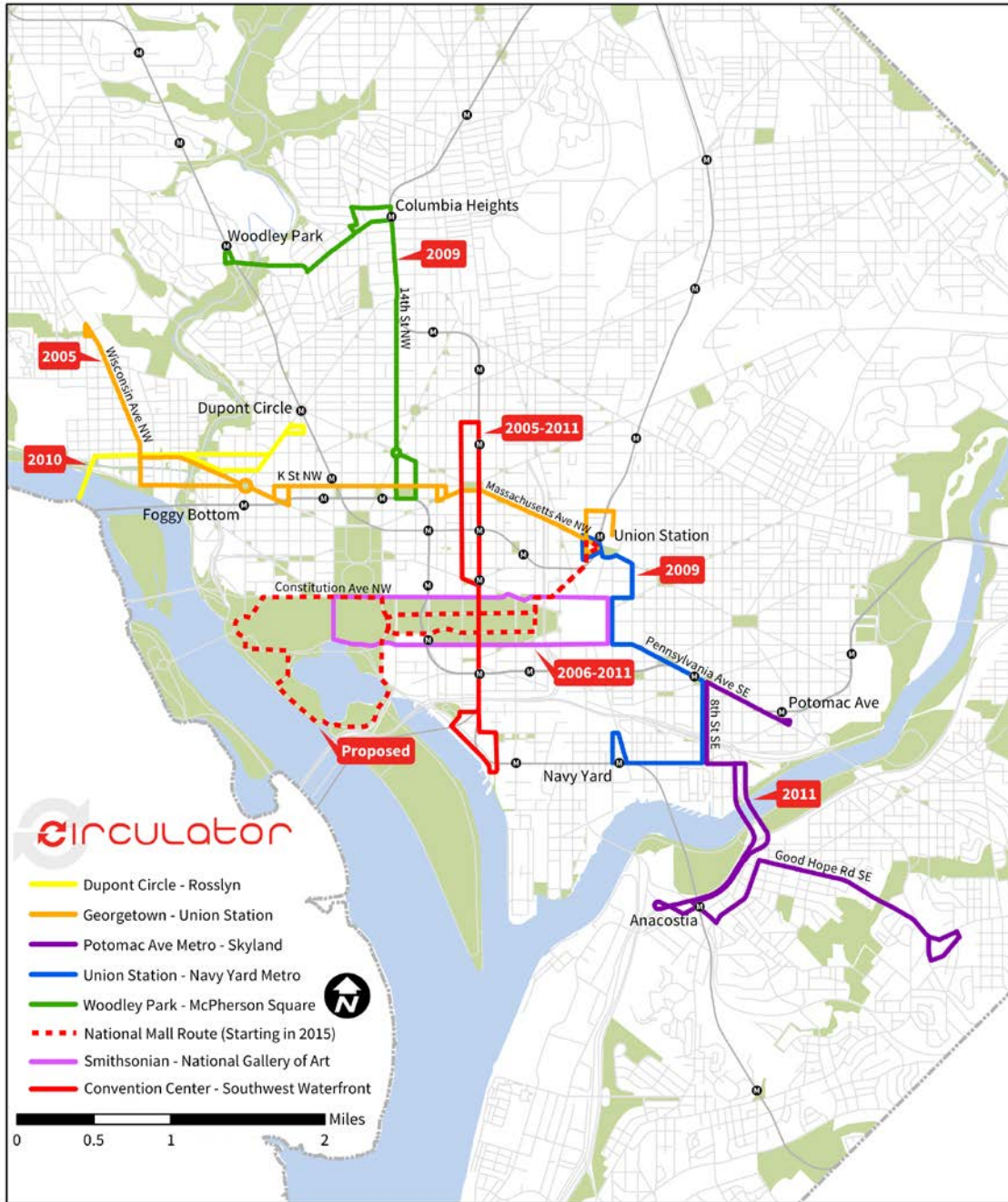




Figure 2-3 | 2013 SmartTrip, Cash, and Pass Use on DC Circulator

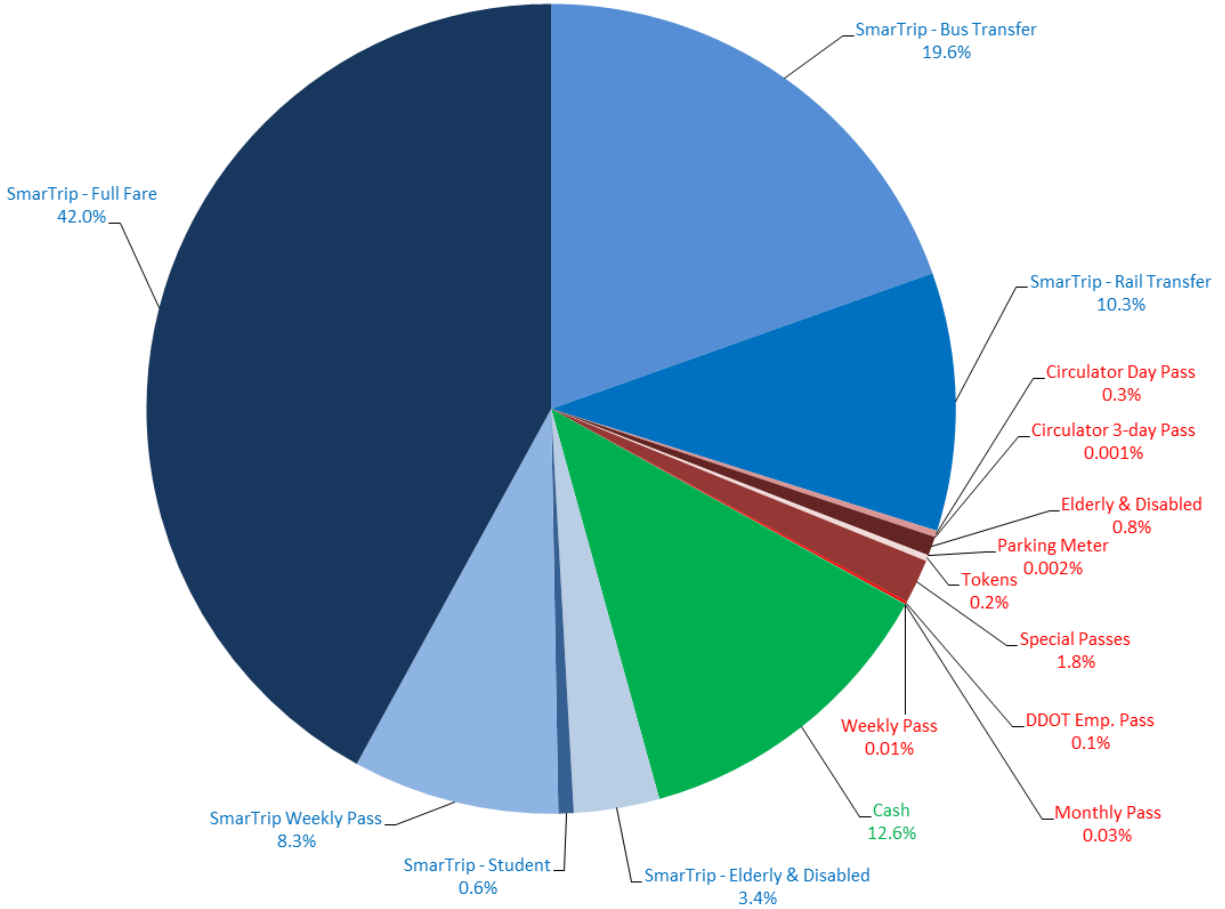
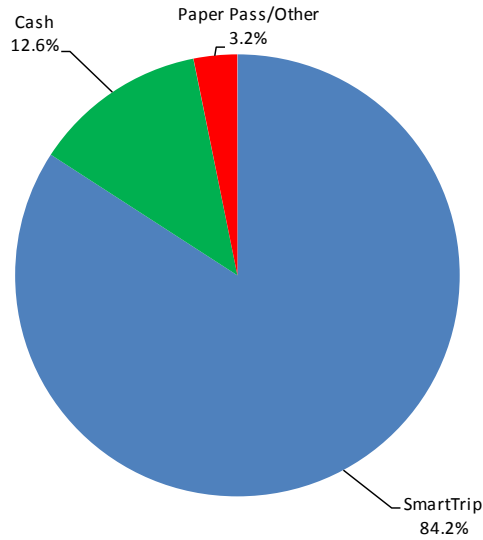
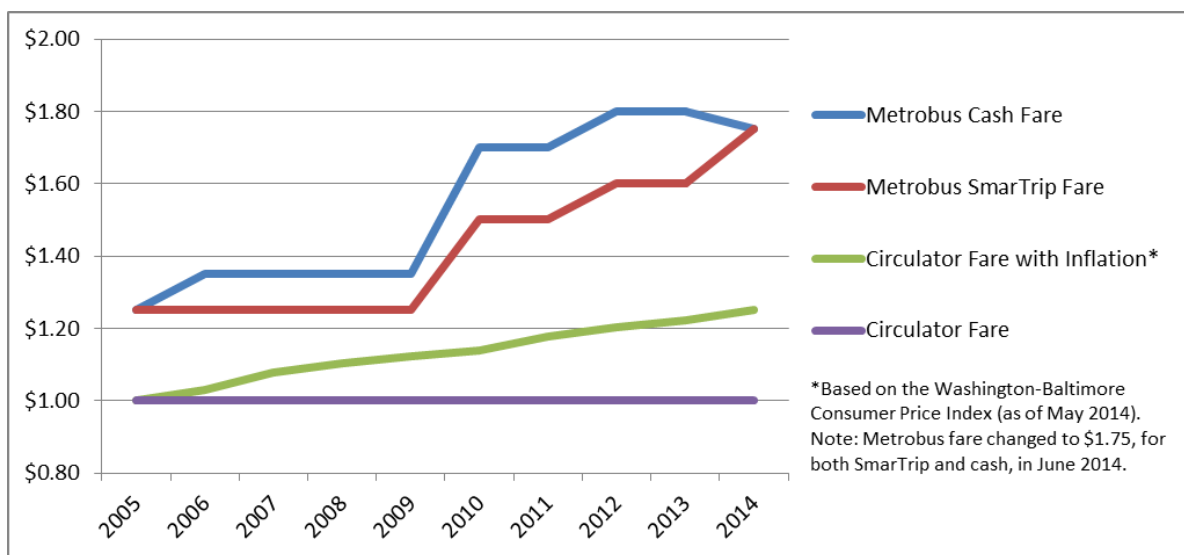


Figure 2-4 | 2013 SmarTrip, Cash, and Pass Aggregated Use on DC Circulator



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 2-5 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 2-5 | Circulator and WMATA Metrobus Fare Comparison





2.3. Hours of Operation

DC Circulator routes have 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 2-1 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 2-1 | Current Circulator Routes’ Days and Hours of Operation

Circulator Route	Weekdays	Sat.	Sun.	Hours
Dupont Circle – Georgetown – Rosslyn	X	X	X	7am-12am (Sun-Th) 7am-2am (Fri-Sat)
Georgetown – Union Station				7am-9pm daily
Additional Night Service (Whitehaven – McPherson Square)	X	X	X	9pm-12am (Sun-Th) 9pm-2am (Fri-Sat)
Union Station – Navy Yard Metro*	X	Summer only		6am-7pm (Winter) 6am-9pm (Summer M-F) 7am-9pm (Summer Sat)
Woodley Park – Adams Morgan – McPherson Square Metro	X	X	X	7am-12am (Sun-Th) 7am-3:30am (Fri-Sat)
Potomac Ave Metro – Skyland via Barracks Row*	X	Summer only		6am-7pm (Winter) 6am-9pm (Summer M-F) 7am-9pm (Summer Sat)

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

3.0 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. The DC Circulator provides a high-quality transit network of limited-stop, high frequency service in a system that is easy to use and understand, including an affordable and simple fare structure. 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 and implementing 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.



