DISTRICT OF COLUMBIA Long-Range Capital Financial Plan Report

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GOVERNMENT OF THE DISTRICT OF COLUMBIA

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District of Columbia: Long-Range Capital Financial Plan Report

Table of Contents

| Executive Summaryii |
|---|
| Introduction1 |
| Purpose of the Report1 |
| Background1 |
| Estimate of Total Capital Funding Needs2 |
| The District's Approach to Asset Management (CARSS) |
| Capital Funding Gap During the CIP Period5 |
| Developing Long-Term Funding Solutions7 |
| Funding Sources7 |
| Funding Solutions for the District's Unmet Capital Needs11 |
| Summary and Conclusions15 |
| Appendix A: Approach to Developing the Capital Asset Replacement Scheduling System (CARSS) |
| Appendix B: Methodology for Classifying and Scoring Capital Projects |
| Appendix C: Overview of How Capital Projects Were Prioritized40 |
| Appendix D: Description of Long-Range Capital Financial Plan Model44 |
| Appendix E: Non-Traditional Funding Approaches (<i>Public-Private Partnerships and</i> Asset Recycling) |

District of Columbia: Long-Range Capital Financial Plan Report

Executive Summary

The District of Columbia, like other state and local governments throughout the country, faces significant challenges in maintaining its critical infrastructure. In fact, in 2016 the ASCE issued its <u>Report Card for D.C.'s Infrastructure</u>. The report concluded that while the District earned a slightly higher overall grade (C-) than the nation at large, the District's infrastructure was also in need of greater investment in basic maintenance and increased innovation to bring the infrastructure of the nation's capital to a state of good repair. Whether it is new infrastructure to meet the needs of residents or maintaining current assets such as roads, streets, schools, libraries and other public buildings, infrastructure is critical to quality of life and economic prosperity. Over the six-year capital planning period, the District will fund more than \$8.5 billion in capital projects, with roughly \$5 billion of that amount funded from selling municipal bonds (debt financing). However, the District's overall need for new or replacement facilities and maintenance of existing facilities far exceeds this funding level. Like any other enterprise, the District has limits on how much it can borrow and must strike an appropriate balance between funding its on-going operations (programs and services) versus capital assets.

Fortunately, the District's strong financial condition puts it in a far better position to address these issues than most other cities and states. Due to prudent financial management practices over the last twenty-plus years, the District has fully funded pensions, strong reserves and strong credit ratings that afford it access to low-cost financing. Strong local and regional economic growth has also provided additional financial capacity over time, as tax and fee revenues have grown. Finally, a significant portion of past borrowings can be refinanced in the coming years, providing additional capacity to support capital needs. *This long-range capital financial plan report shows that if the District commits to borrowing up to its statutory maximum level of twelve percent (12%) of general fund expenses, and commits to increase pay-as-you-go (or cash) funding for capital to an amount averaging three percent (3%) of general fund expenses, then it can fund all deferred maintenance and new capital needs by 2028.* This report will detail the tools and methods used by the Office of the Chief Financial Officer to assess and calculate the District's capital funding gap and the funding solution.

The infrastructure needs of the District, which serves as a city, state, county and school district, are substantial. In order to develop a better understanding of the costs for the District to maintain its assets in a state of good repair, a comprehensive asset management planning system was developed for all of the District's assets. The Capital Asset Replacement Scheduling System, or CARSS, is an asset management planning solution that delivers a comprehensive view of the District's capital asset health and provides information on each project or asset. CARSS, coupled with the District's long-range financial forecasting model, was designed to answer four fundamental questions:

- 1. What assets does the District own?
- 2. What is the condition of those assets?
- 3. How should the District prioritize its capital needs?
- 4. How much funding is available to address those needs?

To determine the District's total capital needs, a comprehensive review of all governmental agencies' capital and asset maintenance requirements was completed utilizing CARSS, with each project scored and ranked to ensure that the highest priority projects were funded first. Since the

first Long-Range Capital Financial Plan Report was published in 2016, the percentage of assets inventoried in CARSS has steadily increased. Now 100% of the District's assets are captured in CARSS. In addition, condition assessments on all the District's assets have either been completed or are expected to be completed during fiscal year 2020. The OCFO, working in conjunction with the Executive Office of the Mayor (EOM), assembles a Capital Budget Team (CBT) made up of subject matter experts from each of the major asset-owning agencies in the District. The CBT is responsible for scoring, ranking and prioritizing all capital projects requested by the various agencies. This scoring and ranking data are then entered into CARSS, which produces a prioritized six-year Capital Improvement Plan for the District. *CARSS is now generally recognized as the most comprehensive and detailed capital asset management system of any city or state government in the country.* Please refer to Appendix A for a more detailed discussion of the development of CARSS, as well as enhancements to the system since the publication of the 2018 report.

