



City of Baltimore

Management Research Report

BBMR-15-01

CHARM CITY CIRCULATOR:

***A FINANCIAL ANALYSIS TO DETERMINE THE
SUSTAINABILITY OF CURRENT OPERATIONS***

November 2014



Management Research Report
CHARM CITY CIRCULATOR: A SUSTAINABILITY ANALYSIS

What BBMR Found

The Charm City Circulator, Baltimore’s free downtown bus service, began operations in January 2010. While ridership has increased significantly over the past four years, operating revenues have not kept pace with service costs, resulting in a cumulative operating deficit of \$11.6 million at the end of Fiscal 2014.

Year	Operating Revenue	Operating Expenditure	Operating Fund Balance
2009	\$3,641,090	\$0	\$3,641,090
2010	\$5,259,459	\$3,912,757	\$4,987,792
2011	\$5,441,137	\$8,527,950	\$1,900,979
2012	\$6,239,647	\$15,159,516	(\$7,018,890)
2013	\$6,155,563	\$9,350,089	(\$10,213,416)
2014	\$8,550,579	\$9,964,222	(\$11,627,059)
Total	\$35,287,475	\$46,914,534	(\$11,627,059)

Based on a 10-year projection, the annual operating deficit is expected to grow on average to \$3.5 million per year (or \$35.1 million over 10 years), to a total cumulative deficit of \$46.8 million by the end of Fiscal 2024. An additional \$26.3 million in capital expenses is projected over this time frame, based on regular contributions towards bus replacement. Accounting for all capital and operating costs, the service is faced with a projected \$73.2 million gap by Fiscal 2024.

Recommendation

To eliminate the projected deficit and ensure long-term sustainability of operations, BBMR examined a variety of possible options. The options we examined in the report are:

1. Route adjustments and consolidation;
2. Standardizing hours of operation;
3. Harbor Connector route study;
4. A capital replacement fund;
5. Implementation of fares;
6. Parking tax increase;
7. Advertising/sponsorship; and
8. Expanding partnerships.

No one option provides all the savings or additional revenue necessary to completely close the gap. Some combination of options will be necessary to erase the current deficit and keep the service from operating at a deficit in the future. This report looks at four specific combinations, and recommends one in particular to DOT.

Why BBMR Did This Study

The Baltimore City Department of Transportation established the Charm City Circulator in Fiscal Year 2010. The purpose of conducting this study is to identify historical revenues and expenses associated with the operation of this service, to provide an accurate projection of future revenues and expenses moving forward, to develop ideas for better managing the service financially, to examine ridership levels, and to compare Baltimore’s system to those of other jurisdictions.

What BBMR Recommends

To reduce the deficit associated with the Charm City Circulator and promote sustainable operations going forward, BBMR recommends a combination of service adjustments (to reduce costs) and revenue enhancements. BBMR would recommend consideration of the following options:

1. Establish a bus replacement fund;
2. Eliminate buses from routes;
3. Standardize hours of operation;
4. Increase the parking tax; and
5. Increase third party contributions to the Circulator.

The adjustments to service would reduce 10-Year projected costs to \$19.7 million above baseline revenues, and produce an additional \$31.6 million in new revenues. Based on this combination of options, the agency would eliminate the current deficit of \$11.6 million and achieve fund balance by Fiscal 2024, identify funding for replacement buses, maintain operations at a sustainable level going forward, and avoid a shut-down scenario.

To view the full report, including scope and methodology, go to <http://bbmr.baltimorecity.gov/ManagementResearch.aspx>.

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Bureau of the Budget and Management Research
Andrew Kleine, Chief

Bureau of the Budget and Management Research
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November 26, 2014

The Honorable Mayor Rawlings-Blake,

The following report provides a detailed assessment of the Charm City Circulator, Baltimore's free bus service. The Department of Transportation (DOT) has operated the Charm City Circulator service since January 2010. The Circulator currently operates along four routes throughout the Downtown and Central Business District areas.

This management research project on the Charm City Circulator was conducted for the purpose of assessing the financial sustainability of this service. The authority to conduct this project comes from BBMR's mandate to provide policy and fiscal research and analysis on a variety of administrative, departmental and citywide issues. Key issues examined in this management research project include: 1) assessment of historical revenues and costs based on Circulator operations; 2) production of an extended, ten-year projection of service revenues and expenditures, including ongoing capital costs; 3) generation of potential scenarios and options to bring revenues and expenditures into balance over the 10-year time frame; and 4) recommendations for future operations based on the projected financial and service impacts of the above options.

The Bureau of the Budget and Management Research (BBMR) conducted interviews with DOT staff responsible for this activity to elicit input on the service's historical background and operations. BBMR also consulted the general ledger for information on both revenues and expenditures. Finally, BBMR researched similar circulator systems in other jurisdictions, and spoke to operational and financial personnel involved with these systems for additional reference.

BBMR conducted this management research project from April 2014 to November 2014 in accordance with the standards set forth in the BBMR Project Management Guide and the BBMR Research Protocol. Those standards require that BBMR plan and perform the research project to obtain sufficient and appropriate evidence to provide a basis for the conclusions and recommendations contained in this report. BBMR believes that the evidence obtained provides a reasonable basis for the findings and conclusions in this report and that such findings and conclusions are based on research project objectives.

BACKGROUND

HISTORY AND SERVICE OVERVIEW

Service Introduction

The City of Baltimore's Department of Transportation (DOT) is committed to providing city residents and visitors with a multi-modal, comprehensive and modern transportation system. In 2008, the agency identified a potential opportunity to expand transportation services by creating a City-operated shuttle service, known as the Charm City Circulator. DOT focused upon several goals that could be achieved through the new service:

1. Reduce vehicular congestion within the Central Business District (CBD);
2. Reduce vehicular emissions contributing towards air pollution;
3. Improve connections among City communities for both residents and visitors; and
4. Improve availability and access to the existing parking supply.

During the early 2000s, the City had engaged in an attempt to provide similar shuttle services through the establishment of the Downtown Area Shuttle (DASH) program. This service was provided through the Downtown Partnership of Baltimore, and funded through a state grant. DASH shuttles operated along the downtown area, providing service to people accessing the downtown parking lots, including the professional sports stadiums for the Baltimore Orioles and Baltimore Ravens.

DASH operated two shuttle routes, primarily serving the workforce population of the downtown area. Riders had two options to receive service: paying a fee of \$0.55 per ride, or signing up for monthly parking through a participating downtown employer. As part of the latter plan, participants were charged \$50 per month to park at one of the stadium lots. According to DOT, the DASH system carried less than 1,000 passengers per day on average.

State grant support of \$5.9 million was provided for only three years. Following discontinuation of the grant, the DASH shuttle system was shut down, as other fund sources could not be identified to support operations.

To distinguish the new service from the DASH service, DOT proposed that the Circulator bus system would meet the following criteria:

- Offer a premium service distinct from other local transit;
- Serve multiple markets – residents, commuters, and tourists;
- Provide transfer opportunities to other mass transit systems, including the Water Taxi; and
- Offer a “cleaner and greener” bus service, through use of a hybrid diesel/electric fleet.

As DOT and the Administration were looking for opportunities to ease downtown congestion, the Circulator provided a means for addressing this goal. Commuters could park at garages and lots located around the CBD periphery, and the Circulator would distribute customers across the area while keeping more cars off the downtown arterial roadways. Additionally, while the DASH service relied on State grant funding for support, DOT and Administration officials pursued a more stable, City-controlled revenue source – the City's parking tax

– to fund most of the Charm City Circulator operations. Commuters, therefore, would be targeted as both a primary ridership group and the principal funder.

When operations began in 2010, the Circulator ran two routes:

- Orange Route – an East/West route running between Harbor East, Downtown, and Westside areas including the University of Maryland Baltimore and Hollins Market (this route was initially named the Red Route).
- Purple Route – a North/South route running between Federal Hill, the Inner Harbor, City Center, and Mount Vernon areas (this route was initially named the Yellow Route).

In addition to the two initial routes, DOT planned to operate the Green Route, servicing City Center, Harbor East, Historic Fells Point, and the Johns Hopkins East Baltimore Campus areas. DOT did not begin formal operations along this route until late Fall 2011. In 2012, DOT began operating a fourth route between the Inner Harbor and Locust Point areas, to provide easy access to Ft. McHenry in anticipation of the War of 1812 Bicentennial services. The fourth route was identified as the Banner Route.

In addition to the bus routes, the Charm City Circulator also consists of a water shuttle service called the Harbor Connector. This service consists of three routes: between Harbor East and Harbor View, between Tide Point and Maritime Park, and between Tide Point and Canton Waterfront Park. A map of all the bus and water shuttle routes is available in Appendix II.

Vendors

Veolia

DOT decided that an outside vendor would be responsible for operations, rather than administering the bus services directly with DOT personnel. The City undertook a competitive bidding process in June 2008, in which it solicited proposals from transit firms or teams of firms to plan and operate a City-sponsored shuttle system.

On October 15, 2008 the City's Board of Estimates approved an award to Veolia Transportation Services, Inc. to provide transit/shuttle services for the Downtown Circulator Project. Veolia is a French company that manages energy and transportation systems on behalf of many localities across the United States. The City entered into a formal agreement with Veolia on February 1, 2009. The contract term is for five years of shuttle services, with two one-year renewals or extensions available at the City's discretion.

In the agency's initial plan, DOT proposed to acquire a fleet of 21 buses through Veolia for Circulator operations. In accordance with this plan, DOT would provide a down payment of \$6 million for the 21 buses. The City would then finance payment of the remaining amount with Veolia at a 7% interest rate over twelve years. The City eventually renegotiated its financing arrangement with Veolia, and wound up financing the remainder at a 3.9% interest rate for seven years.

The City agreed to pay Veolia an hourly rate for bus services pursuant to the following schedule, which would commence upon delivery of at least 11 buses for the fleet:

Table 1: Annual Hourly Rate for Circulator Service Provision

Year	Hourly Rate
Year 1	\$62.38
Year 2	\$64.87
Year 3	\$67.12
Year 4	\$69.98
Year 5	\$72.34

Records pertaining to maintenance for buses are kept by Veolia. Preventative maintenance is performed at 6,000 mile intervals and graffiti removal is done by working with an outside cleaning contractor. The buses are inspected twice a year by the Public Service Commission (PSC). The City is required to maintain a 15% fleet reserve ratio for bus operations (to ensure operations continue in the event of a breakdown or unavailability of a bus). The initial 5-year term of the Veolia contract is scheduled to end in January 2015.

Harbor Boating, Inc.

The City has a separate contract with Harbor Boating, Inc., which operates the Harbor Connector service on behalf of the City. Three boats are currently in operation – the Oriole, the Raven, and the Endeavor. The City paid \$225,000 in start-up expenses, and agreed to pay \$13,296 for each vessel per month for the 13-hour operation of the scheduled routes.

Schedule

As part of the contract, buses are expected to run with no more than ten minutes of lead time, or headway, between buses. Currently, the hours for the bus service are as follows:

- ***Summer Hours (May 1 through September 30)***
 - Monday through Thursday: 6:30am – 9:00pm
 - Friday: 6:30am - Midnight
 - Saturday: 9:00am – Midnight
 - Sunday: 9:00am – 9:00pm
- ***Winter Hours (October 1 through April 30)***
 - Monday through Thursday: 6:30am – 8:00pm
 - Friday: 6:30am - Midnight
 - Saturday: 9:00am – Midnight
 - Sunday: 9:00am – 8:00pm

In addition, the Harbor Connector operates Monday through Friday, from 7:00am to 7:00pm or 7:15pm depending on the route. Headway for two of the Harbor Connector routes (Harbor View-Harbor East, and Maritime Park- Tide Point) is 15 minutes between landings; headway for the Canton Waterfront Park-Tide Point route is 30 minutes.

BUDGET STRUCTURE

Department of Transportation: Functions and Structure

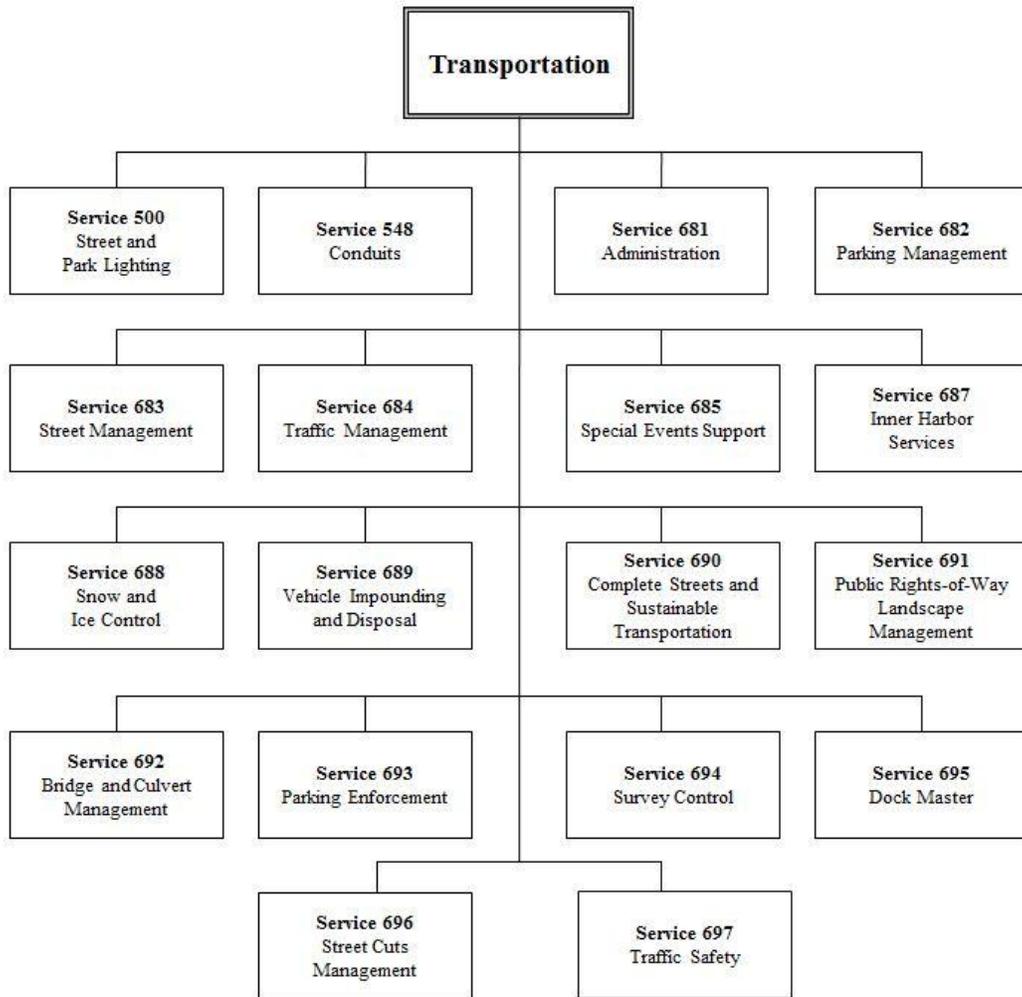
The Charm City Circulator is a transit service provided through the Baltimore City Department of Transportation. DOT is responsible for the following functions across the City:

- Construction, reconstruction, and maintenance of public streets, bridges and highways;
- Maintenance of street lights, alleys, footways, and the conduit system;
- Management of traffic movement;
- Inspection and management of City construction projects;
- Preparation of surveys; and
- Maintenance of parking meters and on-street parking enforcement.