This section summarizes the changes that DDOT implemented to DC Circulator routes between 2011 and 2013 including recommendations from the 2011 TDP.

3.1. Recommendations Implemented Since 2011 TDP

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.

3.2. Operational and Capital Changes 2011-2013

The specific operational and capital changes that DDOT implemented from 2011 through 2013 are summarized below, by year of implementation. Additional details regarding the reasons for the changes and associated issues are described in Appendix A.

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.

4.0 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 performance over the past three years.

Evaluation Framework

In the 2011 TDP, DDOT developed strategic goals to outline the long-term outcomes that the DC Circulator aims to achieve, along with short-term objectives to specify actions for reaching these goals. The strategic goals and objectives play an important role in guiding the planning process for Circulator services and defining the role of DC Circulator within the greater transit network. This technical memorandum focuses on the first two goals, listed below, for which DDOT developed operational performance measures.

GOAL 1: Provide a high quality transit network

Objectives:

- 1.1 Provide efficient, reliable, limited-stop, and high frequency service.
- 1.2 Ensure clean, safe, and courteous operations.
- 1.3 Design and maintain the system so that it is easy to use and understand.
- 1.4 Maintain an affordable and simple fare structure.

GOAL 2: Maximize financial and operational return on investment.

Objectives:

- 2.1 Provide transit priority measures along Circulator routes.
- 2.2 Maximize the level of service that can be provided with the financial resources available
- 2.3 Establish Circulator performance criteria and provide public evaluation reports.
- 2.4 Identify sustainable financing opportunities.

DDOT monitors the following operational performance measures 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 4-1.



Table 4-1 | Circulator Performance Measures and Targets

Performance Measure	Target
On-time performance	80 percent 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

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 operational performance measures, and compares the 2013 data to 2010 performance and the targets 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 and 2012. A summary of the DC Circulator’s performance by route in 2013 can be found in Appendix B.

DDOT evaluated DC Circulator service against targets for seven of the performance measures. At the system level, the DC Circulator performed well in on-time performance, boardings per revenue hour, subsidy per passenger, and bus stops per mile. Areas for improvement included farebox recovery ratio, customer complaints per 10,000 passengers, and preventable accidents per 10,000 revenue miles. Figures 4-3, 4-4, and 4-5 depict the historical data for these three performance measures, respectively, which indicate that the system’s performance declined from 2011 to 2013. These are the areas of performance in which DDOT should focus operational improvements.



Figure 4-3 | Farebox Recovery Ratio by Route, 2011-2013

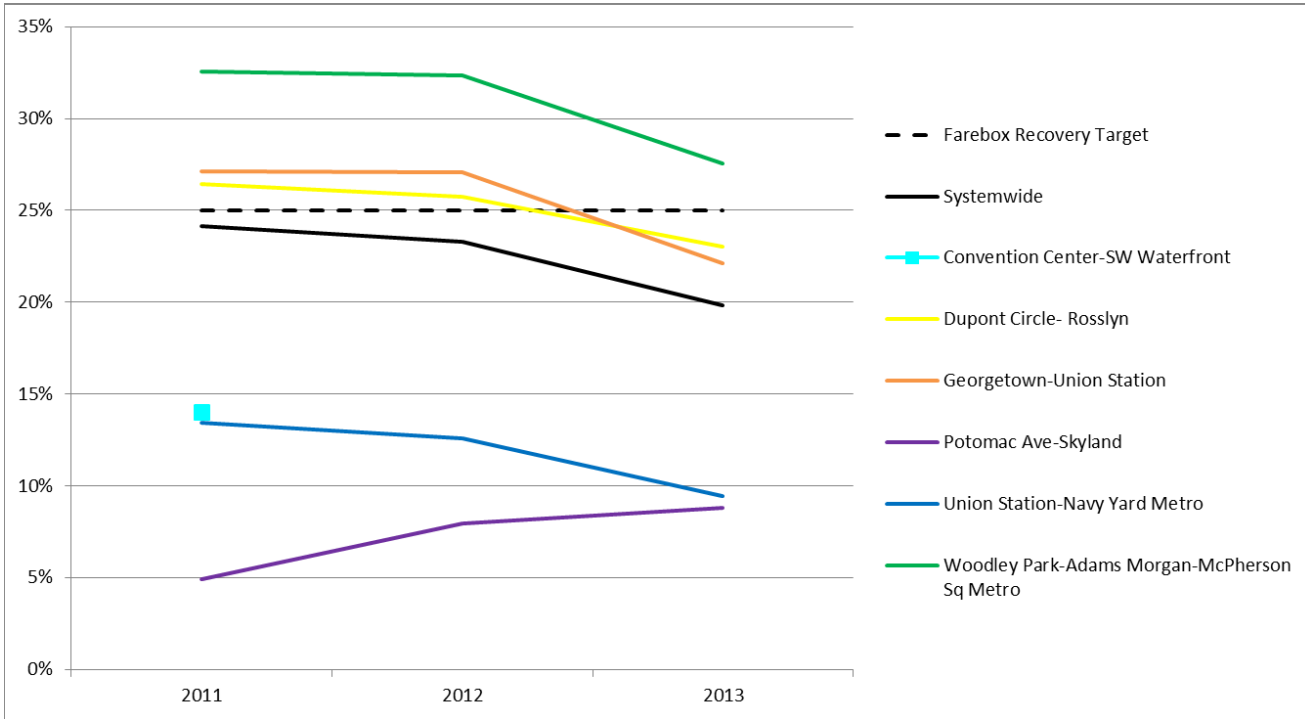


Figure 4-4 | Customer Complaints per 10,000 Passengers by Route, 2011-2013

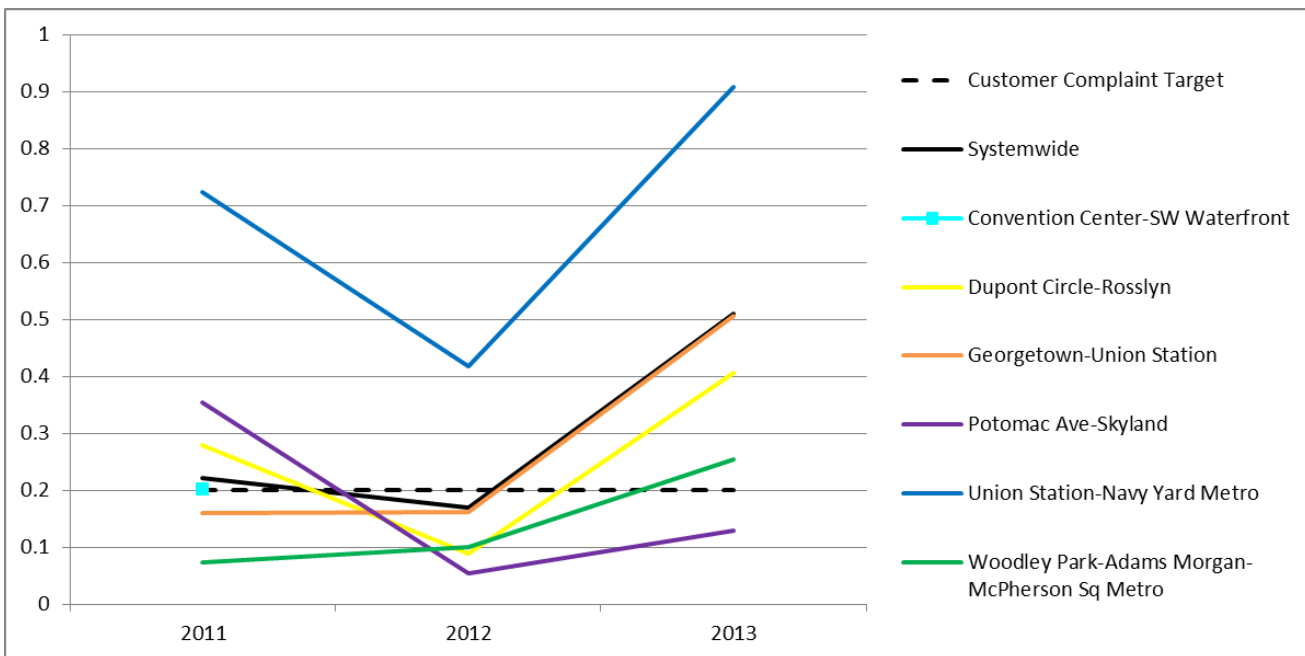
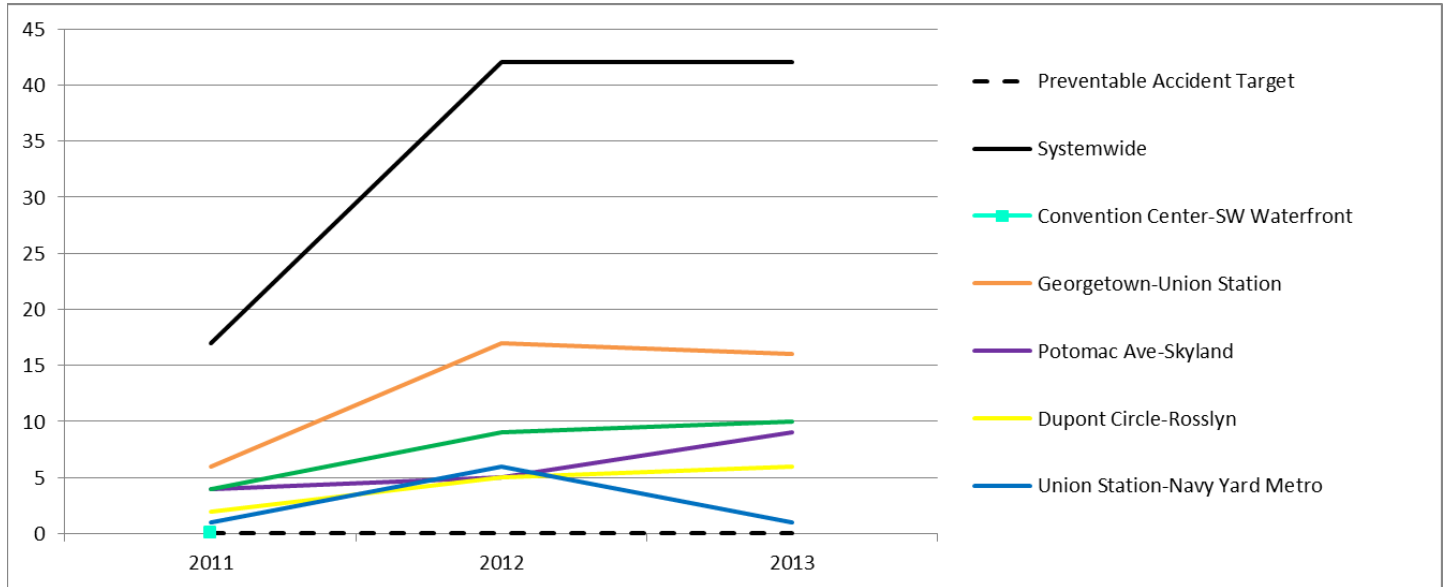