In addition to CARSS, the District also developed a separate long-range financial forecasting model. This model can determine the optimal capital funding mix, within certain financial constraints, including debt capacity, pay-as-you-go (paygo) or cash funding, as well as federal or other grant funding. This long-range financial forecasting model determines the amount of available funding for the six-year CIP and helps determine which capital projects the District cannot afford during the six-year CIP period. In addition to analyzing available traditional methods of funding, capital projects were also analyzed to determine where the private sector may assist in addressing future infrastructure challenges through public-private partnerships, as well as other types of non-traditional funding such as asset recycling.

As previously discussed, the District can fund approximately \$8.5 billion of its capital needs through 2025. Increased funding and heightened focus on maintenance of existing assets has allowed the District's overall capital funding gap to remain relatively unchanged from last year's report, all while increasing cost estimates for certain significant capital projects, as better data became available. With the increase in the FY2020-2025 CIP over the prior year, along with additional new revenues dedicated to capital funding for Metro to return that system to a state of good repair, the capital funding gap remained relatively unchanged at approximately \$3.3 billion during the current CIP period. Approximately 31% of this gap relates to infrastructure maintenance, or re-investment in currently owned assets.

Table 1 below summarizes the primary capital funding needs gap, which averages approximately \$550 million per year, or roughly 6.4% of the District's FY 2020 Local Fund revenues.

| | | | - | abic 1. | | | | | |
|--|----|--------|-----------|-----------|-----------|-----------|-------------|--------------|--|
| (in \$ millions) | | | | | | | | | |
| Fiscal Year | F | Y 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 | 6 year Total | |
| Unfunded Capital Maintenance Projects | \$ | 96.09 | \$ 162.45 | \$ 202.13 | \$ 154.86 | \$ 203.93 | \$ 193.58 | \$ 1,013.04 | |
| Unfunded New Capital Projects | \$ | 185.97 | \$ 169.86 | \$ 199.34 | \$ 216.95 | \$ 527.59 | \$ 984.83 | \$ 2,284.53 | |
| Total Unfunded Capital Needs | \$ | 282.06 | \$ 332.30 | \$ 401.47 | \$ 371.81 | \$ 731.53 | \$ 1,178.41 | \$ 3,297.57 | |

Table 1.

In Fiscal Year 2017, the District Council adopted legislation to increase the amount of paygo provided to support capital program needs as part of the FY 2018 Budget Support Act (*see the "Paygo Funding" section of this report for more details*). Under this law, the amount of additional funding contributed to paygo rises annually from a base year in 2020, until it eventually reaches a cap at the amount of annual depreciation, as can be seen in *Figure 1*. The graphic illustrates the

prescribed, anticipated increases in paygo compared to annual depreciation, which is currently forecasted to grow at two percent (2%) annually. Over the fifteen-year period studied in this report, paygo transfers for capital would average approximately \$414 million annually. The District's current financial plan, which extends through FY 2023, includes the impact of the increased paygo levels as a result of this legislation.



While this projected amount of paygo represents a substantial increase in funding for the capital program over past years, it actually represents a relatively small part of the local portion of the District's general fund budget. As can be seen in *Figure 2* below, the annual amount of legislated paygo for capital averages approximately three percent (3%) of the local portion of general fund expenditures between fiscal year 2020 and fiscal year 2028, which is when all unmet capital needs are projected to be funded.



The combination of the District's strong and growing economy, along with the lower cost of borrowing that results from the credit rating upgrades the District received in 2018, will allow the District to borrow substantial funds into the near future to support its capital budget, all while staying below its statutory debt limit, as can be seen in *Figure 3* below. In fact, over time, the funding of deferred maintenance needs, largely from paygo, will allow future debt capacity to be redirected to new capital projects needed to support the District's growing population. As can be seen in *Figure 3* below, total debt service as a percentage of expenditures is projected to decrease in 2026 and thereafter, which should produce substantial additional borrowing capacity for future capital projects needed in a growing and vibrant city.



Given the substantially higher projected amount of paygo funding for capital (as seen in *Figure 1*), and the full utilization of the District's borrowing capacity (as seen in *Figure 3*), the long-range capital financial plan model now estimates that the District will be able to "catch up" and fund all existing unfunded capital projects identified in CARSS, while continuing to maintain current assets, by FY 2028. As previously indicated, although the current six-year CIP increases funding over the prior CIP, there remains roughly \$3.3 billion of identified, unfunded capital needs during the current Six-year CIP period. These unfunded capital needs would remain outstanding through FY 2025, as the current six-year CIP is at full capacity. However, beginning in FY 2026, assuming no new capital projects are added to the CIP until all identified unfunded capital needs are met, the District could begin paying down the identified, unfunded capital needs gap fairly rapidly, and stay on course to meet its goal of funding all unmet capital needs by FY 2028, as shown in *Figure 4*.