DOT is one of the largest City agencies, with a Fiscal 2015 operating budget of \$169.8 million and 1,414 full-time positions. Within DOT, the budget is structured according to service, as identified in the graphic below.¹

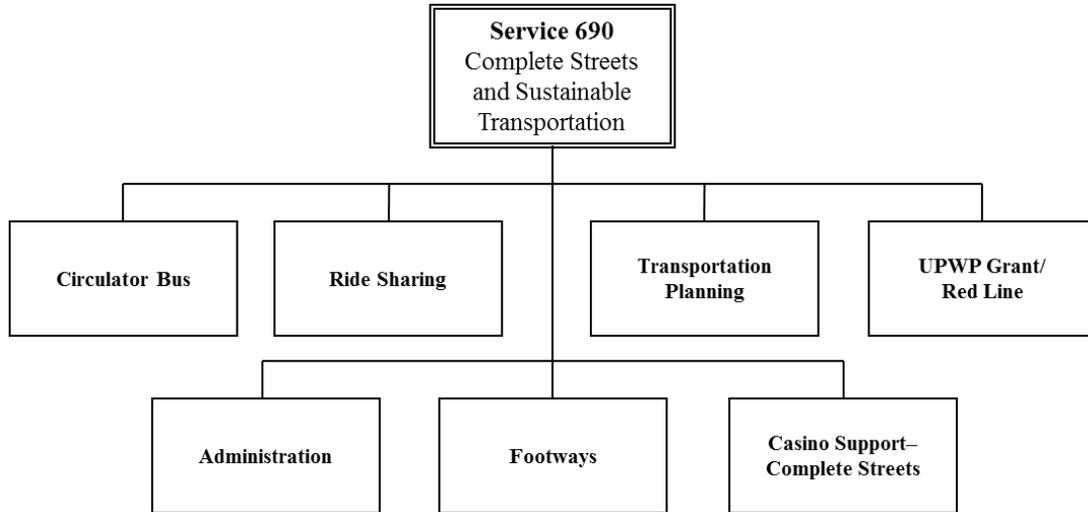
¹ The Parking Management service is administered by the Parking Authority of Baltimore City. The Parking Management budget is identified within the City Department of Transportation for accounting and reporting purposes.

Figure 1: Department of Transportation Organizational Structure by Service



The Charm City Circulator is budgeted as an individual activity within Service 690, Complete Streets and Sustainable Transportation. The budget structure within the Complete Streets and Sustainable Transportation Service includes seven separate activities in Fiscal 2015.

Figure 2: Complete Streets and Sustainable Transportation - Organizational Structure by Activity



City Fund Definitions

Through the course of the report, funding sources and expenditures will be identified through the following categories:

- **General Fund:** The City’s primary fund source for basic operations and capital projects, supported through most taxes and unrestricted revenues.
- **Federal Grants:** Funding derived from grants provided by federal agencies, including the Federal Transit Administration. In some cases, the State may act as a pass-through for federal funding.
- **State Grants:** Funding derived from grants provided by Maryland State agencies, including the Maryland Transit Administration.
- **Special Fund:** Funding derived from other revenue or grant sources. Special Funds can include contributions from external non-governmental or private organizations. Additionally, Special Funds may include transfers of revenue from non-General Fund fees or taxes.
- **Capital Funds:** Funding identified for capital projects, generally defined as an improvement to City property. Capital projects are defined by the City’s Board of Estimates under a set of criteria to limit projects to improvements that are permanent in nature.² Capital funds may be derived from General or Grant funds, as well as other contributions in limited cases.

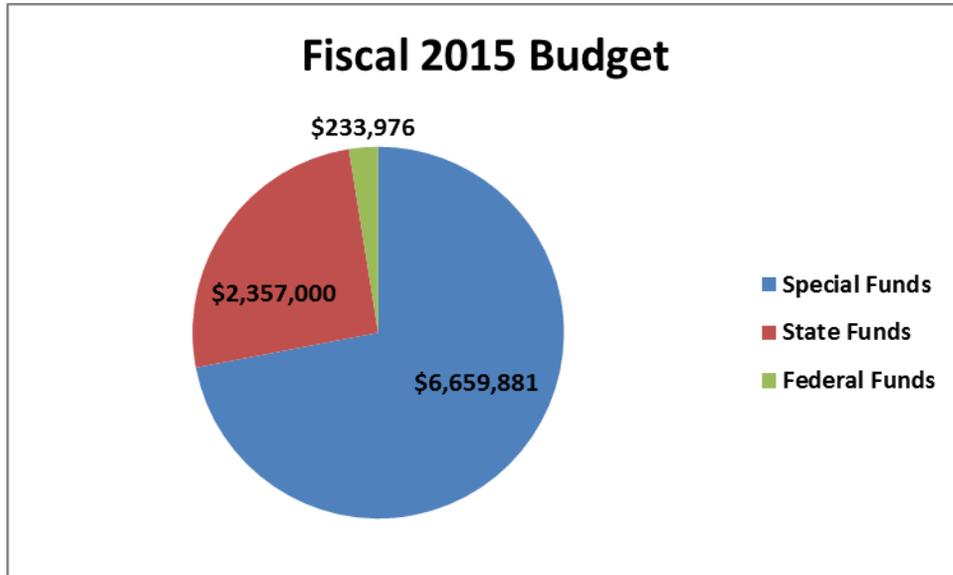
For the purposes of this report, the Special Fund will be identified as the primary source of operating revenues and expenditures for the Circulator and Harbor Connector. Each of the other fund sources will be incorporated as it relates to additional service revenues, start-up costs, or operational costs.

² *Administrative Manual*, Policy # 420-7, “Capital Budget”. The City’s Board of Estimates established that capital projects shall not include the following: Projects or improvements costing less than \$50,000; Vehicular equipment; Items of repair, maintenance or emergency nature costing less than \$100,000; Bureau of Water and Waste Water items of repair, maintenance or emergency nature costing less than \$250,000; or salaries other than those which are properly capitalized as a part of the project cost.

Budget

The figure below shows the budget for the Circulator and Harbor Connector in Fiscal 2015.

Figure 3: Source of Funds – Fiscal 2015



The \$6.6 million Special Fund appropriation includes budgeted line items for professional services payments to Veolia (\$5.6 million), and ongoing payments for bus purchases (\$907k). \$2.3 million in State Fund is appropriated for professional services payments, as is \$234k in Federal Funds. There are no City positions funded within the Circulator activity.

Fund Sources

Parking Tax

Until 2008, the City of Baltimore did not have a uniform tax rate for garages and parking lots. Taxes for hourly, daily, and weekly parking were 12 percent per dollar, while monthly or longer-term parking was assessed at \$15 per month.

In Fiscal 2009, the Baltimore City Council introduced a bill on behalf of the Administration to establish a uniform increased tax rate of 15.5% per dollar for all parking lots and garages. The Department of Finance projected that net revenues would increase by \$4.4 million through this adjustment. The justification to increase the parking tax was straightforward: the revenue would be used to support the Circulator buses that would primarily service commuters in the downtown area using the City's parking lots and garages. Furthermore, it was not difficult to attract political support for the increase, as the tax burden would be borne primarily by commuters rather than City residents.

The uniform tax rate was passed through Ordinance 08-0179 in September 2008, and the rate was established at 16% per dollar on final passage. The Parking Garage and Lots Tax revenues rose from \$18,480,506 in Fiscal

2008 to \$22,249,781 in Fiscal 2009. From the Fiscal 2009 revenues, \$5,559,460 was transferred to the Charm City Circulator Special Fund to support the purchase of buses and related start-up expenses.

Beginning in Fiscal 2010, the City began to experience tremendous fiscal stress due to the collapse of the housing market and the onset of the Great Recession. Planning during the upcoming budget cycle included both expenditure cuts and additional revenue packages. In conjunction with the Fiscal 2011 budget, the parking tax was raised from 16% to 20% through City Council Ordinance 10-301. This tax rate adjustment was initially scheduled to decrease to 19% on July 1, 2013. However, through Ordinance 13-212, and as part of the City's plan to diversify revenue streams through the Ten Year Financial Plan, the Administration decided to maintain the 20% parking tax rate.

State Grant Support

State grant funding was not included in the agency's initial projection for the service, but has since developed into a significant funding component. In Fiscal 2014, DOT received additional State grant support from the MTA in the form of the Local Operated Transit Systems (LOTS) grant. This grant was awarded at \$12 million, and the term has been identified as a six-year commitment of \$2 million each year starting in Fiscal 2014.

The State of Maryland also provided a two year grant, totaling \$522,500, in support of the Circulator operations. This grant was awarded to DOT through the Maryland War of 1812 Bicentennial Commission's Star-Spangled 200 Grant Program, also known as the SS200 grant. The grant is expected to run from Fiscal 2014 to Fiscal 2015, and will not be renewed following conclusion of the War of 1812 Bicentennial celebrations in September 2014.

Federal Grant Support

Federal grants have buttressed some of the capital needs of the CCC program and the Harbor Connector, but have generally been announced as one-time funding sources. Federal grants were not identified in the initial agency revenue projection as a source of capital or operating funds.

Advertising Revenues

The City's Circulator service also derives funding from advertising revenues. Spaces within each bus exterior and interior can be designated for sponsorship, as well as options to sponsor electronic signage, brochures, and promotional messages and announcements. While not as significant as the parking tax revenues, this revenue stream was expected to help support Circulator operations, and was projected to grow as a share of total revenue over time.

Other Revenues

As part of the Circulator start-up, the City engaged with local university campuses, non-profit employers, and development entities in the downtown area to identify potential contributors to the project. The City identified several of these organizations and entered into grant agreements:

- **University of Maryland Biopark Campus:** The University of Maryland Baltimore provides its own bus service, with one route previously identified between the main campus east of Martin Luther King Jr. Boulevard and the University of Maryland Biopark (“Biopark Shuttle Route”). In lieu of the Biopark Shuttle Route, the University of Maryland Baltimore and the City identified a portion of the East/West Circulator route that would cover the identified area. As part of the agreement, the University of Maryland Baltimore agreed to contribute \$100,000 per year for five years, starting on July 1, 2009. The grant officially terminated on June 30, 2014, though the service has not changed.
- **East Baltimore Development, Inc. (“EBDI”):** EBDI is a 501(c)(3) organization that aims to revitalize and rebuild the East Baltimore neighborhood. EBDI agreed to a 5-year contribution at \$50,000 per year to support Circulator operational expenses, with the understanding that free bus services would help to promote revitalization of the surrounding residential and business communities. This agreement started on December 15, 2008, with annual contributions following on the first day of each calendar year between 2010 and 2013. The grant officially terminated on January 30, 2013.
- **Traffic impact studies, development contributions, and other contributions:** In addition to other educational and non-profit organizations, the City receives dollars from developers for traffic mitigation and other projects that have been applied to Circulator revenues. Similar to the contributors identified above, companies may enter into agreements to provide funding should the City establish a route stop close to a company facility, in order to defer some travel costs for employees. The amounts provided through these contributions may vary by amount and term.

Expectations

Based on a review of Circulator financial records and historical information, we can identify the following initial expectations for the service:

- 1) The Special Fund, buoyed by the parking tax allocation and other revenues, would be used to support all operating costs;
- 2) A one-time capital investment would be made to purchase the new bus fleet;
- 3) Expenses would be driven primarily through the established contract hourly service rate; and
- 4) DOT would bear responsibility for both operational and financial oversight.

The Findings section will provide detail on the operational and financial picture of the Circulator and Harbor Connector services, and material discussed within that section will be used to inform subsequent recommendations.

PRIORITY OUTCOMES AND PERFORMANCE MEASURES

Priority Outcomes

In 2010, the City implemented a budget process known as Outcome Budgeting to plan for the next fiscal year (Fiscal 2011). Jurisdictions are faced with growing demands despite limited resources. The aim of Outcome Budgeting is to identify services that provide the most value – through priority and performance – and to align resources accordingly. Rather than making agency-wide cuts or increases, each City agency presents service-level budget proposals, and funding is allocated to services that best advance a priority outcome.

Figure 4: Priority Outcomes for the City of Baltimore, Fiscal 2015



The Complete Streets and Sustainable Transportation service is identified under the Stronger Neighborhoods outcome. The service encourages and provides cleaner forms of transportation to reduce citizen dependence on single-occupant vehicles, most notably through operation of the Charm City Circulator and Harbor Connector water taxi. In addition, this service inspects and maintains sidewalks, markets and develops ridesharing, telecommuting, and flexible work hour programs, installs bicycle facilities, and advocates and coordinates the Red Line Transit Project.

Performance Measures

As part of the move to Outcome Budgeting, agencies identify performance measures to demonstrate their services’ value. Each agency is asked to identify output, efficiency, effectiveness, and outcome measures for its services. In the Fiscal 2015 budget, Complete Streets and Sustainable Transportation listed four performance measures:

Table 2 : Fiscal 2015 Performance Measures

Type	Measure	Fiscal 2014 Target	Fiscal 2015 Target
Output	# of hours Circulator service provided	83,429	90,000
Efficiency	Cost per Circulator rider	\$1.46	\$1.45
Effectiveness	# of Circulator riders annually	4,000,000	4,600,000
Outcome	% of people who sometimes (or more frequently) use public transportation	56%	57%

The output, efficiency, and effectiveness measures for Complete Streets and Sustainable Transportation all reflect on the performance of the Circulator bus service, while the outcome performance measure seeks to assess all public transportation use, including (but not limited to) the Circulator.