Figure 4-5 | Preventable Accidents per 10,000 Revenue Miles by Route, 2011-2013



Move DC Operations Analysis

In 2013, DDOT conducted a Local Bus Study for Move DC. As part of the study, DDOT analyzed two days of data from ridechecks completed in May for Circulator and non-regional Metrobus routes. Based on this analysis, DDOT developed findings, recommendations and possible service improvements for each route and incorporated them into the greater Move DC plan. Summarized in Appendix C, the findings of the Move DC analysis were reviewed as part of this performance evaluation. However, the TDP Update was more thorough and comprehensive than the Move DC analysis due to differences in methodology. DDOT used several years of Circulator Dashboard data and data from recent WMATA bus studies for the TDP Update. The data is statistically more reliable than data collected from a two-day ridecheck. In addition, the TDP Update also incorporated findings from the activity center analysis, an analysis of local bus service, and public input.

5.0 Circulator Costs 2011-2013

In addition to performance metrics, DDOT examined the total system cost of the DC Circulator system between 2011 and 2013. This information provides a foundation for additional analyses of costs related to WMATA services, staffing, and fares later in the TDP process. Given the organizational structure of DC Circulator, the system’s costs include:

- Operating costs:



- For DDOT staff to provide oversight of the management contract with WMATA and conduct public outreach activities;
- For WMATA staff to manage the operations contract with First Transit, including monitoring service performance;
- For First Transit to operate the DC Circulator system, including maintenance of the vehicles and provision of vehicles for limited turnkey service; and
- Capital costs:
 - For DDOT to purchase vehicles and other equipment.

5.1. WMATA and First Transit Operations Costs

The cost data included on the Circulator Dashboard represents the operations costs for WMATA management and First Transit operations. The costs account for WMATA staff, supplies, and overhead (the management fee), and First Transit’s staff, supplies, fuel, and maintenance of the buses. Figure 5-1 displays the system costs for WMATA management and First Transit operations. These operating costs grew from \$15.9 million in 2011 to \$17.1 million in 2013, with annual increases of 2.2% in 2012 and 5.2% in 2013 and a total increase of 7.6% over the three year period.

Figure 5-1 | Systemwide WMATA and First Transit Operations Costs 2011-2013

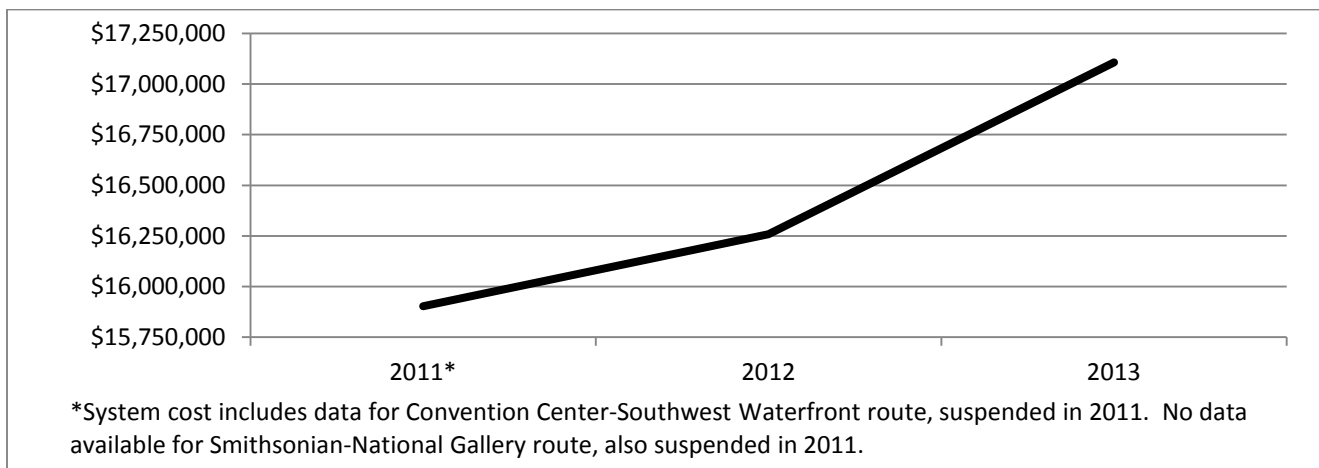


Figure 5-2 displays the annual WMATA and First Transit operations costs from 2011-2013 by route. Each route has seen modest increases in operating costs over the three year period, with the largest increase (11.2%) on the Woodley Park – Adams Morgan – McPherson Square Metro route and the smallest increase (1.5%) 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%), followed by the Woodley Park – Adams Morgan – McPherson Square Metro route (20.2%). The remaining



routes each comprised 13.4% to 15.8% 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.

Figure 5-2 | WMATA and First Transit Operations Costs 2011-2013 by Route

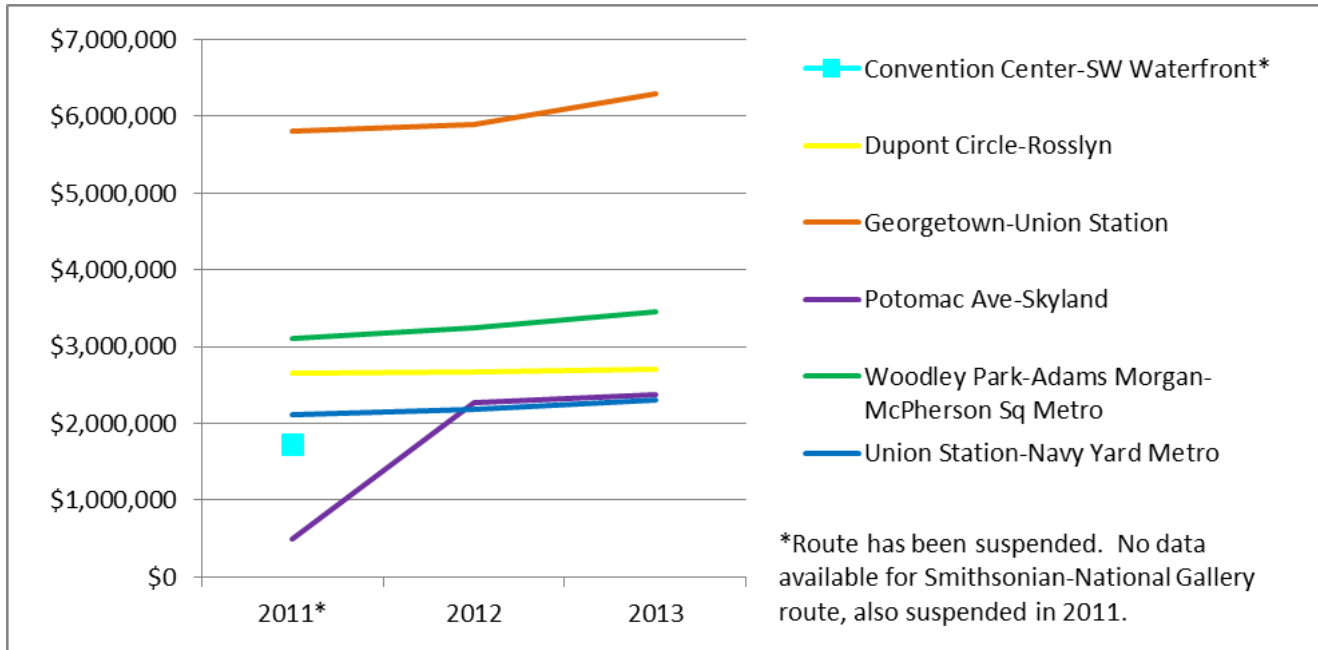
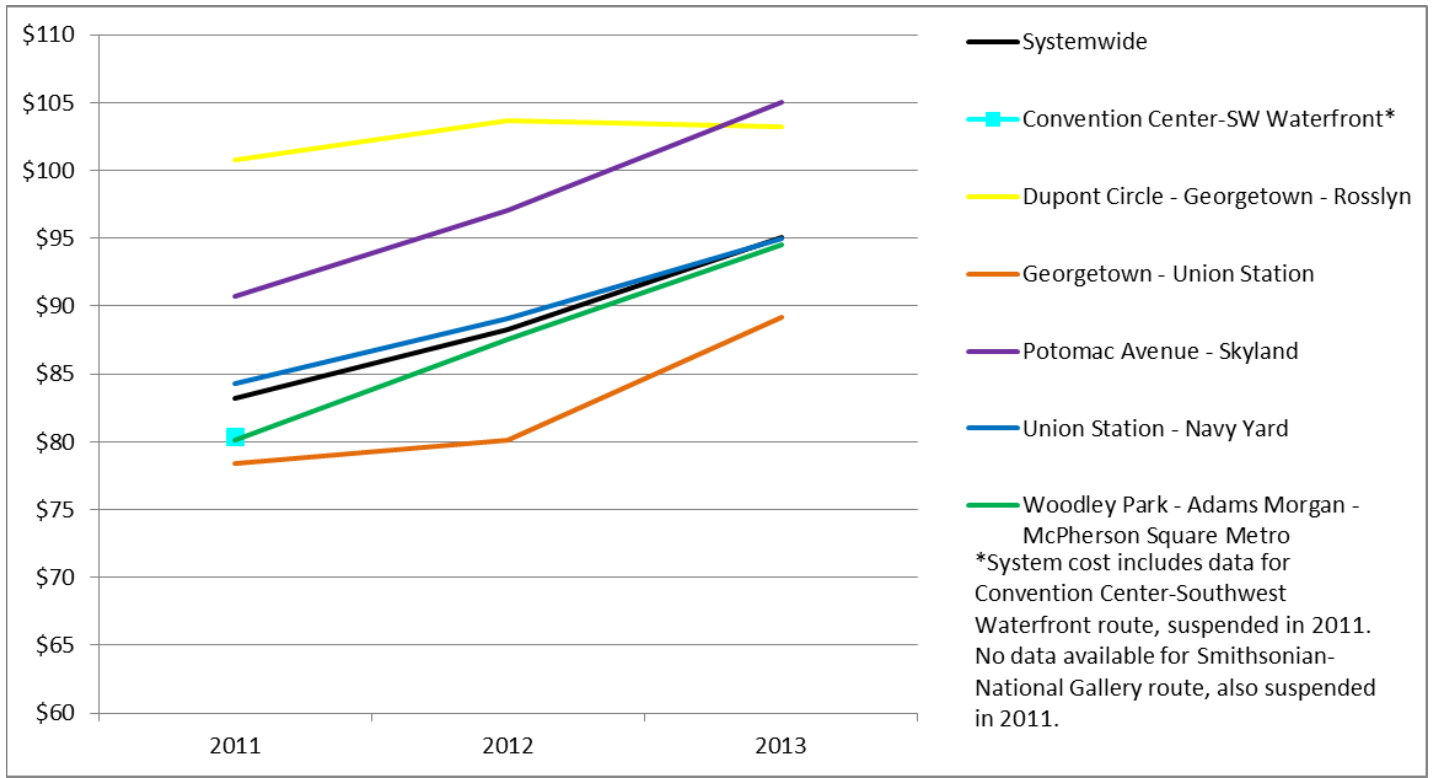