It is important to note that the estimated increases in paygo from local funds shown in *Figure 1* on page *iv* represent significant portions of the projected local funds revenue growth of the District. Allocating this level of additional paygo funding will result in properly maintained equipment and facilities that will, over the long-term, result in lower life-cycle costs and increased resources for other District programs. A large portion of the growth in paygo funding is from dedicated taxes committed to Metro under legislation passed by the District in 2018. The addition of these new revenues, along with debt service savings from future debt refinancings, should allow the District to meet its increased commitment to fund capital while providing reasonable programmatic growth.

This long-range capital financial plan allows all existing District assets to be brought to a state of good repair, while also addressing new unfunded capital projects needed to support a growing city, in less than a decade. In other words, the \$3.3 billion of capital needs not funded in the six-year CIP could be funded by 2028 with the increased paygo levels required in legislation, as well as borrowing up to the 12% statutory debt cap limit. Funding of the gap could be further accelerated through additional paygo resources or other monies, such as federal funds, that might become available, as well as through the use of non-traditional funding structures, such as public-private partnerships or asset recycling initiatives.

Since the first long-range capital financial plan report was produced in 2016, the amount of overall unfunded capital needs has decreased substantially as the District's capital budget has grown and become more focused on addressing those unmet needs, as can be seen in *Figure 5*. The 2016 report identified total unmet capital funding needs of approximately \$4.2 billion, which have since declined to \$3.3 billion as of this report. This overall decrease in unmet capital needs is all the more noteworthy as it has occurred at the same time as the District was systematically building out its asset inventory, as well as refining, and in many cases increasing, the estimated costs of construction for certain new capital projects. This was largely possible due to the continued strength of the District's economy, lower borrowing costs due to credit rating upgrades during the period, and a greater focus on refinancing existing debt and utilizing the debt service savings for additional borrowing capacity to support the District's capital improvement's budget. These factors, along with greater focus on returning the District's critical infrastructure to a state of good

repair, have resulted in growth of the six-year CIP budget from approximately \$6.3 billion in 2016 to more than \$8.5 billion in 2019, or roughly a 35% increase over the last four years.



In addition, as the District's capital budgets have increasingly focused on bringing existing assets into a state of good repair, the unmet capital maintenance needs have continued to decrease quite rapidly as well. As shown in *Figure 5*, unfunded capital maintenance needs, which serve as a proxy for deferred maintenance, have continued to decrease since the first long-range capital financial plan report in 2016. In the 2016 report, unfunded capital maintenance needs were nearly \$2 billion, or nearly half of total unmet capital needs. However, there has been a much greater emphasis on addressing those unmet capital maintenance needs beginning with the 2018 CIP, and those amounts decline to just slightly more than \$1 billion in this 2019 report. Unfunded capital maintenance now only represents approximately thirty-one percent (31%) of the District's total unfunded capital needs, illustrating the marked progress the District has made in addressing its backlog of deferred maintenance needs over a relatively short period of time.

This long-range capital financing plan provides information that can inform policy discussions regarding long-term capital needs and the strategies to address them. The District has taken a leadership role in the region by responsibly funding its portion of the new, dedicated funding for Metro, which is an important economic engine for the Washington Metropolitan region. This act alone has effectively solved a significant portion of the capital funding gap previously identified in prior reports. In addition to the agreed upon funding for Metro, other non-traditional funding structures such as public-private partnerships should also be prudently pursued where cost-effective, as well as asset recycling initiatives to monetize under-utilized District assets as a new, non-debt source of funding for critical infrastructure. Finally, over the next several years, funding from federal sources, reallocation of District resources, and/or new revenue sources need to be directed to paygo funding to fully address needed infrastructure, including maintenance of existing District assets. A strong and growing economy, along with prudent fiscal practices over the past twenty-five years, have provided the District with resources to address its critical infrastructure

needs. If the District is responsible in utilizing these resources and remains focused on executing this long-range capital financial plan by committing an average of three percent (3%) of its budget to paygo funds for capital and up to twelve percent (12%) of its budget for debt service to support borrowing for capital projects, it will be in the enviable position of being able to address all its critical infrastructure needs in less than a decade. Simply stated, if the District commits 15% of its general fund revenues to its capital needs, and the remaining 85% to operations and programs, it can achieve the status of having amongst the best maintained infrastructure of any city or state in America.