FINDINGS

RIDERSHIP AND HEADWAY

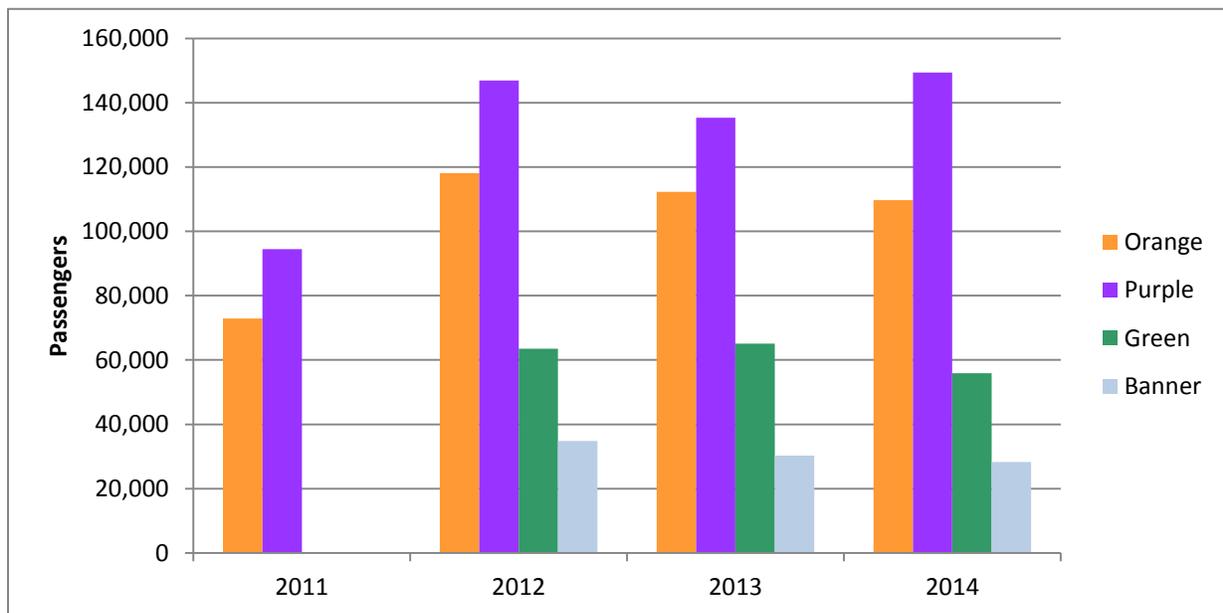
Bus Ridership

DOT tracks the number of passengers that ride on each of the Circulator routes. The ridership figures can be used to assess total ridership along any one route, or to compare ridership across different routes. DOT utilizes a system called NextBus in order to track ridership; the vendor includes the cost of this service in billing to the City. Each Circulator bus is equipped with the tracking system on both the front and rear doors. This system records each passenger's entry onto and exit from a bus.

DOT has identified ridership numbers for each month since July 2010, available online at the Circulator website (with exceptions for January 2011 and February 2012, which were not immediately available on the site).

Figure 5 below provides the average monthly Circulator ridership by route:

Figure 5: Average Monthly Circulator Ridership by Route



As identified above, the Orange and Purple Lines significantly increased in average monthly ridership between 2011 and 2012. Each of these lines showed slightly decreased ridership in 2013. For 2014, the Orange Route's ridership fell slightly, while the Purple Route's ridership increased. The Green Route showed a slight increase between 2012 and 2013, and then a small decrease in 2014. The Banner Route has decreased slightly each year, though it should be noted that in Fiscal 2012 it operated for only the last month of the year.

There is a wide discrepancy among the routes in terms of ridership, with the Purple Route outperforming all other routes with nearly 150,000 riders per month in Fiscal 2014. The Orange Route carried about 110,000 riders per month in Fiscal 2014, and the Green Route carried about 56,000 riders per month. The Banner Route, serviced by a smaller number of buses, carried about 28,000 riders per month.

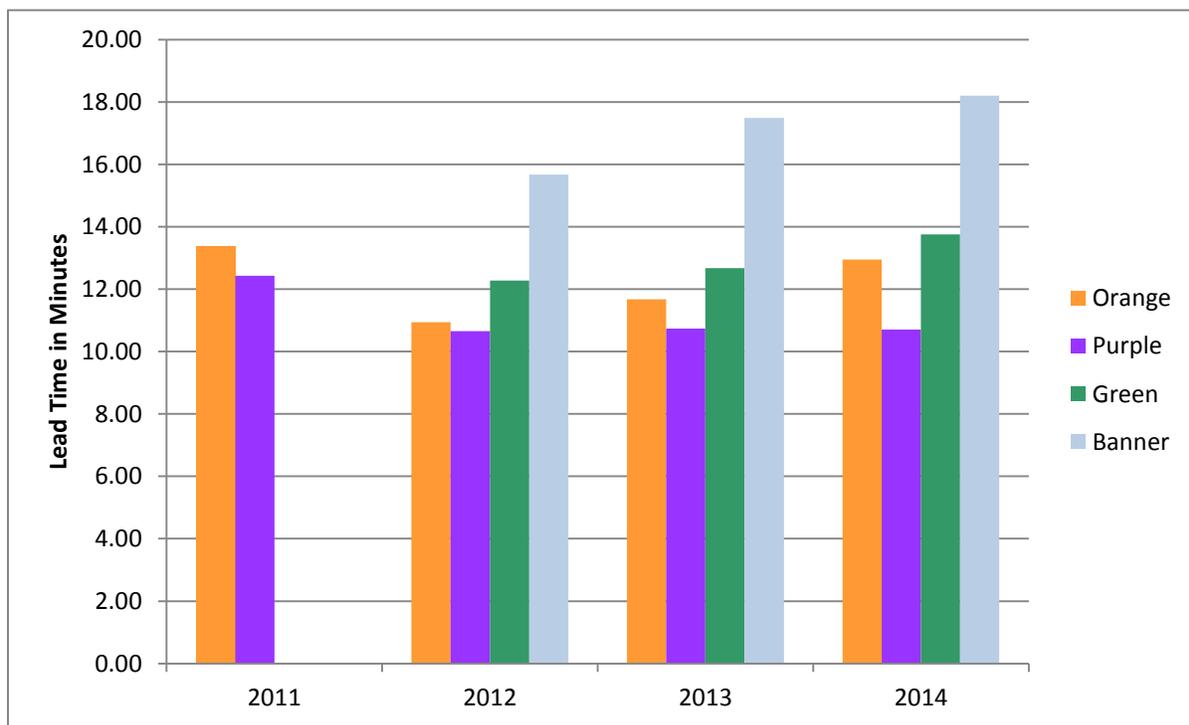
Total monthly ridership started at about 150,000 riders in July 2010, and has surpassed 400,000 riders per month in December 2013. Over the last six months of Fiscal 2014, ridership averaged just under 325,000 riders per month across all lines.

Bus Headway

In order to assess operational performance, DOT also tracks bus headway, which is the average maximum amount of time a passenger needs to wait for the next bus. Each time a Circulator bus arrives at a stop, the GPS system on the bus registers the arrival time. By comparing the times of arrival of successive buses at each stop, DOT can calculate average headways.

One of the features of this service that has been touted since its inception was that it would be reliable and the headway would be only ten minutes. In the case of the Banner Route, the stated goal has been 15 minutes. Figure 6 below provides the average monthly headway for each route over the past four fiscal years.

Figure 6: Average Monthly Headway by Route



While the headway goal for all of the Circulator routes is 10 minutes, only one route – the Purple Route - has maintained headways close to the goal (with average monthly headways of 10.66 minutes, 10.73 minutes, and 10.71 minutes in Fiscals 2012, 2013, and 2014, respectively). Factors such as traffic, congestion and accidents can all disrupt scheduled headway. In Fiscal 2014, the Orange Route had an average headway of 12.95 minutes, the Green Route had an average headway of 13.75 minutes, and the Banner Route’s average headway was 18.20 minutes (note that the Banner Route is scheduled to operate at a 15-minute headway).

COMPARABLE SYSTEMS

Baltimore is one among many cities and jurisdictions to offer free or reduced cost public transportation to residents. Appendix VI includes a list of several cities operating a similar circulator or shuttle system, with some detail on operations and funding. We can identify several common themes as a part of this review:

- 1) **Route size and ridership:** While various cities have circulator/trolley services available to citizens, there is great size disparity among them. For example, the town of Hillsborough, NC has a population barely above 6,000 and the area covered by its one-route circulator covers approximately 10 miles. Similarly, Annapolis has a population of just over 38,000 and its one-route circulator covers approximately 5 miles.

In contrast, Washington, D.C. has a population of slightly over 646,000 and its circulator has five routes that cover over 30 miles of the city. The larger jurisdictions with multiple routes that carry more people are more likely to be engaged in partnerships with other entities that have an interest in the circulator systems and are more likely to have multiple sources of funding, such as federal or state grants. More detail on ridership can be found in Appendix III.

- 2) **Service to specific areas (parking lots/garages):** Jurisdictions with circulator services often designate “pick up” and “drop off” points close to parking facilities. For example, the Annapolis Circulator trolley picks up passengers from three garage locations.³ The Bethesda Circulator also picks passengers up from several parking garages.⁴ As part of the Circulator’s route and its predecessor, DASH, buses and shuttles have both identified stops close to parking garages and lots around the Downtown and Central Business district area.
- 3) **Fare system:** Operations of many of the comparable circulator services are dependent upon fare revenues. Washington, D.C., Portland, OR, and Milwaukee, WI all charge a flat \$1.00 fee to ride. Indianapolis, IN has a variable rate, but charges a minimum fee of \$1.75 to ride the circulator. At the end of October 2014, the city of Annapolis moved to a \$1.00 fare per ride to support operations of their Circulator bus system.⁵

Though a fare system is not a requirement to support operations, the fee-for-service model in many cases produces a form of horizontal equity, as riders are directly responsible for part or all of the cost. Most public transportation systems rely partially upon a fare system for revenues (including the MTA Light Rail and MARC train systems in Baltimore). While the parking tax in Baltimore City can be identified as a proxy or substitute for direct fee-for-service, it does not take actual usage into account, and promotes a system of vertical equity; the cost of operations is shouldered by Downtown and CBD parkers, many of whom may not utilize the service at all.

³ <http://www.annapolis.gov/government/city-departments/transportation/circulator>

⁴ <http://www.bethesdatransit.org/transit-Bethesda-Circulator.shtml>

⁵ “Annapolis to start charging \$1 for Circulator rides”. Capital Gazette. <http://www.capitalgazette.com/news/annapolis/ph-ac-cn-circulator-1028-20141028,0,6141884.story>. Last accessed November 17, 2014.

There is no one-size-fits-all approach. In each jurisdiction, policy makers must identify the political appetite for direct or indirect contributions to the system, and determine which revenue collection system suits the jurisdiction best.

- 4) **Multiple and varied funding sources:** Most of the circulator systems in other jurisdictions have a variety of funding sources, and are not limited to revenues from a fare system. Several examples of differing fund sources include:

- Parking fees and parking fund revenues (Annapolis)
- Federal funds support, with general fund matching contributions (Raleigh)
- Bed tax, i.e. fees for hotel occupancy (Scottsdale)

Similarly, the Charm City Circulator has used a variety of dedicated and non-recurring funding sources, such as the parking tax, advertising, and partner investment, to support operations.

- 5) **Joint ventures:** Many municipal circulator systems operate in joint partnership between the city and another entity, generally for assistance with marketing, administrative support, or funding. Several municipalities are identified below to illustrate these types of partnerships:

- Bethesda: joint venture between city and Bethesda Urban Partnership, Inc.;
- Washington, D.C.: joint venture between city, D.C. Surface Transit Inc., and Washington Metropolitan Area Transit Authority (WMATA);
- Orlando: joint venture between city and Orlando's Downtown Development Board; and
- Portland – joint venture between city, Portland Streetcar, Inc., and TriMet (a municipal corporation of the State of Oregon).

Through establishment of a joint venture, other circulator services can reduce risk, as outside stakeholders can provide additional funding, identify new business and marketing opportunities, and improve the quality of service operational and financial assessment through independent verification.

- 6) **Harbor Connector:** None of the cities reviewed as part of this report offered City-subsidized, water-based connector services as a part of their circulator systems. Two nearby cities, Washington, D.C. and Annapolis, both occupy land on major waterways, and have a large number of private operators providing connector and tour services. However, neither city provides city-funded water transport services.

OPERATIONAL ISSUES

Shuttle Services

Through the initial service contract, a fleet of 21 Eco Saver IV hybrid electric buses would support Circulator operations, with full services scheduled to begin in Fall 2009. However, by December 2010, the manufacturer Design Line North America (“Design Line”) provided only 13 buses, and delivery of further vehicles was suspended due to issues of vehicle dependability. With the full complement of buses unavailable, DOT was unable to begin full Circulator services to the Green Line, as the buses it did have were needed for the already established Purple and Orange Routes.

In order to support service to the City Hall, Fells Point, Harbor East, and the EDBI/Hopkins area through a Green Route service, DOT contracted with Veolia to operate the interim East Side Shuttle. Beginning in November 2010, Veolia provided service to this designated area. The City and Veolia agreed to an interim rate of \$85 per hour for the shuttle, effective from January 2011 to October 2011, when DOT began Circulator Green Line operations in full. During this time frame, Veolia billed DOT for \$873,837.50. Based on the initial annual rates established between the City and the vendor, and the interim rate for the East Side Shuttle, the City paid an additional \$197,411.21 over the 10 month period due to bus unavailability for the Green Route.

Design Line Failure

Delivery of the complete bus fleet turned out to be a larger issue than a mere setback, as the financial viability of the bus manufacturer was called into question. Due to the concerns about delays and dependability, the vendor, Veolia, decided to sever ties with Design Line and seek liquidated damages, based upon failure to deliver on the terms of the vendor-manufacturer agreement. The City concurred with the decision to sever ties.