Figure 5-3 displays the annual cost per revenue hour from 2011-2013 by route and at the system level. Each route has seen increases in cost per revenue hour over the three year period, with the largest increase (17.9%) on the Woodley Park – Adams Morgan – McPherson Square Metro route and the smallest increase (2.4%) 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 the Dupont Circle – Georgetown – Rosslyn route (\$103.24). 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. The systemwide cost per revenue hour has increased by 14.3% 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% 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 and First Transit each year.

Figure 5-3 | Cost per Revenue Hour by Route and Systemwide, 2011-2013



6.0 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.



- As shown in Figure 1-6, the farebox recovery ratio declined from 2011-2013 for nearly all routes, except for Potomac Ave Metro-Skyland due to a significant increase in ridership during this time period. The farebox recovery ratio coincides with ridership. The lowest ridership routes (Union Station-Navy Yard Metro and Potomac Ave Metro-Skyland) have less than half the farebox recovery of the other routes, which brings down the system average.
- As shown in Figure 1-7, the systemwide number of customer complaints increased significantly in 2013, more than double the number in 2011 and nearly triple the number in 2012. While the number of complaints per 10,000 passengers was close to the performance target in 2011 and 2012, it more than doubled in 2013. The Union Station-Navy Yard Metro route had the highest rate of complaints per 10,000 passengers in 2013, while the Georgetown-Union Station route had the largest number of complaints. However, every route experienced a notable increase in customer complaints in 2013 except for Potomac Ave Metro-Skyland.
- As shown in Figure 1-8, the systemwide number of preventable accidents increased from 2011 to 2012, but remained steady in 2013. The systemwide rate of preventable accidents per 10,000 revenue miles more than doubled in 2012, but decreased slightly in 2013. The greatest increase in preventable accidents occurred on the Georgetown-Union Station route in 2012, though all routes saw slight increases over the three year period.
- All routes met the target for on-time performance 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.
- While no target has been developed for this performance measure, it is worth noting that the systemwide operating cost per revenue hour increased 6-7% annually from 2011 to 2013.
 - Georgetown-Union Station and Woodley Park-Adams Morgan-McPherson Square had the lowest costs per revenue hour in 2013, while Dupont Circle-Georgetown-Rosslyn and 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 will become increasingly difficult.

7.0 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.



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Deploy Additional Vehicles to Meet Service Commitment. All routes are operating running times that are longer than scheduled, and customers are not experiencing the advertised 10 minute headways on these routes. Additional vehicles need to be deployed on all routes to meet the DC Circulator’s commitment to 10 minute headways.

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). Priority transit treatments are needed along these routes to significantly improve reliability.

Improve wayfinding at Union Station. Move the final Georgetown – Union Station bus stop location from the Union Station parking deck to Columbus Circle or a nearby on-street location. 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). Additional wayfinding signage to facilitate transfers from other modes in Union Station to DC Circulator would be especially helpful for new riders.

Promote a system-wide core service standard. Currently the routes vary in terms of the span of service and days of service. However, all of the existing routes operate 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 these core service hours systemwide, and then conduct marketing to assist current and potential passengers in understanding the evening and weekend variations among routes.

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.



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Appendix A: Detailed Summary of Operation and Capital Changes, 2011-2013

The following timeline summarizes the operational and capital changes to the DC Circulator since the 2011 TDP.

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

The information that follows provides additional detail on each of these Circulator operational and capital changes.

2011: Re-routed the Union Station – Navy Yard Metro route to 2nd Street NE, and in the summer extended evening hours and introduced Saturday service

In 2010 the Union Station – Navy Yard Metro route served the bus deck within the parking garage located behind Union Station. This stop location was inconvenient and confusing for riders to transfer to other transit services at Union Station. The route also served a second Union Station stop located on Columbus Circle. Due to security blockages on 1st Street NE, the route traveled along Louisiana Avenue NW and Constitution Ave NW-NE, which increased travel times.



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The 2011 TDP recommended consolidating the bus stops on Columbus Circle and taking a more direct route to serve the U.S. Capitol Visitor Center on 1st Street NE. Construction on Columbus Circle had also begun in 2011, making it difficult for buses to travel in front of Union Station to enter the parking garage.

In 2011 DDOT re-routed the Union Station – Navy Yard Metro route to serve one stop on the east side of Columbus Circle (no longer entering the parking garage) and take 2nd Street NE to Constitution Avenue NE en route to serve the U.S. Capitol Visitor Center. This revision simplified the stop at Union Station and shortened the one-way route length by 0.9 miles. Stakeholder and public input during the 2011 TDP also identified needs for later evening service and weekend service on the Union Station – Navy Yard Metro route. In 2011 DDOT extended summer weekday service by two hours until 9pm and introduced Saturday service, from 7am-9pm, during the summer months.

2011: Consolidated and added bus stops on the Georgetown – Union Station route

The 2011 TDP asked riders about the elements of Circulator service they like most. Many riders emphasized the limited stop services available on the McPherson Square-Adams Morgan-Woodley Park route. Given this strong emphasis, limited stop services were incorporated into the Circulator’s planning criteria in the TDP. The TDP analyzed bus stop spacing on each route and found that the Georgetown – Union Station route exceeded the plan’s recommended stop spacing. The TDP recommended consolidating bus stops to improve productivity, running time, and service reliability. In 2011 DDOT removed westbound bus stops along K Street NW at 18th Street NW and at 20th Street NW (the stop at 19th Street NW remained). A pair of bus stops at Wisconsin Avenue NW and P Street NW were also moved further north on Wisconsin Avenue to R Street NW. DDOT also added a bus stop at the western end of the route, at 35th Street NW and Wisconsin Avenue NW, and an eastbound stop on the west side of Washington Circle. The bus stop changes added convenience for riders while better adhering to the bus stop spacing guidelines for limited stop service.

2011: Discontinued the Smithsonian – National Gallery of Art route

DDOT discontinued the operation of the Smithsonian-National Gallery of Art route due to low ridership. The Smithsonian-National Gallery of Art route never performed well due, in part, to its part-time operation and sub-optimal routing, which did not serve the front doors of the Smithsonian museums. The 2011 TDP found that the Smithsonian – National Gallery of Art route experienced low ridership, low productivity, and a high subsidy cost per passenger, which suggested that the existing service was not effective. The TDP recommended that the route be discontinued or replaced with a much-expanded and revised service, capable of attracting significant ridership.

2011: Suspended the Convention Center – SW Waterfront route



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DDOT suspended operation of the Convention Center-SW Waterfront route due to low ridership. At the time of the route discontinuation 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 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 in conjunction with the new National Mall route is being examined as part of this TDP update.

2011: Implemented the Potomac Ave Metro – Skyland via Barracks Row route

The 2011 TDP reviewed existing studies and obtained input from stakeholders, advisory panels, and the public to determine potential corridors for new DC Circulator service. All the potential corridors were evaluated against the DC Circulator's strategic goals and objectives, including connecting multi-use activity centers, complementing existing transit options, providing connections to Metrorail, and providing service that addresses multiple trip purposes. Eastern Market – Capitol Riverfront – Anacostia – Skyland corridor was among those that were highly rated to meet DC Circulator objectives according to the 2011 TDP evaluation. With partial funding available in DC FY 2012, the 2011 TDP recommended implementing this new service East of the River.

2012: Re-routed the two ends of the Union Station – Navy Yard Metro route to go through Columbus Circle and to take K Street SE, and moved the Navy Yard Metro bus stop

In 2012 the construction at Columbus Circle was complete enough that the Union Station – Navy Yard Metro route could once again travel in front of Union Station. DDOT conducted this re-routing, in part, to better facilitate transfers between this route and the Georgetown – Union Station route, which now share a bus stop on the west side of Columbus Circle. The new bus stop also provided a more convenient connection to the Metrorail Red Line, being closer to the Union Station Metrorail entrance. At the other end of the Union Station – Navy Yard Metro route, DDOT conducted a slight re-routing to turnaround on K Street SE, rather than I Street SE, due to customer complaints. Customer input also led DDOT to move the bus stop that was on New Jersey Avenue SE across the street to M Street SE, for riders traveling in the northbound direction.

2012: Re-routed the Georgetown – Union Station route to North Capitol Street NW

DDOT re-routed the Georgetown – Union Station route to use the same turnaround as the Union Station – Navy Yard Metro route, using E Street NE, rather than going through the congestion of Columbus Circle. The Georgetown – Union Station route still served the parking garage located behind Union Station, but was re-routed to use North Capitol Street NW and H Street NE in both directions.



District Department of Transportation

2012: Added bus stops at Marbury Plaza on the Potomac Ave Metro – Skyland route

DDOT received customer requests for an additional stop on the Potomac Ave Metro – Skyland route at Marbury Plaza. Staff realized this would be a good addition given the distance (0.6 miles) between the existing stops, along Good Hope Road SE at 18th Street SE and Naylor Road SE, and the density of housing near Marbury Plaza. DDOT added a pair of stops, one in each direction, at Marbury Plaza.

2012: Re-routed Potomac Ave Metro – Skyland route near Anacostia Metro

Given construction work on the 11th Street bridge, DDOT re-routed the Potomac Ave Metro – Skyland route to directly take Howard Road SE from I-295, rather than using Firth Sterling Ave SE, to access Anacostia Metro station. This shortened the one-way route length by 0.5 miles.

2013: Added one new stop each on the Union Station – Navy Yard Metro and Potomac Ave Metro – Skyland routes




DDOT added a southbound stop on the Union Station – Navy Yard Metro route on Massachusetts Avenue NE at 2nd Street NE. DDOT also added a northbound stop on the Potomac Ave Metro – Skyland route on Good Hope Road SE at Martin Luther King Jr. Avenue. The new stops added convenience for riders traveling in these directions on the routes, as the previous distances between the existing stops were long (i.e., 0.7 miles between the Massachusetts Avenue NE/E Street NE stop and the 1st Street NE/Maryland Avenue NE stop on the Union Station – Navy Yard Metro route).




Appendix B: Route Profiles

Operational Performance Measures

Performance Measure	Targets
On-time performance (<15 minute headways)	80%
Boardings per revenue hour	20
Cost per revenue hour	n/a
Subsidy per passenger	\$2.75
Farebox recovery ratio	25%
Bus stops per mile	>3 & <4
Complaints per 10,000 passengers	0.2
Preventable accidents per 10,000 revenue miles	0

Target Legend

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

Summary of DC Circulator Bus System

System Description

The DC Circulator bus system began service with two routes in 2005 and has grown to five routes in 2013. The current Circulator system provided 5.6 million trips in 2013 and is the fourth largest bus system in the region in terms of ridership.

Key Characteristics

Total Routes: 5

Total System Length: 36.2 miles

2013 Total Ridership: 5.6 million

Findings/Recommendations

- 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 target for on-time performance in 2013 except for the Potomac Ave Metro-Skyland route.
- All routes met the 85% 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).
- Deploy additional vehicles to meet commitment to 10 minute headways.
- Establish a system-wide core service standard.

Performance Measures for Systemwide

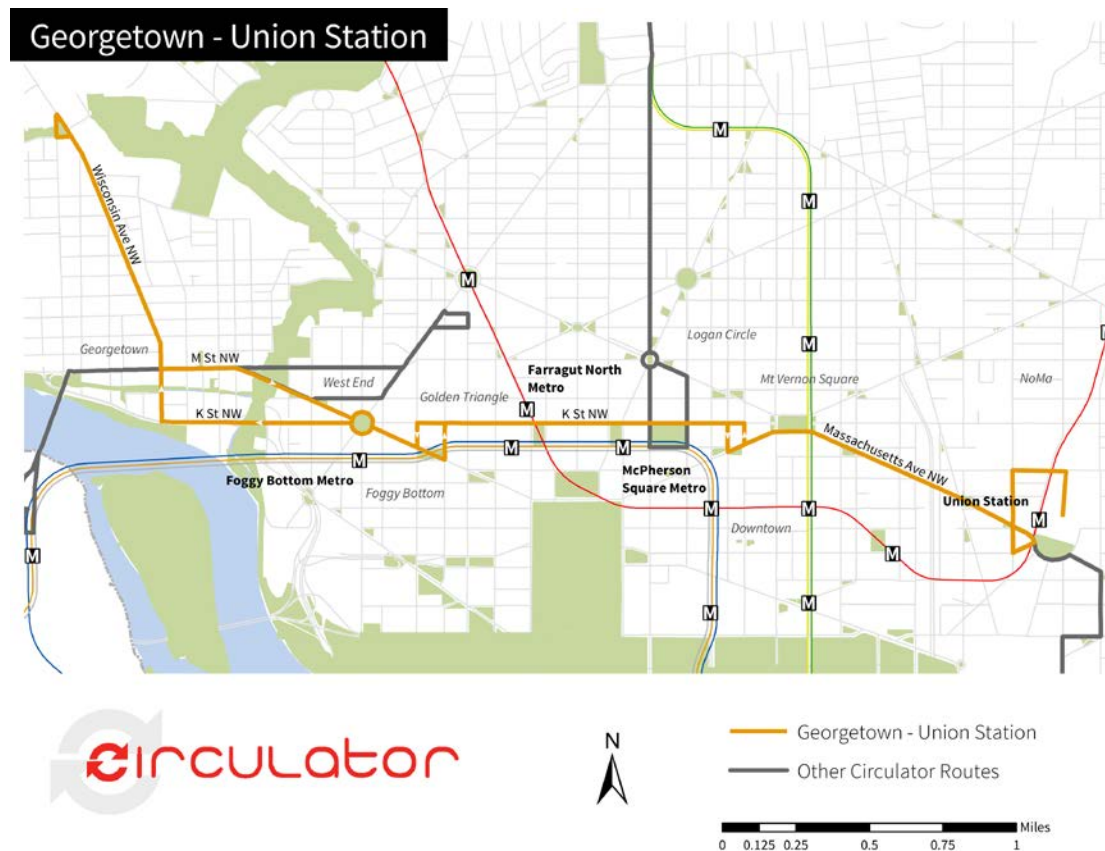
Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	77.20%	80.86%	82.53%	79.53%	↑	Green
Boardings per revenue hour	29	30	31	32	↑	Green
Cost per revenue hour	\$83.01	\$83.20	\$88.26	\$95.06	↑	n/a
Subsidy per passenger	\$2.31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

*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.

Georgetown - Union Station

Route Description

The Georgetown – Union Station Circulator is the longest DC Circulator route at 4.5 miles, 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.



Key Characteristics

Opened for Service: July 2005

Round-trip Route Length: 9.7 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

Findings/Recommendations

- On Fridays and Saturdays, there is relatively little demand for service after midnight, as the late trips are only lightly utilized.
- 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.
- On weekends, and perhaps weekdays, ridership and development point towards extending service to Union Station until midnight.



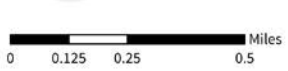
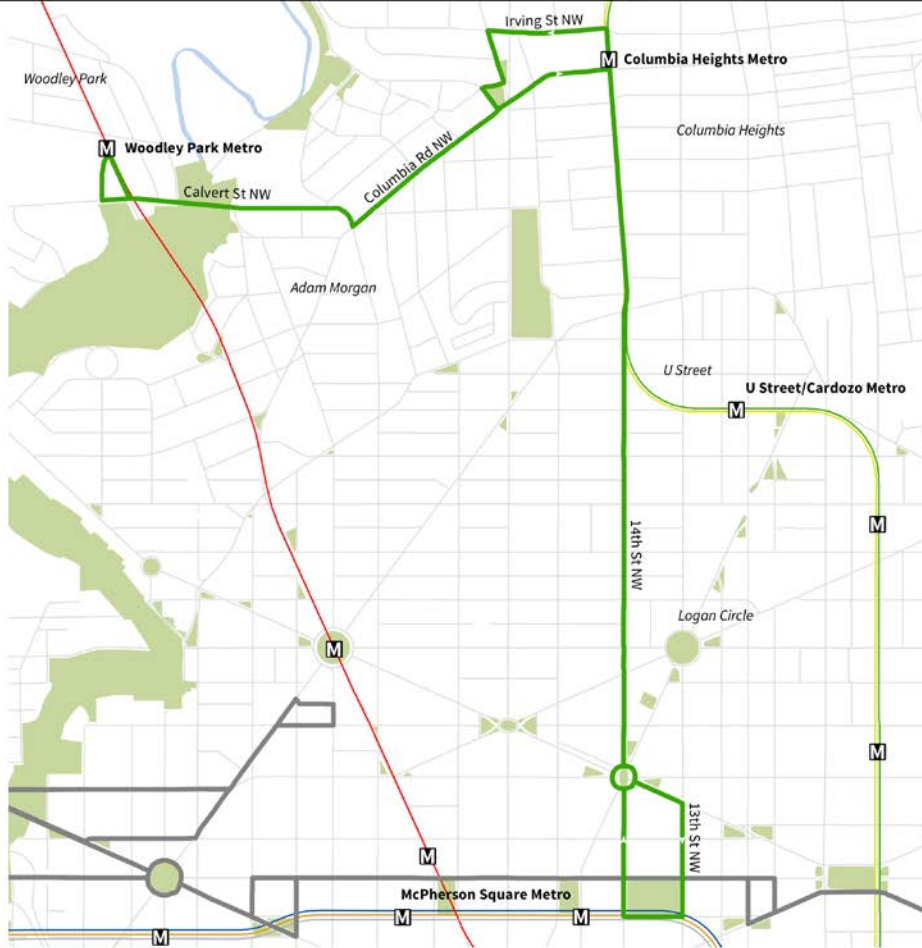
Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	80.91%	84.32%	86.43%	83.66%	↑	Green
Boardings per revenue hour	32	31	31	34	↑	Green
Cost per revenue hour	\$79.51	\$78.43	\$80.12	\$89.17	↑	n/a
Subsidy per passenger	\$1.91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

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.

Woodley Park - Adams Morgan - McPherson Square Metro



- Woodley Park - Adams Morgan - McPherson Square Metro
- Other Circulator Routes

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

Findings/Recommendations

- 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 Routes 52, 53, and 54.

The major issues related to the route's service are:

- Actual running times are longer than scheduled, and as a result, actual headways average 13 minutes rather than the advertised 10. Consider deploying additional vehicles to achieve 10-minute headways.
- Overcrowding, or near overcrowding, on occasional trips. However, if more vehicles are deployed to achieve 10-minute headways, this will address the overcrowding problems.