The manufacturer eventually declared bankruptcy, and DOT provided payment to Veolia to cover the difference between the City’s down payment to Veolia for the Design Line buses and Veolia’s initial payment to Design Line for the 13 delivered buses. This operational failure resulted in the accelerated payment of \$1,569,432 to Veolia, charged against the Circulator operating account. Later, an additional \$378,471.60 was identified by the vendor to complete payments. Based on the above settlement, the Circulator’s operating fund absorbed \$1,947,903.60 in unbudgeted vehicle payments during the fiscal year; the service did not identify any additional revenues at the time to offset these costs.

New Bus Purchases – Orion Models

In order to stabilize the fleet, DOT elected to purchase additional buses in late 2011. The agency selected 8 Orion-style buses, to bring the fleet total to 21 as initially planned. The cost of the additional buses totaled \$4 million, for which DOT did not initially have capital funding identified. A grant from the Federal Transit Administration allowed the agency to offset part of the cost later, but the operating fund was once again identified as the source to support the bulk of the purchase. In total, DOT paid \$2.8 million from the operating fund to support the 8 Orion bus purchases during Fiscal 2012.

Leasing

Without the full complement of Design Line buses, DOT would have been unable to operate all three bus routes while maintaining reasonable headway times and meeting the 15% fleet reserve threshold. Accordingly, DOT also moved forward with a lease of 5 Van Hool style buses to supplement the Circulator fleet. The Van Hool bus lease was approved by the City's Board of Estimates in 2011⁶, and allowed DOT to lease buses for Circulator operations for a 36-month time frame, with options to extend the lease for two additional one-year periods. The lease provides 5 buses at a rate of \$5,745 per bus per month⁷, plus 3.5% in administrative fees. Including the initial security deposit, costs for the Van Hool bus lease through November 2013 totaled \$1,123,550.71 over this three year period. The three year lease term formally expired in April 2014, but has been extended to continue supplementing the Circulator fleet.

Banner Route Creation

The most recent addition of the four Circulator routes is the Banner Route, established in 2012. The route was identified to serve the Fort McHenry area of South Baltimore in accordance with the beginning of the Star Spangled Sailibration, a national bicentennial celebration commemorating the War of 1812.

Federal, State, and City officials identified \$1,160,000 in FTA grant funding to support purchase of buses to service the Banner Route. In order to support the Banner Route, and to maintain the fleet reserve requirement, DOT purchased an additional 4 Orion style buses for \$2 million. DOT used the \$1.16 million FTA grant as the primary funding source, and charged an additional \$870,175.20 to the operating fund to support the remainder of the purchase. Similar to the Orion bus purchase in 2011, no additional revenues were identified to offset the bus purchase charges to the operating fund. The Banner Route revenues included \$337,500 in operating funds for Fiscal 2014 as part of a two-year SS200 grant from the State.

While establishment of the Banner Route has provided a dedicated free bus service to the area, the decision to do so has a number of long-term service and financial effects:

- **Service Demands/Public Expectations:** Each increase to service provision cements public expectation of continuing those same services into the future. While the Banner Route was created primarily with the Star Spangled Sailibration event in mind, riders have become accustomed to the free service for regular transit needs.
- **Capital Support:** To maintain current services, additional funding would need to be identified to support future bus purchases that are dedicated to the Banner Route.
- **Fleet Reserve:** As part of the current agreement with the vendor, the City is required to keep a bus spare ratio (fleet reserve) of 15%. To accommodate any fleet augmentation, including service to additional routes, the City must increase the number of buses held in reserve in order to meet the terms of the current contract.
- **Opportunity Cost:** The Banner Route was established in support of the Sailibration events, and continuation of the route requires dedicated buses. Consequently, if DOT continues the route after Sailibration events end, the agency will miss an opportunity to add the Banner Route buses to fleet

⁶ Board of Estimates Agenda 4-27-2011

⁷ Financial records indicate that DOT paid \$5,631 per bus per month through the first year of the lease (November 2011), plus administrative fees.

reserve, decrease current leasing needs, or further support operations of the Orange, Purple, and Green routes. Adding buses to the three original routes could postpone the time frame for future bus purchases, and reduce annualized capital costs.

Purple Route Expansion

The Purple Route is currently slated for expansion during Fiscal 2015. As part of the expansion, the route would continue north from Penn Station to University Parkway, and extended further south to Wells Street.

According to DOT, the northern extension of the Purple Route is expected to add another seven stops along Charles Street, and six stops along St. Paul Street. The extension of the southern portion of the route would add three stops. Each of the stops identified in the northern and southern extensions are currently serviced by MTA buses. DOT conducted timed runs to determine the service implications of the extension, and found the following:

- To maintain 10-minute headway, the Purple Route currently requires six buses, as the route takes 56 minutes to complete.
- The proposed extension would add 3.2 miles and 22 minutes to the running of the route.

To support the extension without increasing headway, DOT identified a need for two additional buses. Financially, the impact of the expansion would result in over \$800,000 in annual operating costs (including fuel). Additional buses have not yet been added to the fleet to support this extension.

Accounting and Reporting

Through review of Circulator financial information, BBMR has identified significant problems in tracking revenue and expenditure information. Some of the critical issues include the following:

- Revenues from partners and contributors are not segregated from expenditures, or are unidentified within the service's budgeted revenue and have been applied against expenditure accounts;
- Operating expenses were charged against capital accounts well after operating expense accounts had been identified, and specific capital expenses were charged against operating accounts;
- Payments have been charged to outdated or old program designations in the accounting system;
- In a select case, revenues were not applied to the appropriate grant account; and
- The agency did not identify the capital appropriation used for Circulator or Harbor Connector activities as a separate account, greatly increasing the difficulty in reporting Circulator and Harbor Connector-related capital expenses.

The first issue does not affect the fund's bottom line, but it produces significant confusion during review of the service's revenues and expenses. In this case, revenues and expenses would both appear understated.

The four remaining issues, at best, add a layer of complexity to a financial review. As a result of these issues, there have been gaps in financial reporting. Early capital and operational expenses are not charged to the appropriate accounts, which cloud operational cost trends. It is important to separate these as best as possible, so that one-time or replacement costs can be accurately assessed, separate from ongoing operational costs. When grant revenues are applied to the incorrect fund account, the resulting revenue reports are

inaccurate and the financial picture can appear worse than expected. Finally, if capital and operating revenues and expenses are not clearly delineated by project or program, reporting on the Circulator or the Harbor Connector can be challenging.

On a secondary level, mistakes in financial reporting should be a cause for concern for service managers. It becomes increasingly difficult to assess revenue or expenditure performance versus expectations, provide accurate internal or external reporting, and ultimately make well-informed policy decisions when information is presented in an inconsistent manner. Accurate financial reporting is key to providing a clear picture of the service – and the problems with reporting above present a distressing picture.

STATEMENT OF REVENUES AND EXPENDITURES

The following section of the report will provide detail on the revenue and expenditure performance related to the Charm City Circulator.

Revenues

Based on a review of early Circulator and Harbor Connector financial documents, there is some disconnect between projected and actual revenue figures. Below, we will review revenue performance across several sources to determine where the differences are most pronounced.

The Circulator and the Harbor Connector rely on several different funding streams to support both operations and capital expenses. These revenues include the City's parking tax, state and federal grants, advertising revenues, and other contributions. In each case, we will review the sources of funding and explore how the service initially projected and realized these revenues through Fiscal 2014, and identify future commitments from each revenue source.

Parking Tax

DOT established an early financial pro forma for Circulator and Harbor Connector expenses covering the periods from Fiscal 2009 through Fiscal 2016. As part of the projection, the parking tax would support the vast majority of operating costs - between 82 and 85 percent across the first five planning years.

Circulator revenue derived from the parking tax rose from \$3.021 million in Fiscal 2009 to \$5.754 million in Fiscal 2013. Parking tax revenue did not meet expectations in Fiscal 2010, producing a revenue deficit of \$531,666 versus budget. Initial projections identified a 2.5% inflationary increase in revenues each year after Fiscal 2010, though revised revenue estimates suggested lower revenues. Based upon the revision, parking tax revenue rebounded significantly and exceeded expectations in the following years.

Table 3 : Circulator Parking Tax Revenue Performance - Fiscal 2009-2014

Description	2009	2010	2011	2012	2013	2014
Revenue Projection (Initial)	\$3,021,730	\$5,297,000	\$5,039,700	\$5,273,000	\$5,495,000	\$5,720,000
Revenue -Actuals	\$3,021,730	\$4,765,334	\$5,307,065	\$5,486,790	\$5,754,463	\$6,059,137
Difference	\$0	(\$531,666)	\$267,365	\$213,790	\$259,463	\$339,137
% Variance from Projection	0%	-10.0%	5.3%	4.1%	4.7%	5.9%

During the six-year time frame, parking tax revenues on the whole exceeded projections by \$548,090 or 1.8%. The overall performance suggests that the parking tax revenue projection was too aggressive in Fiscal 2010. While consistently higher parking tax revenues have aided the service from Fiscal 2011 onwards, the margin of the difference (5% across all four years) suggests some disconnect between the revenue projection and the

adopted parking tax revenue budget. Looking towards Fiscal 2015 and beyond, the parking tax remains the largest and most steady source of income for this service.

While the parking tax revenues exceeded expectations overall, other revenues failed to materialize to the degree anticipated. Below we will discuss some of those other revenue sources.

State Grant Support

As identified in the Fund Sources section, the Circulator derives part of the service’s operating revenue through the MTA LOTS grant and the SS200 Grant. While the MTA LOTS grant is not currently tied to specific Circulator initiatives (such as increased services), the State has engaged in discussions with DOT to evaluate areas in which Circulator buses may overlap with Baltimore City MTA bus services.

A Summary of State grant sources is provided below:

Table 4 : State Grant Revenue Summary

Grant Name	Total Amount	Starting Date	Ending Date	Duration	Fund Use
LOTS Grant	\$12,000,000	Fiscal 2014	Fiscal 2019	6 Years	Operating
SS200 Grant	\$522,500	Fiscal 2014	Fiscal 2015	2 Years	Operating

One item to note is that the LOTS grant may be subject to MTA’s discretion in out years. While a commitment of 6 years has been communicated to DOT recently, the change in administration could potentially impact this funding source. For the purposes of this report, this source is assumed available through Fiscal 2019, but there is risk in reduction to this grant.

Federal Grant Support

Several significant federal revenue streams can be identified supporting these services:

- Congestion Mitigation and Air Quality Improvement (CMAQ) Program Funds: The CMAQ program is designed to assist State and local governments in decreasing congestion and achieving Clean Air Act air quality goals.⁸ DOT received \$1.6 million in funding in Fiscal 2009 for CMAQ, and used \$375,000 of CMAQ funding as a pass-through from the State to support Circulator operations.
- The agency used federal funds from the Recovery Act Ferry Boat Discretionary Program to purchase the Harbor Connector boats.
- In Fiscal 2011, the FTA awarded \$1.56 million to the City to assist in establishment of the Banner Route, the fourth Circulator bus route.
- In Fiscal 2012, the FTA awarded a second grant worth \$1.16 million for costs related to establishment of the Banner Route. This and the above FTA award, totaling \$2.72 million, supported part of the DOT purchases of the Orion bus fleet.

⁸*Air Quality –Congestion Mitigation and Air Quality Improvement (CMAQ) Program*. Federal Highway Administration. Accessed Nov. 10, 2014.

http://www.fhwa.dot.gov/ENVIRonment/air_quality/cmaq/policy_and_guidance/2013_guidance/index.cfm

Table 5: Federal Grant Revenue Summary – Circulator Operations

Grant Name	Total Amount	Starting Date	Ending Date	Duration	Fund Use
CMAQ Grant	\$375,000	Fiscal 2009	Fiscal 2009	1 Year	Operating
FTA Grant	\$1,164,000	Fiscal 2012	Fiscal 2012	1 Year	Capital
FTA Grant	\$1,560,000	Fiscal 2012	Fiscal 2012	1 Year	Capital
Recovery Act - Ferry Boat Discretionary Program	\$1,600,000	Fiscal 2009	Fiscal 2009	1 Year	Capital

While federal grants have proven instrumental in supporting Circulator and Harbor Connector capital requirements, the disbursements are non-recurring and less predictable than other revenue sources such as the parking tax allocation or state grant funding agreements. Without consistent support, it is difficult to identify this as a steady revenue source for potential future capital needs.

The Harbor Connector service received an \$854,130 federal grant commitment in June 2014, to assist in purchase of an electric vessel and recharging station. This federal funding is expected as a pass-through from the State, and will require a \$150,000 match from the City in Fiscal 2015. The agency will need to identify appropriation to receive the funding, and identify the matching dollars, likely from an operating fund account.

Advertising Revenues

Advertising was identified as a small but growing source of revenue in the agency’s initial financial projections. DOT entered into an agreement with Mjach Designs in 2009 to promote advertising on the Circulator. While revenues from this enterprise were estimated at \$350,000 in Fiscal 2010 and growing in out years, actual revenues from advertisements amounted to \$50,000 total through Fiscal 2013. DOT parted with the vendor in Fiscal 2014 and identified a new vendor for future advertising ventures. Through the first quarter of Fiscal 2015 the service had received \$28,000 in advertising revenues. On this basis, this report will include a more conservative annual revenue projection \$120,000 for Fiscal 2015, which will be held steady in out years (and adjusted only on an inflationary basis).

Other Revenues

All other non-grant revenues (advertising, developer contributions, and partner contributions) are captured within the Special Fund as well. Below is a table illustrating the revenue performance for those particular categories:

Table 6: Circulator Special Fund Revenue Performance – Non-Parking Tax - Fiscal 2009-2014

Description	2009	2010	2011	2012	2013	2014
Projected Other Revenues, Special (Operating) Fund	\$612,000	\$507,601	\$734,155	\$875,366	\$907,678	\$893,067
Special Fund Revenue - Actuals*	\$50,000	\$669,360	\$578,196	\$797,481	\$472,073	\$237,268
Difference	(\$562,000)	\$161,759	(\$155,959)	(\$77,885)	(\$435,605)	(\$655,799)
% Variance from Projection	-91.8%	31.9%	-21.2%	-8.9%	-48.0%	-73.4%

*\$375,000 was credited to an expense account in FY2010. This revenue has been identified as a State MTA grant source (pass-through from CMAQ).