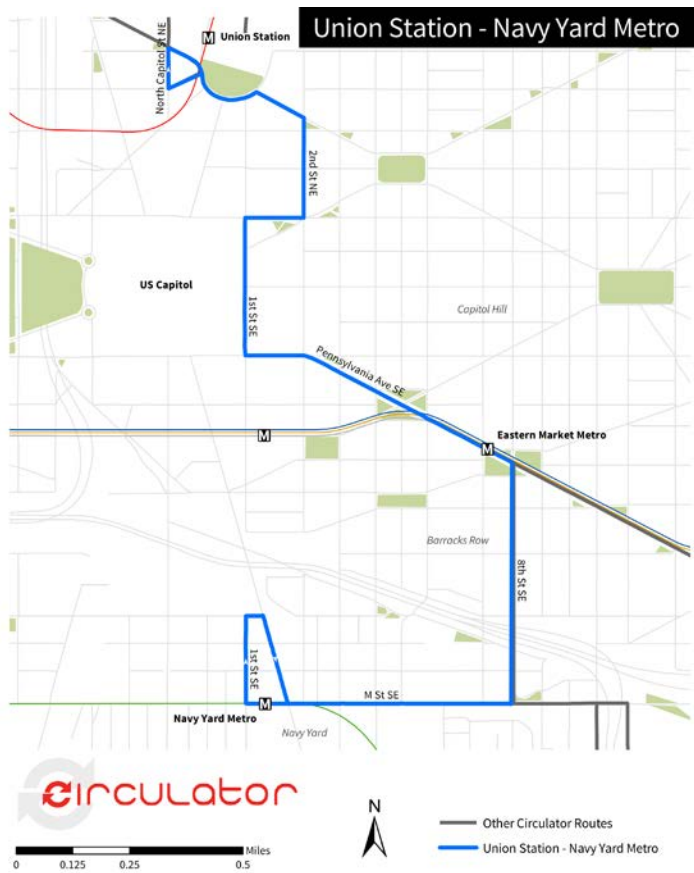


Performance Measure	2010 Actual	2011 Actual	2012 Actual	2013 Actual	Vs. 2010 Actual	Vs. Target
On-time performance (headways < 15 min)	71.67%	83.79%	77.79%	76.99%	↑	Green
Boardings per revenue hour	38	42	45	44	↑	Green
Cost per revenue hour	\$80.83	\$80.16	\$87.58	\$94.51	↑	n/a
Subsidy per passenger	\$1.59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

Union Station – Navy Yard

Route Description

The Union Station – Navy Yard Circulator operates between Union Station and the developing Navy Yard area as well as to the National Stadium for special events. 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.



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

Findings/Recommendations for Union Station – Navy Yard

- This route has the lowest ridership of all the Circulator routes.
- 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.
- Actual running times are longer than scheduled, and as a result, actual headways average 11 minutes rather than the advertised 10. Consider deploying additional vehicles to achieve 10-minute headways.



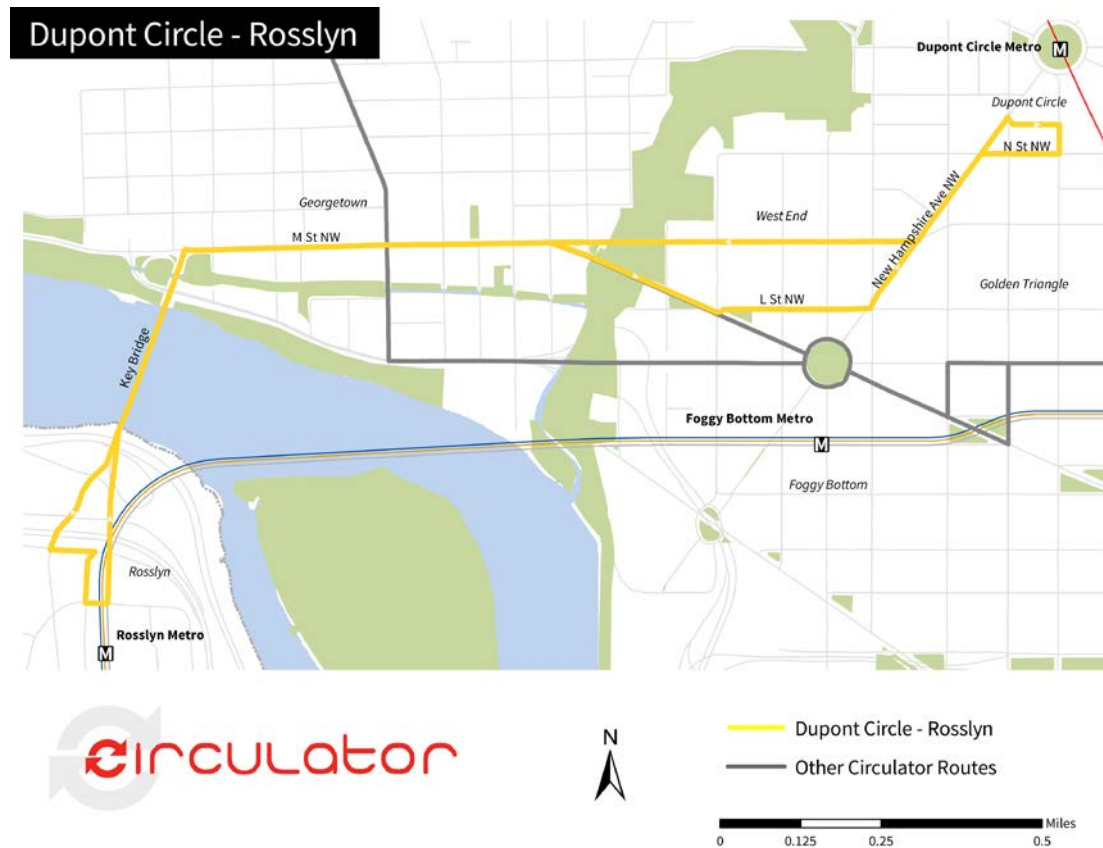
District Department of Transportation

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%	↑	Green
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	↑	Yellow
Farebox recovery ratio	12.67%	13.46%	12.56%	9.46%	↓	
Bus stops per mile	2.97 (NB)	--	--	4.33 (NB)	↑	Green
	2.96 (SB)			4.48 (SB)	↑	
Complaints per 10,000 passengers	0.32	0.72	0.42	0.91	↑	Red
Preventable accidents per 10,000 revenue miles	0.55	0.06	0.42	0.07	↓	

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. Unlike many other Circulator routes that directly connect with Metrorail Stations, this route operates one block short of Metrorail stations at each end in an attempt to shorten the route sufficiently to provide service with four buses and to avoid the congestion in Dupont Circle.



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

Findings/Recommendations

- 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% higher than daily weekday ridership, and average Sunday ridership represents a high proportion of daily weekday ridership. Georgetown is a major shopping, entertainment, and recreation destination, which explains the strong weekend ridership.
- The route has the third highest ridership on weekdays of all Circulator routes.



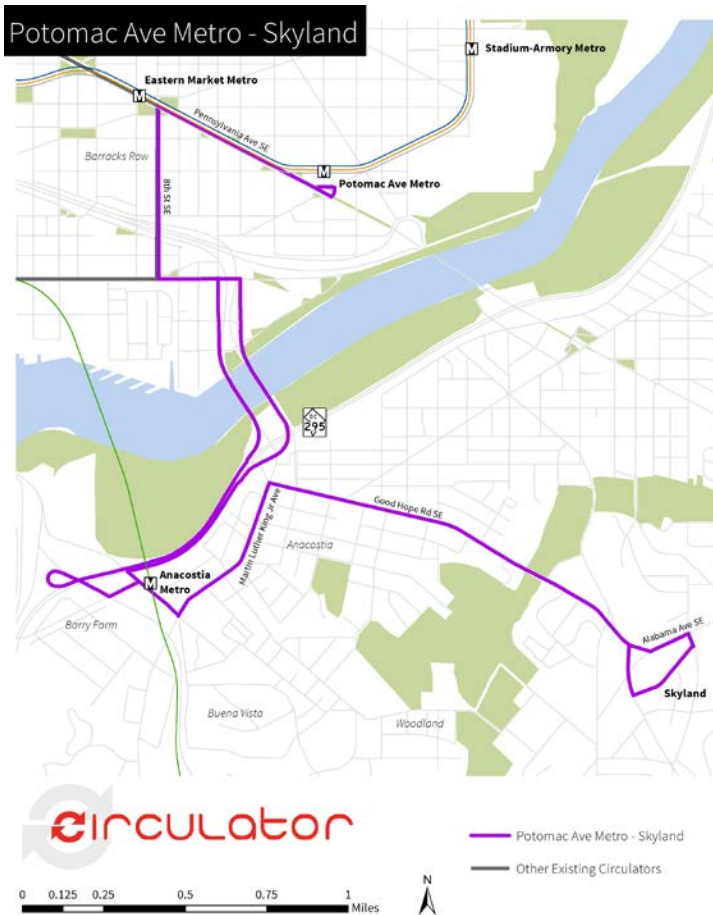
District Department of Transportation

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%	↓	Green
Boardings per revenue hour	27	34	35	34	↑	
Cost per revenue hour	\$92.03	\$100.81	\$103.71	\$103.24	↑	n/a
Subsidy per passenger	\$2.77	\$2.22	\$2.32	\$2.46	↓	Green
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)	↑ ↑	Green
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	↓	Red

Potomac Ave – Skyland

Route Description

The Potomac Avenue – Skyland Circulator 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.



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: Daily (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

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.
- 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. Consider deploying additional vehicles to achieve 10-minute headways.
- 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.
- A short extension to Congress Heights Station could provide a much stronger southern anchor with transfer opportunities to Metrorail and other bus routes.



District Department of Transportation

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

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

Table 4-2 | Summary of 2013 Circulator Route Performance

Route	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
	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	\$103.24	\$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



Appendix C: Move DC Analysis Summary of Findings

In 2013, DDOT conducted a Local Bus Study for Move DC. As part of the study, DDOT analyzed two days of data from ridechecks completed in May for Circulator and non-regional Metrobus routes. Based on this analysis, DDOT developed findings, recommendations and possible service improvements for each route and incorporated them into the greater Move DC plan. The following is a summary of the Move DC analysis on the DC Circulator routes, which was taken into consideration in the performance evaluation conducted as part of the TDP Update.

Dupont Circle – Georgetown - Rosslyn

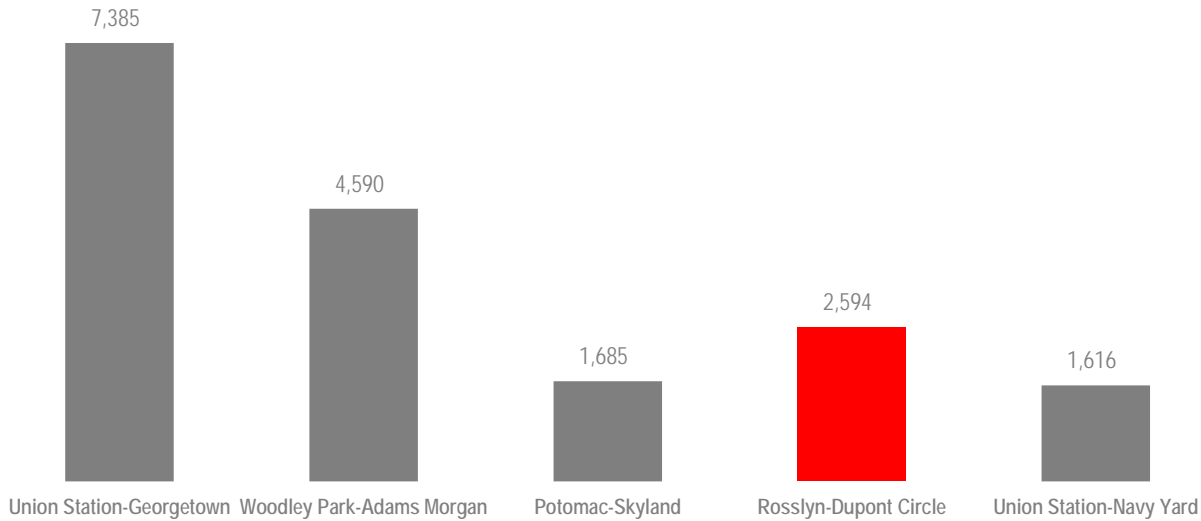
The Dupont Circle – Georgetown – Rosslyn Circulator provides unique service between Dupont Circle and Georgetown and between Georgetown and Rosslyn. Unlike many other Circulator routes that directly connect with Metrorail Stations, this route operates one block short of Metrorail stations at each end in an attempt to shorten the route sufficiently to provide service with four buses and to avoid the congestion in Dupont Circle. On weekdays, it serves a commuter oriented market with strong demand during peak periods, but with weaker demand during off-peak periods. Weekend demand, however, is particularly strong – total Saturday ridership is nearly that of weekday ridership, Sunday ridership is proportionally very high, and ridership is more balanced throughout the day.

The Dupont Circle – Georgetown – Rosslyn Circulator carries an average of 2,594 passengers on weekdays, 2,432 on Saturdays, and 1,721 on Sundays. Nearly equivalent ridership on Saturdays compared to weekdays is fairly unique. Sunday ridership, while lower than weekday ridership, is still proportionally very high relative to typical routes.

In terms of weekday ridership, the Dupont Circle – Georgetown – Rosslyn Circulator averages about 2,600 passengers per day. (see Figure B-1). It also carries 36 passengers per hour, equivalent to the Georgetown to Union Station route on weekdays (see Table B-1).



Figure B-1 | Average Weekday Ridership for Dupont Circle – Georgetown – Rosslyn Route



Source: WMATA based on 2013 Annual Data divided by 261 weekdays

Weekend productivity is also very strong. Saturday ridership productivity is higher than the Saturday system average of 25.0 passengers per hour. Georgetown is a major shopping, entertainment and recreation destination, which may explain the strong weekend ridership.

Table B-1 | Ridership Statistics for Dupont Circle – Georgetown – Rosslyn Route

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	AVERAGE CIRCULATOR SYSTEM RIDERSHIP PER TRIP	CIRCULATOR BOARDINGS PER HOUR TARGET
Weekday	2,594	36	32	20
Saturday	2,432	29	25	20
Sunday	1,721			

Source: WMATA based on 2013 Annual Data divided by 261 weekdays, 52 Saturdays, and 52 Sundays. Ridership Per Trip for Saturday and Sunday is not available by day but is combined.

Given that peak period demand is much higher than off-peak demand, the DC Circulator model of consistent headways throughout the day does not work particularly well for this route, and much more service is provided during the midday and evening than is required. The DC Circulator model, however, does work well for weekend service, although service does start earlier and ends later than demand warrants.²

² Nelson Nygaard. *MoveDC: Local Bus Study*. October 2013.



Georgetown – Union Station

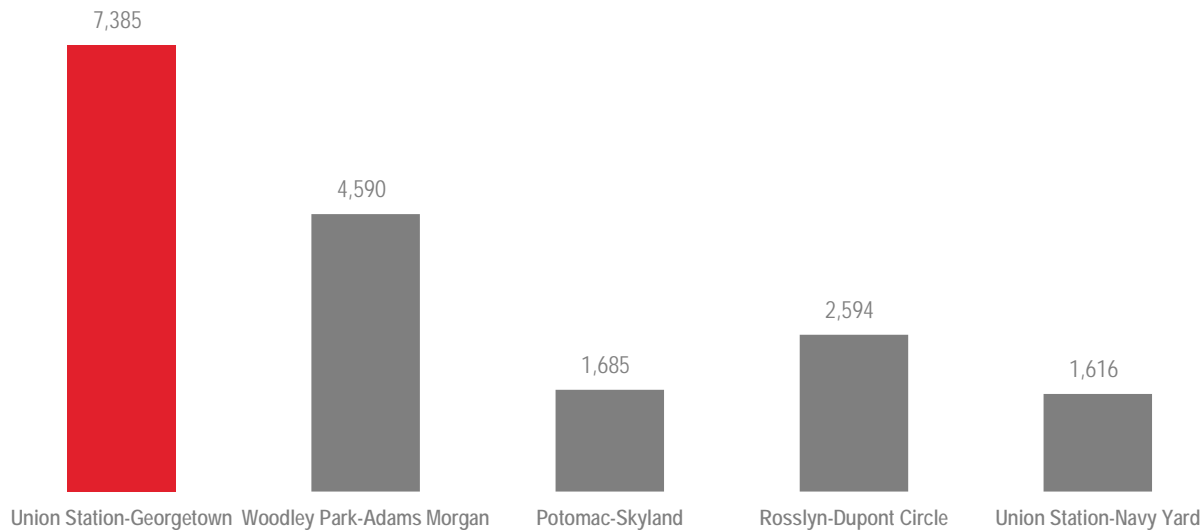
The Georgetown-Union Station Circulator is the longest DC Circulator route at 4.5 miles, and is the only bus route that runs along the entirety of the K Street, NW Corridor from Wisconsin Avenue to Mount Vernon Square. The Georgetown-Union Station Circulator is an extremely effective route in most respects, and carries the highest ridership in the system. Table B-2 lists the ridership statistics for this route and Figure B-2 illustrates the ridership compared with the other Circulator routes. Both illustrate the strong performance of this route both in terms of total ridership and riders per hour, a key measure of effectiveness.

Table B-2 | Ridership Statistics for Georgetown to Union Station Route

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	CIRCULATOR SYSTEM AVG	CIRCULATOR BOARDINGS PER HOUR TARGET
Weekday	7,385	36	32	20
Saturday	4,514			
Sunday	3,678	26	25	20

Source: WMATA based on 2013 Annual Data divided by 261 weekdays, 52 Saturdays, and 52 Sundays. Ridership Per Trip for Saturday and Sunday is not available by day but is combined.

Figure B-2 | Average Weekday Ridership for Georgetown to Union Station Route



Source: WMATA based on 2013 Annual Data divided by 261 weekdays

Despite this strong performance there are a number of findings that offer opportunities to improve the current service³:

³ Nelson Nygaard. *MoveDC: Local Bus Study*. October 2013.



- On weekdays, based on demand, service should start earlier than 7:00 AM.
- On Fridays and Saturdays, there is relatively little demand for service after 12:00 midnight, as ridership on late night trips drops off sharply.
- 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.
- On weekends, and perhaps weekdays, ridership and development point towards extending service to Union Station until midnight.

Potomac Ave Metro – Skyland via Barracks Row

The Potomac Avenue – Skyland Circulator 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.

The Potomac Ave Metro – Skyland Circulator carries an average of 1,684 passengers on weekdays and 522 passengers on Saturdays. The route ranks next to last among the DC Circulator routes in weekday ridership (see Figure B-3). The route carries just 21.0 passengers per hour, which is significantly lower the circulator average of 32 (see Table B-3).

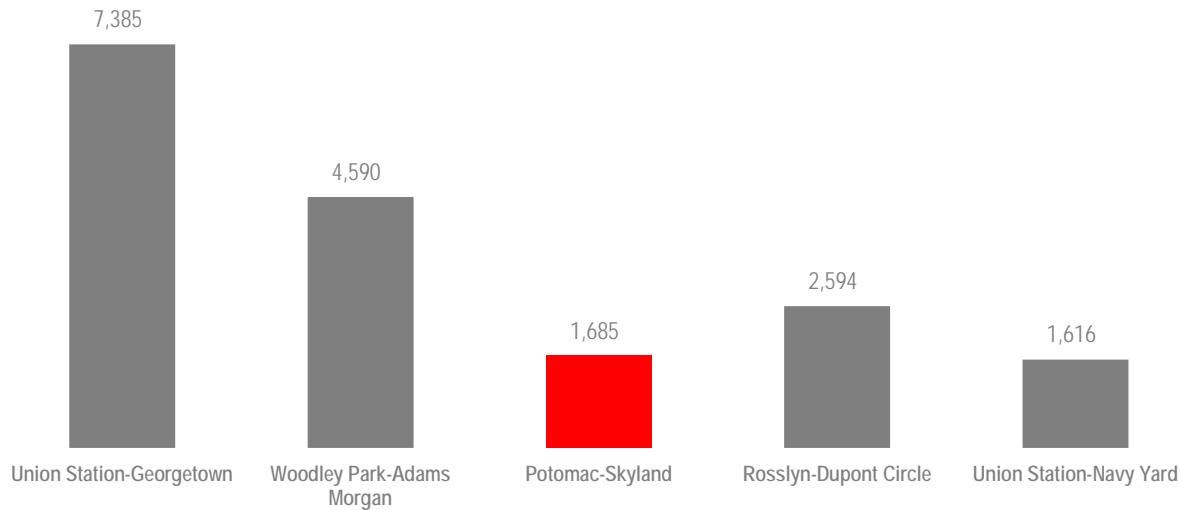
Table B-3 | Ridership Statistics for Potomac Ave Metro – Skyland Route

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	CIRCULATOR SYSTEM AVG	CIRCULATOR BOARDINGS PER HOUR TARGET
Weekday	1,684	21	32	20
Saturday	522	16	25	20
Sunday	–	–		

Source: WMATA based on 2013 Annual Data divided by 261 weekdays, 52 Saturdays, and 52 Sundays. Ridership Per Trip for Saturday and Sunday is not available by day but is combined

As would be expected, ridership is lower on weekends, with Saturday service carrying 1,122 fewer riders per day when compared to weekday ridership. Similarly, Saturday ridership productivity, at 16.0 passengers per hour, is lower than the weekday average for this route and lower than the Saturday DC Circulator average.