From Fiscal 2009 through Fiscal 2014, the Circulator’s initial projection included a total of \$4.52 million in other revenues. However, actual Special Fund revenue performance over this time frame fell well short of this expectation. The Circulator failed to collect on \$1.72 million of projected Special Fund revenues – more than 38% percent of the initial projection. Primary drivers of the shortfall include advertising revenues and developer-related contributions. Furthermore, the revenue performance in Fiscal 2010 is buoyed by the CMAQ pass-through grant that was incorrectly identified within Special Fund revenues.

Expenditures

As indicated in the previous section, revenue performance has been somewhat mixed - yet a more significant disconnect appears to take place within the service’s expenditures.

Operating Account Expenses

Between Fiscal 2010 and Fiscal 2014, the Circulator operating fund expenditures totaled \$45 million. Note that the expenditures in this table do not reflect operating costs attributable to the Harbor Connector.

Table 7: Special Fund Reported Circulator Expenditures - Fiscal 2010-2014

Fiscal Year	Expenditures
2010	\$3,663,851
2011	\$8,174,919
2012	\$14,750,060
2013	\$8,882,569
2014	\$9,543,895
Total	\$45,015,294

From Fiscal 2011 onward, expenditures have exceeded initial projections. During Fiscal 2012, several operational issues detailed above led to significantly higher payments from the operating fund, including the

\$1.9 million Design Line settlement, \$2.8 million for the eight Orion bus purchases, and an \$870K contribution towards the four additional Orion bus purchases. These issues account for over \$5.6 million in unplanned operational expenses alone, but do not fully explain the discrepancy between planned expenditures and actual expenditures.

Given that the vendor charges the City for service on a per-hour basis, we would expect to see expenses for a full year of service track consistently with the hourly rate for service (refer to Table 1: Annual Hourly Rate for Circulator Service Provision). Adjusted for the unplanned operational expenses above, operational costs appear to track relatively closely with operational hours, though there are still some discrepancies.

Table 8: Circulator Operating Hours - Fiscal 2009-2014

Measure	2009	2010	2011	2012	2013	2014 (Projected)
Operating Hours	N/A	34,762	55,620	69,934	98,531	90,000
Adjusted Operational Costs	N/A	\$3,663,851	\$8,174,919	\$9,087,981	\$8,882,569	\$9,543,895

There are several reasons for the disconnect between operating hours and adjusted expenditures. First, the rate established through the initial contract did not go into effect immediately. Interim rates were established for several routes due to the inability to field a full fleet of buses in a timely manner. In addition to the adjusted hourly rate, the City engaged in a leasing agreement that results in additional annual expenses. In combination, the annual operating costs associated with the service exceed projected expenses each year after Fiscal 2010, and suggest continued structural deficits in out years if no actions are taken to reduce costs.

Beyond the operational costs stated above, financing and capital costs threaten to contribute to the Special Fund deficit.

Lease Purchase Payments (Financing)

To cover the initial cost of 13 Design Line buses in 2009, DOT funded part of the bus purchase through the use of capital dollars (\$2.4 million). The remainder of the purchase, \$3.6 million, was financed through the City’s Treasury Bureau, with payments charged against the Circulator’s Special Fund budget. The terms for financing the Design Line buses are listed below:

Table 9: Payment Schedule for Bus Purchases

Payment Date	Payment Amount (Principal + Interest)
5/1/2010	\$286,575.09
11/1/2010	\$286,575.09
5/1/2011	\$286,575.09
11/1/2011	\$286,575.09
5/1/2012	\$286,575.09
11/1/2012	\$286,575.09
5/1/2013	\$286,575.09
11/1/2013	\$286,575.09
5/1/2014	\$286,575.09
11/1/2014	\$286,575.09
5/1/2015	\$286,575.09
11/1/2015	\$286,575.09
5/1/2016	\$286,575.09
11/1/2016	\$286,575.09
Total*	\$4,012,051.33

**Please note that summation of payments will not match exactly, due to rounding.*

While the initial \$6 million purchase was partially financed, the expense was not identified as an ongoing cost. The current lease purchase payments will end in Fiscal 2017. While this will provide for a decrease to operating expenses, it does not account for any contribution towards future bus needs.

Capital Costs (Start Up and Replacement)

A capital replacement fund was not identified as part of the service’s cost structure or budget. In some instances, federal grant dollars have provided capital infusions for both bus and ferry purchases, yet these past appropriations are nonrecurring and unavailable for future needs.

The City’s most recent Circulator bus purchases took place during Fiscal 2012, for the Orion bus fleet supporting the Banner Route. The cost at the time was identified at \$501,000 per bus. Recent estimates put the cost of a hybrid bus closer to \$700,000; however, there are additional items that should be factored into the total cost for a bus purchase. BBMR has reviewed expenses related to the most recent bus purchases, and identified items that should be factored into the fully-loaded cost of a new bus purchase:

Table 10: Bus Purchase - Projected Full Cost

Item	Amount
Bus	\$700,000
Camera System	\$7,430
GPS/Tracking System	\$3,499
Voice Announcement System	\$9,114
Passenger Counting System	\$3,700
Bus Wrapping	\$11,543
Vendor Upcharge	\$2,447
Total	\$735,285

Replacing the bus fleet will be necessary to support service provision in the coming years. Deferring this cost will result in larger and larger commitments necessary to maintain a full fleet. The risks associated with additional deferral include:

- Jeopardizing consistent service provision (due to breakdowns);
- Additional payments to vendors to supplement fleet in response to breakdowns;
- Requirement of large, multi-million dollar purchases or down payment for new buses; or
- Suspension of the entire service.

The service received \$3.25 million in initial capital funding for bus purchases, and will require significantly more to support future, comprehensive fleet replacement. With pressure on the City's General Fund to support other capital needs (including housing demolition, school construction, and bridge maintenance), establishment of a replacement fund, supported by a separate revenue source, is critical to reduce potential large outlays and commitments of General Fund dollars.

Based upon the age of the current fleet of vehicles, and assuming current services are maintained and require the same number of buses, we can identify the following timeline for bus replacement over the next 10 years⁹:

Table 11: Bus Replacement Timeline through Fiscal 2024

	2021	2023	2024
Identification	Group A	Group B	Group C
No. of Replacements	12	8	4

Taking the full cost figure developed earlier in Table 10 into account, the following contributions would be needed to support full replacement during each of the identified out years.

⁹ Bus replacement is currently based upon a 12-year replacement cycle as identified by DOT. Factoring in Purple Route expansion (2 buses) to the buses currently on route (19 buses) would result in 21 buses. Based on the fleet reserve requirement, DOT would need to have an additional 3 buses on hand, resulting in a grand total of 24 buses.

Table 12: Bus Replacement Cost by Year - Fiscal 2021, 2023, and 2024

	Fiscal 2021	Fiscal 2023	Fiscal 2024	Total
No. of Replacements	12	8	4	24
Cost of Replacements	\$9,936,610	\$6,892,033	\$3,514,937	\$20,343,580

Without a capital replacement plan, the City is faced with a number of risk scenarios for the Circulator service, none of which are necessarily exclusive of the others:

1. Requirement to support large capital outlays in the coming years to maintain fleet (including nearly \$10 million for Fiscal 2021 alone);
2. Increased risk for abrupt suspension or discontinuation of Circulator services due to equipment failure;
3. Additional reliance on short-term leasing, which increases operating costs.

A proposed capital replacement plan is available in this report's Recommendations section on page 38.

City-Wide Administrative Costs

This report focuses on the direct costs assigned to the Circulator operating fund. In addition, there are indirect costs that can be attributed to the service. Indirect costs will not impact the operating fund balance, but will be identified for reference in Appendix V.

Structural Concerns

In most cases, city agencies have an obligation to meet specific stipulations of a grant, both financially and programmatically, or risk losing the grant. The Circulator, however, currently operates without these same constraints. The Circulator's Special Fund (operating fund) is treated as an annual grant, with revenues from multiple sources: a direct contribution from the City's parking tax, advertising revenues, state and federal grants, and contributions from other sources. In many senses, the City acts as both the grantor and the grantee, yet lacks the standard enforcement mechanisms and incentive structure to marry operations and finances.

The structural problems raised above are reflected in the following issues:

- If the fund is projected to run a deficit during the year, DOT cannot immediately adjust service to bring revenues and costs into alignment. Changes to service must be announced to provide the public with appropriate notice;
- There are currently no provisions to increase developer or partner organization contributions mid-year should service needs increase;
- The largest portion of the annual revenue, the parking tax revenue share, is not in jeopardy of elimination or redistribution to other transit services; and
- DOT has no direct means for altering or enhancing parking tax revenue.

The combination of these factors produces an unsettling result: unlike most enterprises, Circulator and Harbor Connector operations have few direct controls of their revenue streams, and there are few immediate consequences or penalties for financial shortfalls. Given the dangers presented here, it is critical that service

revenues and costs are appropriately mapped out to best understand where the service is headed, and how finances will be impacted.

REVISED PRO FORMA- CURRENT BASELINE

BBMR has developed the following statement for Circulator and Harbor Connector revenues and expenses as of Fiscal 2014. This includes revenues and costs across the Circulator operating funds.

Table 13: Circulator Operating Fund, Fiscal 2009-Fiscal 2014

Summary	2009	2010	2011	2012	2013	2014
OPERATING BALANCE	0	3,641,090	4,987,792	1,900,979	(7,018,890)	(10,213,416)
OPERATING REVENUE	3,641,090	5,259,459	5,441,137	6,239,647	6,155,563	8,550,579
TOTAL OPERATING EXPENDITURES	0	3,912,757	8,527,950	15,159,516	9,350,089	9,964,222
CUMULATIVE OPERATING SURPLUS (DEFICIT)	3,641,090	4,987,792	1,900,979	(7,018,890)	(10,213,416)	(11,627,059)

Starting in Fiscal 2011, the service has run an annual deficit. The largest change came in Fiscal 2012, at which time the City covered expenses related to the Design Line bus settlement, purchased new buses for the fleet, and began operations along the Banner Route. Despite the addition of \$2 million in new revenues for the Circulator starting in Fiscal 2014 (the MTA LOTS grant), Circulator operating costs continued to exceed total revenues in Fiscal 2014.

Given the current level of service, current revenue sources, and projected hours of operation, the service is expected to run a deficit in Fiscal 2015 based on ongoing operating expenses exceeding projected revenues. One of the critical outcomes of this report is to establish a baseline for current services, identify assumptions for ongoing revenues and costs, and identify impacts to the operating fund based on those expectations going forward.

This service depends upon funding and commitments that require considerably more planning than a two- or three-year forecast. Consequently, and in order to assess the long-term viability of the service, we will extend the projection period to Fiscal 2024, or ten years from the most recent year-end closeout period.

The following assumptions are included in the 10-year operating fund projection:

- The parking tax will continue to act as the fund’s primary revenue source. Revenue growth will begin at 1.6% and increase to 2% in out years.
- General inflation will take place at a 2% growth rate.
- The MTA LOTS grant will be received through Fiscal 2019; no commitments will be assumed after this time without further information.
- Orange, Green, and Banner Routes will continue at current operations; the Purple Route will be extended in December 2015.
- Operations will continue to require the rental of buses until Fiscal 2021, at which point the service will replace the original Design Line fleet with new buses.

Based on the above assumptions, we have produced a 10-year projection for the service.

Table 14: Circulator Operating Fund Year-Over-Year Projection, Fiscal 2015-Fiscal 2024

	2015	2016	2017	2018	2019
Revenues	8,370,800	8,286,200	8,396,027	8,513,881	8,639,964
Expenditures	(11,918,713)	(10,943,630)	(10,864,433)	(10,789,385)	(11,005,172)
Difference	(3,547,913)	(2,657,430)	(2,468,406)	(2,275,503)	(2,365,209)
	2020	2021	2022	2023	2024
Revenues	6,768,874	6,900,213	7,034,181	7,170,779	7,310,007
Expenditures	(11,225,276)	(11,449,781)	(11,283,629)	(11,509,302)	(11,739,488)
Difference	(4,456,402)	(4,549,568)	(4,249,448)	(4,338,523)	(4,429,481)

The current level of services, maintained over the 10-year time frame, results in a total gap of \$35.3 million. Note that the projected deficit is between \$2.4 million and \$3.5 million annually for the first five years; over the next five years, the operating gap averages \$4.4 million. The primary change in the second five year period is the termination of the MTA LOTS grant, which would result in \$2 million less in annual revenues. The Fiscal 2015 expenditure figure is much higher than the immediate following years, due to expenses that were not captured as part of the Fiscal 2014 reporting period.

Note that this projection only encompasses the operating fund. As stated in the Capital Costs section above, the City will need to identify a potential \$20.3 million in capital replacement, which would only cover the upcoming period of replacement (no funding would be identified for bus purchases taking place beyond 2024, potentially re-introducing the long-term capital replacement risk factors). Based on current services, contributions for replacements beyond 2024 would increase the capital replacement cost by \$6.0 million¹⁰. A summary of the long-term risk, based on current deficit, projected 10-year operating deficit, and 10-year capital replacement costs is captured below:

Table 15: Circulator Risk - 10-Year Deficit Projection

Item	Risk (Deficit)
Fiscal 2014 Fund Balance	(\$11.6 million)
Projected 10-Year Operating Deficit	(\$35.3 million)
Capital Replacement	(\$26.3 million)
Total	(\$73.3 million)*

*Total projected deficit figure is rounded.

BBMR has identified a series of recommendations based on the identified deficit and future risk. The objectives of the recommendations will be to meet the following criteria:

¹⁰ The cost of replacing and pre-funding future bus purchases totals \$26.3 million. Please see Subheading #4 of the Recommendations section for further information on this piece.

1. **Fund bus replacement costs:** Funding for the replacement of the bus fleet will originate from the operating fund revenues. In this manner, there would be no requirement to dedicate or “earmark” future General Fund revenues.
2. **Provide for sustainable operations over 10-year period (Fiscal 2015-Fiscal 2024):** Service recommendations are expected to generate enough revenue and savings to result in a non-negative fund balance by Fiscal 2024.
3. **Eliminate the cumulative deficit generated through Fiscal 2014:** The Fiscal 2014 year-end Circulator operating fund balance is \$11.6 million. As part of the recommendations, this deficit is not expected to receive coverage from other sources, such as the City’s Fund Balance or one-time surplus from General Fund revenues.
4. **Preserve the initial bus system to the greatest extent possible:** The recommendations will aim to avoid a shut-down scenario and maintain a sustainable bus service to all three primary routes - Orange, Purple, and Green.

RECOMMENDATIONS

Consolidated Options

Any one of the individual options for producing savings or generating revenue will not, by itself, fully solve the Circulator’s 10-year projected deficit of \$73.2 million (which includes the current fund deficit, projected shortfall over the next 10 years, and long-term capital replacement). However, various combinations of these options could eliminate the projected deficit. This section will identify several combinations of alternatives and impacts, with one recommended for adoption.

To analyze the fiscal effects of these different options, we developed a spreadsheet model. Within this model, we analyzed each option individually. We then had each of these individual options interact with other options as needed. For example, if we were analyzing the elimination of a route we adjusted the fare projection to accommodate the fact that this route would no longer exist. This model then aggregated the results from each of these individual analyses into a total fiscal impact projection for all the options that we were examining taken together.

Two specific adjustments are recommended in each of the consolidated options: establishment of a bus replacement fund (“Capital Replacement”), and standardization of bus hours. Both items will be discussed in further detail in the Individual Options section below.

Option 1 –Reduced Green Route Services w/ Significant Parking Tax Increase

- Establish a bus replacement fund.
- Eliminate two buses from the current Green Route.
- Standardize hours.
- Increase the parking tax from 20% to 26%, with all revenue generated from the increase put towards the Circulator operating fund.
- Fund Balance achieved: Fiscal 2024

Table 16: Circulator Financial Projection- Option 1

Item	Cost
Beginning Balance	(\$11,627,059)
Projected 10-Year Operating Costs above Baseline Revenues	(\$35,337,883)
Capital Replacement	(\$24,429,321)
Savings	\$13,725,025
Revenues	\$59,054,873
Fiscal 2024 Balance	\$1,385,635

The above option preserves most services to the Purple, Orange, and Banner Routes, standardizes hours, and allows for immediate expansion of the Purple Route in December 2015. Two buses total are eliminated from

the Green Route. Based on ridership, the Green Route services the fewest riders per dedicated bus, and therefore is identified as the only route to reduce dedicated bus fleet (refer to *Route Adjustments and Consolidation* under the following Individual Options section of the Recommendations for further detail on operating efficiency). While this option may appear attractive to retain ridership and current services, it raises the parking tax six percentage points – more than doubling the current commitment from parking tax revenues.

Option 2 –Increased Headway w/ Minor Parking Tax Increase

- Establish a bus replacement fund.
- Eliminate two buses from the current Green Route, and one bus each from the current Orange Route and Purple Route.
- Standardize hours.
- Discontinue service to the Banner Route
- Increase the parking tax from 20% to 22%, with all revenue from the increase put towards the Circulator operating fund.
- Increase third-party contributions from partners.
- Fund Balance achieved: Fiscal 2024

Table 17: Circulator Financial Projection- Option 2

Item	Cost
Beginning Balance	(\$11,627,059)
Projected 10-Year Operating Costs above Baseline Revenues	(\$35,337,883)
Capital Replacement	(\$17,699,200)
Savings	\$33,689,039
Revenues	\$31,601,248
Fiscal 2024 Balance	\$626,144

This option presents a combination of revenue and savings adjustments. The parking tax is increased by two percentage points, with additional revenues of \$1 million per year provided through contributions from partner organizations. Services are discontinued along the Banner Route. Hours are standardized, and four fewer buses total operate along the Orange, Purple, and Green Routes, resulting in increased headway (estimated at 12 minutes along the Purple Route, 15 minutes along the Orange Route, and 20 minutes along the Green Route). The Purple Route extension takes place in December 2015, with the additional buses added back to the route to support the extension (these costs are captured in the baseline projection).

Option 3 –Introduction of Fare and Increased Headway

- Establish a bus replacement fund.
- Eliminate two buses from the current Orange and Purple Routes, and three buses from the current Green Route.
- Standardize hours.

- Discontinue service to the Banner Route.
- Increase third-party contributions from partners.
- Institute a \$1.00 per ride fare.
- Fund Balance achieved: Fiscal 2024

Table 18: Circulator Financial Projection- Option 3

Item	Cost
Beginning Balance	(\$11,627,059)
Projected 10-Year Operating Costs above Baseline Revenues	(\$35,337,883)
Capital Replacement	(\$12,498,263)
Savings	\$47,948,002
Revenues	\$11,618,133
Fiscal 2024 Balance	\$102,930

This option does not increase the parking tax, and therefore removes one of the larger revenue streams from consideration. With the revenue streams limited in this option, service reductions make up the bulk of the adjustments – the Banner Route is eliminated, the Purple and Orange Routes are reduced by two buses each, and the Green Route loses half of the current six buses on the route. Headway is estimated at 15 minutes along the Purple Route, 20 minutes along the Orange Route, and 30 minutes along the Green Route. The Purple Route is extended in December 2014, adding back in the buses removed from the current route.

On the revenue side, this option also introduces a fare of \$1.00 per ride. Note that there is an interaction between ridership and fare revenue - the more buses taken off route, the greater the headway, and therefore greater impacts to ridership and fare revenues.

Additionally, this revenue projection includes a decrease to the MTA LOTS grant, with the assumption that this grant would be discontinued should a fare system be enacted. Contributions from partner organizations are included in the above option.

Option 4 – Limited Service w/ No Revenue Increases

- Establish a bus replacement fund.
- Eliminate two buses from the current Orange Route, three buses from the current Purple Route, and four buses from the current Green Route.
- Standardize hours.
- Defer extension of the Purple Route to July 2015.
- Discontinue service to the Banner Route.
- Fund Balance achieved: Fiscal 2024

Table 19: Circulator Financial Projection- Option 4

Item	Cost
Beginning Balance	(\$11,627,059)
Projected 10-Year Operating Costs above Baseline Revenues	(\$35,337,883)
Capital Replacement	(\$9,721,014)
Savings	\$56,922,486
Revenues	\$0
Fiscal 2024 Balance	\$236,530

This option includes no additional revenue, and instead limits costs by pulling buses from routes. The Banner Route is eliminated entirely, and the three main routes run reduced operations. The Orange and Purple Routes operate with estimated 20 minute headways, and the Green Route operates with an estimated 30 minute headway. Additionally, the Purple Route extension is deferred to the start of the next fiscal year (July 2015).

Given the reduction to the bus fleet, expected capital replacement costs decrease dramatically from the baseline scenario. And with a large amount of buses now available in reserve, the life cycle associated with each bus in the current fleet is extended.

BBMR Recommendation

Within the four identified consolidated options above, Option #2 presents a relatively moderate combination of revenue enhancements and service reductions, and is identified as the primary recommendation. Reduced hours and headways along the three main routes, in combination with the Banner Route elimination, will produce significant savings; furthermore, the effective parking tax rate increase (from 20% to 22%) will be relatively minor, and will not significantly discourage parking within City garages. The parking tax increase appears to present a more cost-effective solution than introduction of a fare. Finally, the increased contribution from third parties will demonstrate an ongoing commitment from partner organizations in maintaining a viable Circulator bus system.

Individual Options

Each of the recommendations above presents a combination of options. In the following section, individual options will be discussed in further detail. The individual options are identified below:

1. Route Adjustments and Consolidation
2. Standardized hours of operation
3. Harbor Connector route study
4. Capital replacement
5. Implementation of fares
6. Parking tax increase
7. Advertising/sponsorship

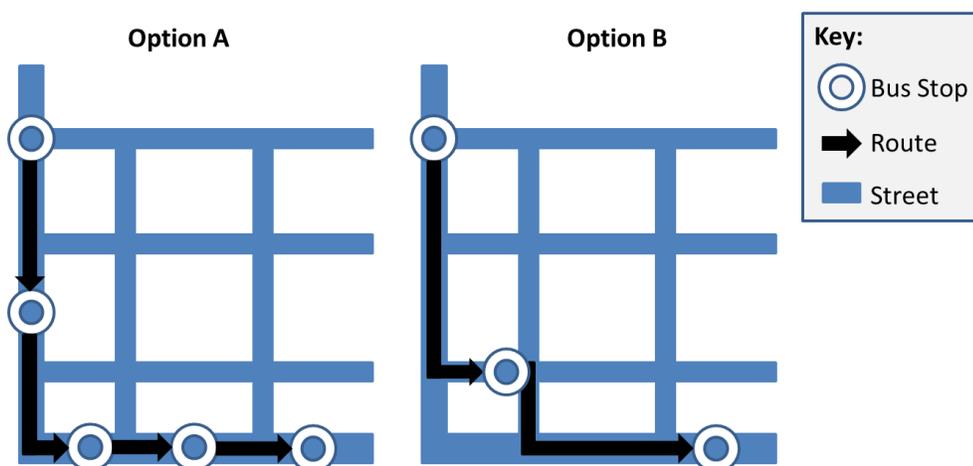
8. Partner Contributions

1. Route Adjustments and Consolidation

DOT is currently examining route structure, with the goal of identifying more efficient means for maximizing ridership within the service area. This action is encouraged, as the resulting changes could streamline services by reducing the total buses or service hours necessary to retain riders.

For example, in Option A below, a bus is routed through only two streets, but scheduled for five stops. In Option B, a bus is routed through four streets, but makes only three stops. Each route should be evaluated on the basis of street space configurations and limitations, effects of (and on) traffic, stop time, and potential ridership.

Figure 7: Generic Route Consolidation

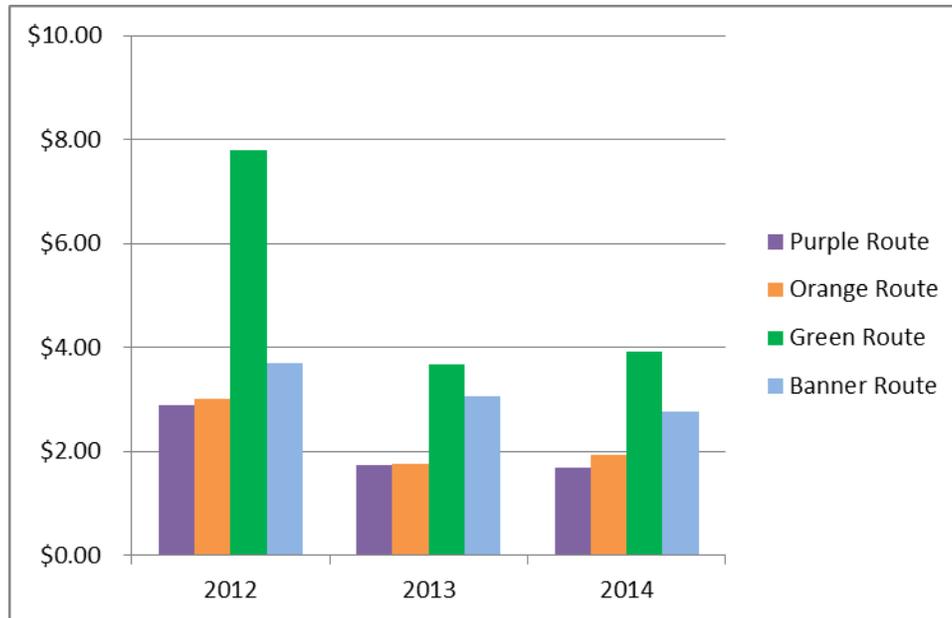


Whether adjusting route stops, consolidating routes, pulling buses off of current routes, or eliminating routes the agency should be evaluating the efficiency of each potential change. As established in the Ridership Section, the four routes have very different levels of ridership. The Circulator's ridership data can be disaggregated to better understand service trends and inform these changes. Using information (or expectations) of annual service hours, we can allocate total costs across each route, and use the ridership figures to produce a cost per rider figure. For purposes of consistency, we will only look at Fiscal 2012 onward, when all four lines were active.

Table 20: Cost per Rider by Line – Fiscal 2012-2014

	Orange	Purple	Green	Banner
2012	\$3.01	\$2.88	\$7.79	\$3.70
2013	\$1.75	\$1.72	\$3.66	\$3.06
2014	\$1.92	\$1.68	\$3.92	\$2.77

Figure 8: Cost per Rider by Line – Fiscal 2012-2014



The Purple and Orange Routes have a relatively similar cost per rider based on the expected service hours. The Green Route, meanwhile, demonstrates much lower efficiency on a per-rider basis. While the Banner Route carries considerably fewer riders, it too presents greater efficiency than the Green Route. On this basis, it would be recommended that the Green Route receive foremost consideration for any route adjustments, consolidation, removal of buses, or elimination of a route.

It should be noted that the current contract stipulates DOT will operate the Circulator at least 94,000 service hours each year. The service hour requirement allows for 15% variance above or below this number (about 80,000 to 108,000 service hours); after this point, vendor and City may negotiate a revised or interim rate.

The current contract is due to expire in January 2015. When the City enters into negotiations for a new contract, DOT should pursue greater flexibility in modifying the service hours requirement; if the current contract is maintained or extended, the City should assess whether changes to routes (or buses on routes) conflict with the service hours requirement.

2. Standardized Hours of Operation

Current operations provide for extended hours during the summer, operation of the Banner Route during the same hours as the Purple, Orange, and Green Routes, and a 6:30am start time. In light of the current operating deficit, these provisions of the Circulator service have emerged as the likely “low hanging fruit” – easy to adjust, and able to generate savings without dramatically changing the service.

By operating consistent hours (Winter hours) across the year, beginning operations at 7:00am (one half hour later), and reducing Banner Route hours to better coincide with the Fort McHenry hours of operation, DOT will only need to make minor adjustments to service, yet save a projected \$2 million over 10 years.

3. Harbor Connector Route Study

While the Harbor Connector supplements the Circulator in providing transportation across the Inner Harbor, the agency should consider potential savings in adjusting or reducing routes. BBMR estimates that the service could save \$2.3 million in operating costs over ten years, based on the reduction of one route.

Currently, there is a Water Taxi service that operates across the same landings (this is a fee-for service enterprise not operated by the City). It is recommended that the agency take this into consideration in reviewing this service, and determine whether it is worthwhile for the City to provide a free service that in many ways duplicates services provided by a private enterprise.