Figure B-3 | Average Weekday Ridership for Potomac Ave Metro – Skyland Route



Source: WMATA based on 2013 Annual Data divided by 261 weekdays

In addition, there are a number of issues with the current service that should be considered⁴:

- Time of day demand patterns on this route are very typical of routes that serve a large proportion of commuters, with demand much higher during peak periods than during off-peak periods. This ridership pattern does not match well with headways that are uniform throughout the day.
- Actual running times are too long for the route to provide the advertised 10 minute headways with the existing bus assignments, given routing changes due to 11th Street bridge construction.
- To a large extent, the route competes with, rather than complements WMATA service and adjustments to WMATA service may be warranted to reduce this competition.

A recent evaluation of this route for the DC City Council revealed that a short extension to Congress Heights Station could provide a much stronger southern anchor with transfer opportunities to Metrorail and other bus routes.

Union Station – Navy Yard Metro

The Union Station-Navy Yard Circulator operates between Union Station and the developing Navy Yard area as well as to the Nationals Stadium for special events. Relatively high ridership on weekday peak period trips indicates that this route does meet a market need. However, low weekday off-peak ridership and low Saturday ridership also shows that there is

⁴ Nelson Nygaard. *MoveDC: Local Bus Study*. October 2013.



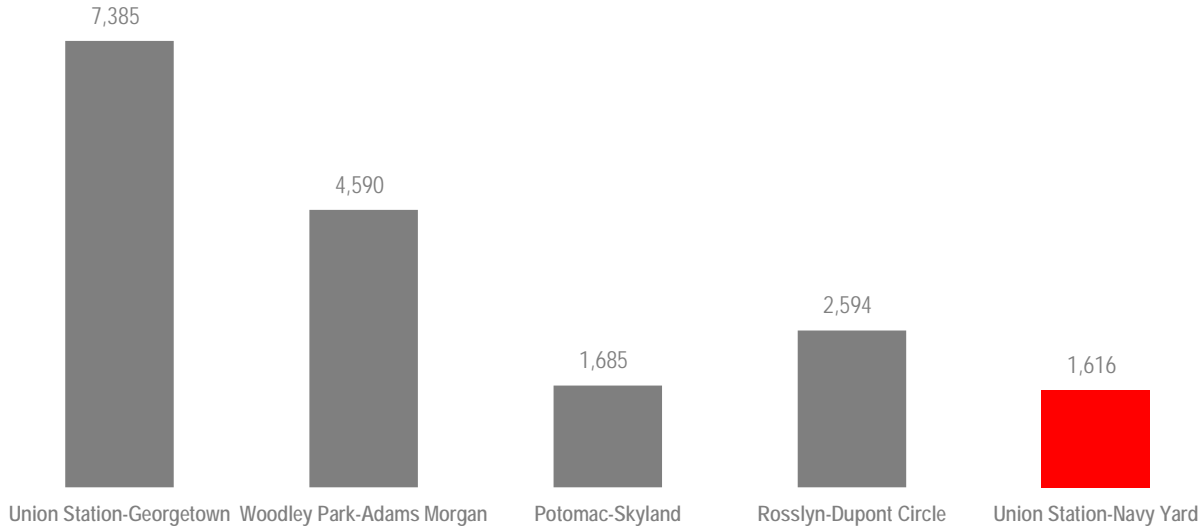
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not sufficient demand for the very high level of service that DC Circulator routes provide. Compared to other Circulator routes the Union Station-Navy Yard route offers limited and weekend evening service, undermining the core elements of the service standard.

Based on annual ridership counts, the Union Station - Navy Yard Circulator carries an average of 1,616 passengers on weekdays and 382 on Saturdays. This ridership is the lowest ridership of any Circulator route (see Figure B-4). The route also carries 19.0 passengers per hour, which is significantly fewer riders per hour than the system average of 32 (see Table B-4) and is also below the TDP established performance goal of 20.0 boardings per hour.



Figure B-4 | Average Weekday Ridership for Union Station to Navy Yard Route



Source: WMATA based on 2013 Annual Data divided by 261 weekdays

Table B-4 | Ridership Statistics for Union Station to Navy Yard Route

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	CIRCULATOR SYSTEM AVG	CIRCULATOR BOARDINGS PER HOUR TARGET
Weekday	1,606	19	32	20
Saturday	382	10	25	20
Sunday	188			

Source: WMATA based on 2013 Annual Data divided by 261 weekdays, 52 Saturdays, and 52 Sundays. Ridership Per Trip for Saturday and Sunday is not available by day but is combined

Overall, this route provides an example of one of the key issues that the DC Circulator program must address as it is expanded, which is how to leverage the DC Circulator brand to improve transit service in the District in a manner that provides meaningful service improvements that reflect market demand. If this route was evaluated and scheduled in a manner similar to WMATA Non-Regional services, or most other demand-based transit routes, then midday and evening headways would be reduced and spans of service would be shortened. It is acknowledged, however, that the goals of Circulator are to offer a service that attracts new riders and supports economic activity and some inefficiency may be tolerated in order to achieve those goals.



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In addition, actual running times are longer than scheduled, and as a result, actual headways average 11 minutes rather than the advertised 10. To provide the advertised service, additional vehicles need to be deployed on the route.⁵

Woodley Park – Adams Morgan – McPherson Square Metro

The Woodley Park - Adams Morgan - McPherson Square Circulator provides a unique link between Woodley Park Station and Columbia Heights Station. However, between Columbia Heights Station and downtown, it operates along 14th Street in the same manner as WMATA Routes 52, 53, and 54, all of which comprise the 14th Street Line. That line operates between Takoma Station and L'Enfant Plaza, and compared to the Circulator, runs more frequently (every 7 to 8 minutes) but slower due to many more stops, starts service earlier, and ends service later on most nights but about one hour earlier on Fridays and Saturdays. In total, over half of the Circulator parallels WMATA corridors, but offers a substantially different limited stop service.

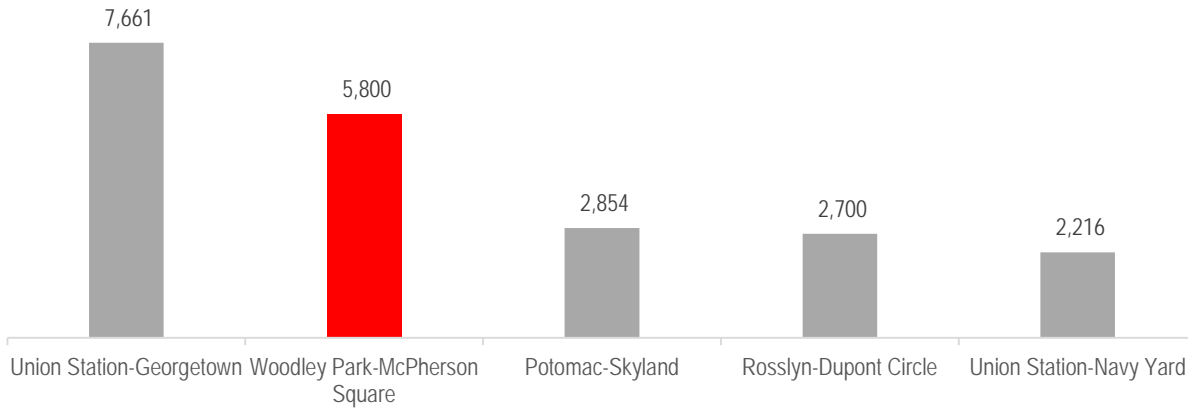
Transfers with other services can be made at a number of locations, including three Metrorail stations, which are Woodley Park Station on the Red Line, Columbia Heights Station on the Yellow and Green Lines, and McPherson Square Station on the Blue and Orange Lines. Connections can also be made with other bus routes at intersections of all major arterials and along 14th Street.

Based on annual ridership counts, the Woodley Park - Adams Morgan - McPherson Square Circulator carries an average of 5,800 passengers on weekdays, 6,009 on Saturdays, and 3,984 on Sundays. This ridership is the second highest of any Circulator route (see Figure B-5). The route also carries 33.7 passengers per hour, which is more than the system average of 32 (see Table B-5).

⁵ Nelson Nygaard. *MoveDC: Local Bus Study*. October 2013.



Figure B-5 | Average Weekday Ridership for Woodley Park - Adams Morgan - McPherson Square Route



Source: WMATA APC data from Spring 2013

Table B-5 | Ridership Statistics for Woodley Park - Adams Morgan - McPherson Square Route

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	CIRCULATOR SYSTEM AVG	CIRCULATOR BOARDINGS PER HOUR TARGET
Weekday	5,800	33.7	32	20
Saturday	6,009	36.4	25	20
Sunday	3,984	28.3		

Source: WMATA Ridecheck Plus Data

The Woodley Park – Adams Morgan – McPherson Square Circulator parallels 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 limited stop 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 Routes 52, 53, and 54.

The major issues related to the route’s service are:

- Actual running times are significantly longer than scheduled, and as a result, actual headways average 13 minutes rather than the advertised 10. To provide the advertised service, additional vehicles need to be deployed on the route.
- Overcrowding, or near overcrowding, on occasional trips. However, if more vehicles are deployed to achieve the scheduled 10 minutes, this will address the overcrowding problems.

Service improvement options include:

- **Deploy Additional Vehicles to Provide Advertised 10 Minute Frequencies:** As described above, actual running times are significantly longer than scheduled, and as a result, the scheduled 10 minute headways are not



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provided. To reflect the actual running times, the number of vehicles deployed needs to be increased from 6 to 7 during most of the day, and to 8 and possibly 9 during the late afternoon and PM peak.