4. Capital Replacement

Each of the identified recommendations includes the establishment of a capital replacement fund for Circulator buses. While this is listed as an “option,” the City is faced with the following choice: contribute now, or contribute later. It is worth noting that, if the City were to pursue each round of bus purchases without establishing a replacement fund, the cost for outright replacement during the three years would total over \$20.3 million (with \$9.9 million of the cost due in Fiscal 2021). An additional \$6.0 million would be required to begin the next phase of contributions for bus replacements (remember that even if the City pays \$9.9 million in Fiscal 2021 for replacements, this would be a one-time purchase, and the City would then need to begin contributing towards the following replacement cycle).

While grant awards may allow for DOT to reduce some of the necessary capital contribution, there is no guarantee that grant dollars will be available during these out years, and the arrival of grant dollars may not meet more immediate needs.

For these reasons, the establishment of a capital replacement fund is considered a more prudent option than deferring the cost, which presents the City with unnecessary and avoidable risk. In order to support bus purchases over the upcoming 10-year period (including allocating funding towards purchases subsequent to the 10-year period), the agency should develop an ongoing contribution schedule to smooth out the “lumpy”

one-time bus purchase costs. The following schedule would allow for a smoother recapitalization effort, requiring moderate capital fund contributions over a ten-year basis¹¹:

Table 21: Cost Schedule for Bus Replacement by Year - Fiscal 2015 – 2024

Year	Group A	Group B	Group C	Total
Fiscal 2015	\$0	\$0	\$0	\$0
Fiscal 2016	\$1,987,322	\$984,576	\$439,367	\$3,411,265
Fiscal 2017	\$1,987,322	\$984,576	\$439,367	\$3,411,265
Fiscal 2018	\$1,987,322	\$984,576	\$439,367	\$3,411,265
Fiscal 2019	\$1,987,322	\$984,576	\$439,367	\$3,411,265
Fiscal 2020	\$1,987,322	\$984,576	\$439,367	\$3,411,265
Fiscal 2021	<i>\$1,050,169</i>	\$984,576	\$439,367	\$2,474,112
Fiscal 2022	<i>\$1,050,169</i>	\$984,576	\$439,367	\$2,474,112
Fiscal 2023	<i>\$1,050,169</i>	<i>\$728,397</i>	\$439,367	\$2,217,933
Fiscal 2024	<i>\$1,050,169</i>	<i>\$728,397</i>	<i>\$371,482</i>	\$2,150,048

The identified funding contributions above total \$26.3 million. This figure is larger than the one-time cost of bus purchases (\$20.3 million) as this schedule incorporates replacement costs for the next 12-year bus purchasing cycle (italicized), to ensure that the service is investing in the service in a sustainable fashion.

Additionally, while the Harbor Connector boats have a much longer expected life cycle (at least 25 years) that extend beyond the 10-year projection, the agency should consider creation of a capital replacement fund to begin contributing towards new boat purchases. Reduction of a route, as mentioned in the Harbor Connector Route Study section, would reduce capital needs in out years. The recent federal funding commitment provides one-time support, but the agency should begin planning for future needs as soon as possible, if current services are to be maintained.

5. Implementation of Fares

As identified in the section on Comparable Systems, this report highlights four other jurisdictions that incorporate fare systems (Indianapolis, Milwaukee, Portland, and Washington, D.C.). Public transit systems often rely upon direct payments from riders, such as fares, to fund operations. The Charm City Circulator currently relies on indirect revenue sources (primarily the parking tax), but a fare system may provide another option in achieving a sustainable service.

A recent City Council bill resolution identified a potential fare of \$1.00 per rider, though the revenues generated through fare implementation appear to be earmarked for unrelated purposes. In the event that the City pursues a fare option, it is recommended that fares contribute solely to the provided service, consistent with the City’s established fee policy.

¹¹ Group A purchases include replacement of all 13 buses purchased as part of initial Circulator operations start-up in Fiscal 2009. Groups B and C represent the replacement of the second line of buses that were purchased in 2011 (Fiscal 2011 and Fiscal 2012).

In calculating projected revenue from fare implementation, two options have been identified for modeling purposes: a per-trip fare, and a per-day fare (“Day Pass”). While pursuit of a fare option will require additional study, this report includes revenue estimates based on several factors, including:

- The anticipated baseline growth rate in ridership going forward, based in part on current ridership levels and recent trends in these levels;
- Reductions in ridership due to the introduction of the fare - based on the adjustments to service, baseline ridership is estimated at 3.9 million for Fiscal 2015. The initial \$1.00 fare per rider is expected to decrease annualized ridership by 46% from the baseline;
- Variations in demand elasticity over time due to the fact that we are holding the fare constant over time – We have the ridership dropping by approximately 50% at the start of the ten years and ending up at approximately 33% at the end of the ten years;
- The fare system will require a \$3.16 million start-up cost, and \$800,000 to maintain in the first year, with a 2.7% inflationary increase thereafter;
- Elimination of the L.O.T.S. state grant due to adoption of the fare; and
- Adjustment of calculation based on which other policy options are being adopted – e.g. if we are looking at the possibility of eliminating a route, we then eliminate the possibility of collecting fares from that route.
- Based on the adjustments to service, baseline ridership is estimated at 3.9 million for Fiscal 2015. The initial \$1.00 fare per rider is expected to decrease annualized ridership by 46% from the baseline.

Below is a table showing our revenue projections for the implementation of a \$1.00 per ride fare, based on current services and Purple Route extension.

Table 22: Revenue Generated, \$1.00 per Trip Fare

Fiscal Year	Revenue
2015	(\$2,762,456)
2016	(\$329,586)
2017	(\$279,177)
2018	(\$230,068)
2019	(\$182,154)
2020	\$1,864,651
2021	\$1,910,414
2022	\$1,955,190
2023	\$1,999,020
2024	\$2,041,936

Note that the fare system is projected to produce \$3.7 million in net costs over the first five years, and does not result in net revenues for the Circulator until after Fiscal 2021. There are several factors here that should be highlighted for reference:

- **Start-up Costs:** DOT would likely incur costs for the new system implementation without realizing any immediate revenues. This would include payments to any vendors coordinating the service, training, collections and security equipment, and other needs to operate a fare system.
- **Ridership:** Establishment of any fare will result in decreased ridership, though the true impact is currently unknown. The fare implementation could also result in a “vicious cycle” - the new fare decreases ridership to the point of losing money, forcing DOT to implement an even higher fare, further jeopardizing ridership and revenues.
- **Grant Revenues:** While the fare may itself generate revenue, current grant receipts may be dependent upon the Circulator operating as a free service. If DOT chooses to operate a fee-for-service system going forward, the agency will need to assess how this may impact grant revenues, and perform a cost benefit analysis for this action. For the purposes of the revenue projection, this report assumes that establishment of a fare would result in discontinuation of the MTA LOTS grant.

Details on start-up costs and ridership from a \$1.00 per rider fare are estimated as follows, based on annualized ridership and cost figure for the first year of implementation:

Table 23: \$1.00 per Ride Impact on First-Year Ridership, Revenues and Costs

Item	Ridership	Revenue/Cost
Baseline Ridership	4,235,978	-
Projected Annual Ridership, Revenues	2,397,544	\$2,397,544
Projected First Year Start-Up Costs		(\$3,160,000)
Projected Grant Impact		(\$2,000,000)
Net Impact (Ridership, Dollars)	(1,838,434)	(\$2,762,456)

Note that the impact of the first year of revenues is significantly impacted by the potential loss of the MTA LOTS grant in the above scenario. Fiscal 2020, at which time the MTA LOTS grant has been built out of operating assumptions, is the first year in which the agency should have positive revenue expectations. This would continue through Fiscal 2024.

Assuming implementation of a \$2.00 Day Pass fare, ridership is not expected to decrease as drastically, yet the amount of revenue generated annually is much lower:

Table 24: Revenue Generated, \$1.00 per Day Fare

Fiscal Year	Total Net Revenue
2015	(\$3,327,847)
2016	(\$896,302)
2017	(\$846,955)
2018	(\$798,697)
2019	(\$751,465)
2020	\$1,294,793
2021	\$1,340,119
2022	\$1,384,544
2023	\$1,428,094
2024	\$1,470,785

With the expected reduction to grant funding based on fare implementation, the net impact of the Day Pass option is less than \$300,000 through Fiscal 2024; this projection excludes any changes to ridership based on headway increases (reducing buses on routes). While this option does have the potential to generate funding during out years, the projected \$300,000 in net revenue over ten years is not a viable option in the framework of reducing the current deficit. It is not recommended that the City pursue this option due to the limited (at best) projected returns over the 10-year time frame.

Note in the below table that a new number, “unique” ridership, is identified. While unique ridership is unknown, it will be assumed that unique riders are approximately half of current ridership (i.e., Circulator riders will take the bus to and from their destination). While the revenue generated per rider is increased, the projected unique ridership is impacted by the \$2.00 per day fare, resulting in fewer unique riders, and therefore lower revenues. The start-up costs and impact upon the LOTS grant are assumed the same for this scenario.

Table 25: \$2.00 per Day Impact on First-Year Ridership, Revenues and Costs

Item	Ridership	Revenue/Cost
Baseline Unique Ridership	2,117,989	-
Projected Unique Ridership	916,076	\$1,832,153
Projected First Year Start-Up Costs		(\$3,160,000)
Projected Grant Impact		(\$2,000,000)
Net Impact (Ridership, Dollars)	(1,201,913)	(\$3,327,847)

6. Parking Tax Increase

The most lucrative option for closing the deficit would be to raise the parking tax. In 2008, the parking tax was raised to 16%, with four percentage points of the total parking tax revenues identified for Circulator

operations. In 2010, the parking tax was increased to 20%, as part of the City’s revenue package to balance the Fiscal 2011 budget; the four percentage point share of parking revenues identified for the Circulator did not change.

The City could pursue an additional increase in the parking tax, which has performed well against initial expectations, with the full amount of the additional revenue used to support the Circulator. A parking tax adjustment would need to be approved by the City Council, likely as a component of the Fiscal 2016 budget.

Below is a table showing projected revenues from an increase in the parking tax rate from 20% to 21%, with the additional one percent tax on parking revenues applied fully to the Circulator’s revenue stream. Note that this revenue enhancement has not been identified as an option for Fiscal 2015 because we assume that it would not be enacted until Fiscal 2016.

Table 26: Parking Tax Increase

Fiscal Year	Revenue
2015	\$0
2016	\$1,161,415
2017	\$1,182,340
2018	\$1,204,815
2019	\$1,228,879
2020	\$1,253,485
2021	\$1,278,556
2022	\$1,304,131
2023	\$1,330,210
2024	\$1,356,793
Total	\$11,300,624

One of the assumptions built into the revenue projection is elasticity of demand – when faced with an increase in parking fares, some parkers from the current population may choose to forgo parking in City garages. This increase to the parking tax, however, is not expected to have a dramatic effect on the population of City garage parkers. Residents, commuters, and visitors that park and ride the Circulator may prefer the benefit of incorporating the tax into parking fees, rather than establishment of a separate fee for Circulator use.

Demand for parking is expected to decrease, however, as the tax rate increases – commuters could seek other travel or parking options based on a sudden, large increase in the parking tax rate, thereby limiting the revenue stream supporting the Circulator. The City should also consider whether the tax rate is competitive with select nearby or comparable metropolitan jurisdictions – most jurisdictions carry a parking tax rate similar to or lower than Baltimore’s current rate:

Table 27: Comparison of Parking Tax Rates of Select Metropolitan Jurisdictions

Jurisdiction	Parking Tax Rate
Pittsburgh, PA	40.0%
Philadelphia, PA	20.0%
Baltimore, MD	20.0%
New York, NY	18.375%
Washington, DC	18.0%
Cleveland, OH	8.0%

While a large increase to the parking tax could result in fewer parkers, a modest increase in the parking tax may prove effective in customer retention. Furthermore, a modest increase may have more customer appeal if the tax itself is not decoupled from the fee for garage use.

7. Advertising/Sponsorship

DOT has pursued advertising as a revenue source from the beginning of the project, but overall performance has been anemic. Revenue derived from advertising did not reach \$50,000 in total over the first five years of Circulator operations. While DOT has engaged a new vendor to sell advertising, and has reduced revenue expectations, BBMR recommends that the agency shift considerable focus towards improving this revenue stream.

This is one of the few revenue streams that DOT can directly impact, so it is critical that the agency demonstrate its commitment towards sustainable operations through expansion of these sources. DOT should establish clear revenue benchmarks with its vendor, and provide regular vendor review tied to revenue performance.

While the market for advertising can be difficult to predict and is constantly evolving with technology, advertising through established formats, such as short term selling of space on Circulator buses, should provide an additional revenue stream. Another option could be to promote and engage in sponsorship of the Circulator service; while it is important to preserve the “brand” of the Circulator for recognition, the City should approach this avenue with greater flexibility, as businesses and organizations may welcome the opportunity to identify and market themselves to such a large group of regular passengers.

8. Partnerships

One common theme identified during the review of comparable bus systems is the reliance on partnerships. Several local circulator systems are operated and financed through partnership – for example, support provided by the Bethesda Urban Partnership in Bethesda and the WMATA and D.C. Surface Transit in Washington, DC. Baltimore’s DOT has received significant funding from the State MTA, but should look at expanding to other partners or contributors who benefit from the service.

Visit Baltimore provides the City with a solid opportunity to leverage resources for the Circulator. Visit Baltimore’s appropriation has grown by a significant amount over the past five fiscal years, as the organization

receives 40% of the City’s gross hotel tax revenue. The hotel tax rate increased in Fiscal 2011 from 7.5% to 9.5%, and the Visit Baltimore General Fund budget has increased as a result:

Table 28: Visit Baltimore General Fund Budget, Fiscal 2011-2015

Fiscal Year	Budget
2011	\$9,377,058
2012	\$9,917,021
2013	\$11,575,698
2014	\$13,185,303
2015	\$14,310,715

Given the increase to the budget, Visit Baltimore may have more opportunity to contribute now than in years past. Visit Baltimore, the Downtown Partnership, the Waterfront Partnership, and numerous other organizations and businesses benefit from the economic impact of bringing residents, commuters and tourists throughout the Central Business District and Downtown areas. While these agencies or businesses may not wish to promote fares, it may prove beneficial to instead provide direct financial support to promote continuity of Circulator and Harbor Connector operations.

CONCLUSIONS

Through Fiscal 2014, the Circulator has produced continual deficits year after year, resulting in an operating fund gap of approximately \$11 million as of the end of Fiscal 2014. This deficit is projected to grow significantly, due to current misalignment of revenues and expenditures, and upcoming unfunded capital replacement costs. However, there is still opportunity to mend the current system, through potential revenue increases and service adjustments, to provide for a sustainable, balanced service in the long run.

While this report does not focus on many of the service's operational issues, we hope that this presents a more complete picture of the service, and allows policy makers to identify realistic options going forward. It is critical that service managers implement changes going forward. Furthermore, the agency will need to produce regular reporting of all aspects of the Circulator, both operational and financial, and identify risks and potential solutions should additional issues arise.

AGENCY COMMENTS

This report was submitted for comment to William M. Johnson, DOT Director, and Veronica McBeth, Transit Bureau Chief. BBMR will also make copies available online at:

<http://bbmr.baltimorecity.gov/ManagementResearch.aspx>.

For further questions about this report, please contact Ben Brosch at benjamin.brosch@baltimorecity.gov.

Andrew Kleine, Chief

Bureau of the Budget and Management Research,

Department of Finance

APPENDIX I: SCOPE AND METHODOLOGY

BBMR approached this research project with the following objectives:

- 1) Determine whether the revenue for the service supported the ongoing cost of operating the Circulator;
- 2) Produce a ten-year projection of service revenues and expenditures, including ongoing capital costs;
- 3) Identify potential scenarios and options to bring revenues and expenditures into balance over the 10-year time frame; and
- 4) Produce recommendations for future operations based on the projected financial and service impacts of the above options.

BBMR conducted interviews with DOT staff responsible for this activity to elicit input on the service's historical background and operations. BBMR also consulted the general ledger for information on both revenues and expenditures. BBMR examined files that have been kept on Circulator operations. Finally, BBMR researched similar circulator systems in other jurisdictions, and spoke to operational and financial personnel involved with these systems for additional reference.

BBMR conducted this management research project from April 2014 to November 2014 in accordance with the standards set forth in the BBMR Project Management Guide and the BBMR Research Protocol. Those standards require that BBMR plan and perform the research project to obtain sufficient and appropriate evidence to provide a basis for the conclusions and recommendations contained in this report. BBMR believes that the evidence obtained provides a reasonable basis for the findings and conclusions in this report and that such findings and conclusions are based on research project objectives.

APPENDIX II: ROUTE MAP



APPENDIX IV: CHARM CITY CIRCULATOR FACT SHEET



Charm City Circulator **Fact Sheet**

WHAT ARE THE GOALS OF THIS NEW CIRCULATOR SERVICE?

- Limit air pollution
- Limit congestion growth
- Tie together growing communities
- Spread the use of the existing parking supply

THE SERVICE AT A GLANCE

- Free!
- 4 Routes
- 10 minute frequency
- 7 days a week
- Connects to less expensive parking on the fringes of downtown
- Connects to Amtrak, MARC, Light Rail, and Metro Subway
- Integrated with the Harbor Connector

HOW WILL IT BE FRIENDLY?

- Customers are #1
- Innovative hybrid buses are low emitting and environmentally friendly
- Free means that it is wallet-friendly, too

HOW IS IT DIFFERENT?

- Sustainable funding source
- Innovative hybrid buses

HOW WILL IT BE FAST?

- Traffic engineering improvements to help the bus move quickly along its route:
 - Transit/bike lanes on Pratt and Lombard Streets give buses priority
 - Queue jumping gives the bus a little head start at busy intersections by giving the bus an early green light
- Stop locations - placed further apart than the norm, allowing for faster travel
- Free means no fare box, so boarding is faster

THE HARBOR CONNECTOR:

- Easy access to Maritime Park, Tide Point and Canton Waterfront Park
- Two "ping-pong" routes:
 - Maritime Park to Tide Point
 - Canton Waterfront Park to Tide Point
- Also free!



APPENDIX V: INDIRECT COST CALCULATION

As identified on page 28 of the report, there are a number of agency and city-wide overhead costs that can be allocated to the Circulator activity budget.

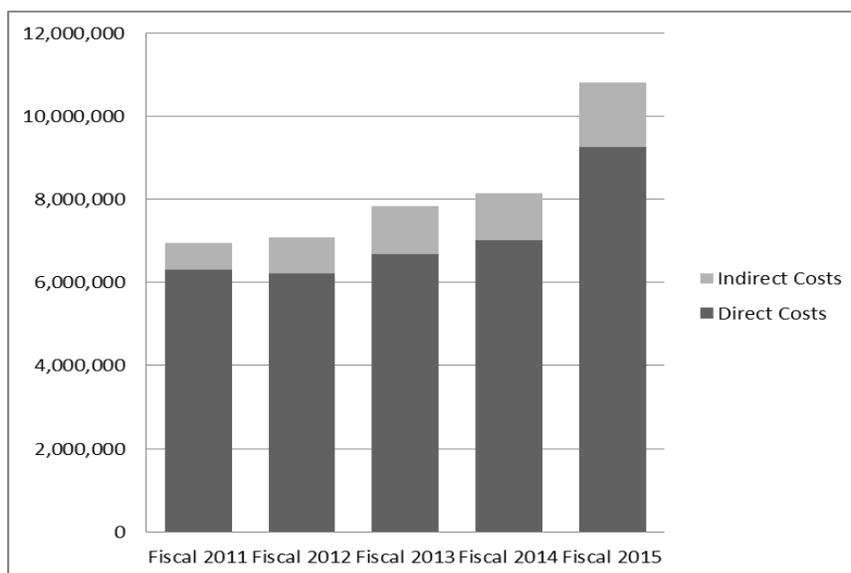
The Complete Streets and Sustainable Transportation service contains an Administration activity. In Fiscal 2015, the total administrative cost within this service is \$589,374. The Circulator activity was appropriated for \$9,250,857 in Fiscal 2015, out of a total budget of \$12,555,238. Removing the Administration activity from the service budget, the Circulator appropriation represents 77.3% of the remaining service appropriation. This percentage, when applied against the Administration budget, results in an indirect cost of \$445,647 that can be applied to the Circulator.

Costs for central DOT Administration can also be applied towards the Circulator, based on agency-wide administrative costs (including agency fiscal, human resources, and executive direction). For this calculation, the Circulator's appropriation is identified as a share of total DOT appropriation. This percentage share of the total budget can be applied against the budget of DOT Administration. In Fiscal 2015, DOT's appropriation, excluding DOT Administration, is \$158,666,245. The Circulator activity represents 6.1% of this appropriation. Based on this 6.1% share, \$680,787 of the DOT Administration budget of \$11,128,413 can be allocated towards the Circulator.

Further indirect costs that should be factored in are central support costs from City-wide administrative functions. Finance, Human Resources, Information Technology, CitiStat, and the Law Department all can be captured as central services. DOT makes up about 6.82% of the City's adopted budget in Fiscal 2015. Based on the cost of these central services, about \$98 million, we can identify about \$6.7 million that can be allocated to DOT, and from that amount about \$411,665 that can be attributed to the Circulator.

In total, we can identify \$1,548,100 in indirect costs based on the Fiscal 2015 budget (about 16.7% of the total Circulator appropriation). Figure 9 below identified the indirect costs for Fiscal 2011 through Fiscal 2015, calculated on a budget basis.

Figure 9: Direct and Indirect Costs for the Circulator



Indirect costs identified in the above exercise should simply be noted as contributing toward the full cost of this activity. Indirect costs will not be evaluated in the context of the service's budget, as many of these costs are captured within other agency budgets. Most indirect costs may be identified as unavoidable, as these costs may be incurred by the City regardless of the size or scope of Circulator operations (for instance, the Circulator's share of procurement or accounting costs may be shifted towards other City services should total Circulator costs decrease).

APPENDIX VI: CIRCULATOR SYSTEMS IN OTHER JURISDICTIONS

Jurisdiction	Name of System	Funding Sources and Notes	Ridership (as available)
Annapolis, MD	Circulator Trolley	Funded largely by increased parking fees and grants from MTA. The city may also use Parking Fund balance to support the cost of the service. In October 2014, Annapolis City Council voted to implement a \$1.00 per ride fare to support operations.	Fiscal 2014: 216,482
Bethesda, MD	Bethesda Circulator	The Bethesda Circulator is primarily funded by the Bethesda Parking Lot District, with additional funding coming from sponsorships of the buses solicited by the Bethesda Urban Partnership, Inc.	Fiscal 2014: 360,000
Washington, DC	DC Circulator	The DC Circulator is supported in part by customer fares (\$1.00 per ride). DDOT and WMATA also contribute towards funding and operational support, in cooperation with D.C. Surface Transit, Inc. In Fiscal 2013, 16.5% of the costs of the service were paid for with customer fares.	Fiscal 2013: 4,139,358
Raleigh, NC	R-Line	Raleigh identified that the capital costs for this service are based on a federal-local share, in which 80% of costs are supported through federal funds, and 20% of costs are supported through local General Funds. Local funds support the operating costs associated with this service. There is no direct fare for passengers.	Since 2006: 1.42 million
Orlando, FL	LYMMO	The LYMMO is administered through the city of Orlando's Downtown Development Board and Parking Division. The revenue source for funding of operations and maintenance is the Parking Enterprise Fund. Startup funding for the service included significant contribution from the Federal Transit Administration and the FDOT. There is no direct fare for passengers.	Approximately 1 million riders per year

Jurisdiction	Name of System	Funding Sources and Notes	Ridership (as available)
Indianapolis, IN	Red Line Circulator	The Indianapolis Red Line Circulator was initially funded through a federal Congestion Mitigation Air Quality (CMAQ) grant, which provides for federal/local cost sharing. Currently the system has a fare system that provides for revenue generation.	
Milwaukee, WI	Milwaukee Trolley Loop	The Milwaukee Trolley Loops is administered by the Loop Group, a group of private and non-profit organizations led by Milwaukee Downtown (a business improvement district). Milwaukee charges a \$1.00 per ride fare, and operates the Trolley only during Summer months and primarily on weekends.	
Scottsdale, AZ	Downtown Trolley	Funding to support the Downtown Trolley is currently derived from a portion of the bed tax (a tax based upon hotel occupancy); additional revenue is provided through the city's transportation department funds. There is no direct fare charged to passengers.	Fiscal 2014: 955,752
Portland, OR	Portland Streetcar	Portland Streetcar is operated by the City of Portland, with funding support from TriMet. Portland Streetcar charges \$1.00 per ride fare, with all-day, monthly, annual options, as well as reduced fare options for elderly and youth passengers. A number of local businesses and non-governmental entities also contribute as system sponsors.	Fiscal 2014: 5.4 million
Hillsborough, NC	Hillsborough Circulator	The Hillsboro Circulator is supported through state grant dollars and local funding provided as a match. Currently, there is no direct fare for passengers.	

APPENDIX VII: PRO FORMA 10-YEAR PROJECTION

Summary of Actuals, Fiscal 2009-Fiscal 2014

Summary	2009	2010	2011	2012	2013	2014
TOTAL AVAILABLE	0	6,891,090	5,116,080	2,029,267	(6,783,075)	(9,977,600)
OPERATING BALANCE	0	3,641,090	4,987,792	1,900,979	(7,018,890)	(10,213,416)
OPERATING REVENUE	3,641,090	5,259,459	5,441,137	6,239,647	6,155,563	8,550,579
TOTAL OPERATING EXPENDITURES	0	(3,912,757)	(8,527,950)	(15,159,516)	(9,350,089)	(9,964,222)
CUMULATIVE OPERATING SURPLUS/DEFICIT	3,641,090	4,987,792	1,900,979	(7,018,890)	(10,213,416)	(11,627,059)
CAPITAL REVENUES	3,250,000	0	0	2,724,025	0	0
CAPITAL EXPENDITURES	0	(3,121,711)	0	(2,616,498)	0	0
BALANCE (ALL FUND SOURCES)	6,891,090	5,116,080	2,029,267	(6,783,075)	(9,977,600)	(11,391,244)

Summary of 10-Year Projection, Fiscal 2015-Fiscal 2024*

Summary	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
TOTAL AVAILABLE	(11,391,244)	(14,789,157)	(17,446,587)	(19,914,993)	(22,190,497)	(24,555,705)	(29,012,107)	(43,498,285)	(47,747,733)	(58,978,288)
OPERATING BALANCE	(11,627,059)	(15,024,972)	(17,682,402)	(20,150,809)	(22,426,312)	(24,791,521)	(29,247,922)	(33,797,491)	(38,046,938)	(42,385,461)
OPERATING REVENUE	8,370,800	8,286,200	8,396,027	8,513,881	8,639,964	6,768,874	6,900,213	7,034,181	7,170,779	7,310,007
TOTAL OPERATING EXPENDITURES	(11,768,713)	(10,943,630)	(10,864,433)	(10,789,385)	(11,005,172)	(11,225,276)	(11,449,781)	(11,283,629)	(11,509,302)	(11,739,488)
CUMULATIVE OPERATING SURPLUS/DEFICIT	(15,024,972)	(17,682,402)	(20,150,809)	(22,426,312)	(24,791,521)	(29,247,922)	(33,797,491)	(38,046,938)	(42,385,461)	(46,814,942)
CAPITAL REVENUES	0	0	0	0	0	0	0	0	0	0
CAPITAL EXPENDITURES	0	0	0	0	0	0	(9,936,610)	0	(6,892,033)	(3,514,937)
BALANCE (ALL FUND SOURCES)	(14,789,157)	(17,446,587)	(19,914,993)	(22,190,497)	(24,555,705)	(29,012,107)	(43,498,285)	(47,747,733)	(58,978,288)	(66,922,706)

*Note that the 10 year projection baseline does not include \$6.0 million in costs for bus replacement beyond the Fiscal 2024 time frame. Addition of this amount, combined with the projected operating costs, would total \$73.0 million. The variation from the \$73.3 million projected deficit is due to remaining balance from capital revenues.

APPENDIX VIII: ACKNOWLEDGEMENTS

We would like to thank Ciara Willis, Dhirendra “DK” Sinha, Lindsay Wines, and Veronica McBeth at the Department of Transportation for assistance in compiling information and providing insight on Charm City Circulator services for the purposes of this report. We would also like to thank Amy Costanzo from Bureau of Budget and Management Research for assistance in research.

Additional thanks to Andrew Kleine from the Bureau of Budget and Management Research for guidance on project delivery.

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