Introduction

As part of the Fiscal Year (FY) 2015 Budget Support Act, the Council of the District of Columbia (Council) included a requirement for the Office of the Chief Financial Officer (OCFO) to develop a replacement schedule for capital assets and report on its status in October of each year. This report meets this requirement by reporting on the development of a long-range capital financial plan for the District of Columbia ("District") that includes capital asset replacement needs. This report also satisfies an initiative included in the OCFO's strategic plan, released in August 2014, which called for the development of a long-range capital financing plan for the District. Therefore, the legislative requirement introduced by the Council coincided with, and is complementary to, the necessary work in support of the OCFO's strategic initiative that had already begun. In addition, this report serves as an update on the progress of the Capital Asset Replacement Scheduling System (CARSS), which now includes more detailed information on the individual assets of the District.

Purpose of the Report

This report is intended to assist the Mayor, Council, other policymakers and the public in understanding the size and scope of the challenges facing the District in identifying its capital infrastructure funding gap during the current CIP period and beyond, as well as to provide a funding solution through the development of a long-range capital financial plan. In addition, the development of the long-range capital financial plan will allow the District to have a truly data-driven and more transparent CIP process. Finally, the long-range capital financial plan will help policy makers understand the true costs of maintaining the District's current assets, as well as the costs of deferring maintenance, so that capital budgeting decisions can be better informed and justified. *This update to the long-range capital financial plan report indicates that if the District commits to borrowing up to its statutory maximum level of twelve percent (12%) of general fund expenses, as well as commits to increase pay-as-you-go (or cash) funding for capital to a level averaging approximately three percent (3%) of general fund expenses, then it can fund all deferred maintenance and new capital needs by 2028.*

Background

A 2018 report by the Council on Foreign Relations entitled, <u>The State of U.S. Infrastructure</u>, states, "According to the World Economic Forum's Global Competitiveness Report, in 2016 the United States ranked tenth in the world in a broad measure of infrastructure quality – down from fifth place in 2002. That places it behind countries like France, Germany, Japan, and Spain." The report further states that, "Much of the discrepancy between the United States and its peers can be traced to very different funding levels. On average, European countries spend the equivalent of 5 percent of GDP on building and maintaining their infrastructure, while the United States spends 2.4 percent." The report also states that, "The United States differs from most other industrialized countries in the extent to which it relies on local and state spending to meet its infrastructure needs. While most European countries fund the bulk of their infrastructure development at the national level, only 25 percent of U.S. public infrastructure funding comes from the federal government. That is down from a peak of 38 percent in 1977, leaving often cash-strapped local governments to bear more of the costs of investment and maintenance."



State and local governments own the vast majority of public infrastructure in the United States, and therefore, bear the lion's share of responsibility for maintaining these critical assets. In fact, a 2019 report from the Center on Budget and Policy Priorities titled <u>It's Time for States to Invest in Infrastructure</u>, which analyzed data from the U.S. Bureau of Economic Analysis, showed that as of 2017, state and local governments owned \$10.6 trillion (or 93%) of all public non-defense buildings and other structures in the U.S. This fact highlights the scope of the challenge facing state and local governments as they are charged with maintaining this vast array of assets, all while federal spending on infrastructure has continued to decline.

State and local government budgets have generally recovered from the hits they took during the Great Recession. However, revenue growth for many of these governments has remained somewhat sluggish and growing legacy obligations such as employee pensions and retiree healthcare liabilities, have crowded out their ability to redirect funding to needed infrastructure investments. In fact, the American Society of Civil Engineers (ASCE) published its most recent *Infrastructure Report Card* in 2017, which graded the current state of the nation's infrastructure as D+ (or poor) due to many of these very practices. Over the long term, the lack of adequate investment in infrastructure by federal, state and local governments threatens to harm both the local and national economies.

Fortunately, the District of Columbia is in a very sound financial position. Due to prudent fiscal management over the past twenty-plus years, the District does not face the large pension and retiree health care liabilities facing many other state and local governments, however the District's past practices mirror that of other jurisdictions in its deferral of necessary investment in capital infrastructure in favor of other competing priorities. In 2016, the ASCE released an infrastructure report card focusing solely on the infrastructure of the District, and while its overall grade (C-) was slightly better than the national grade (D+), it is still far from adequate. The District faces significant challenges in being able to balance the need to maintain and repair aging, existing infrastructure brought on by continued population growth with the need to direct limited resources to critical programs. However, as will be discussed later in this report, the District is somewhat unique amongst other state and local governments, as it has shown the ability to both significantly increase its funding to bring down its backlog of deferred maintenance, while at the same time still maintain borrowing capacity to fund new capital projects that are needed to support the continued growth of the city.

Estimate of Total Capital Funding Needs

There were several challenges in accurately assessing the size and scope of the capital infrastructure funding gap of the District, including creating an accurate inventory of the number and condition of all District-owned assets; estimating their related costs of repair or replacement; assessing future capital infrastructure needed to support continued growth of the city; understanding which capital projects might be funded through the use of public-private partnerships or other non-traditional financing sources, such as asset recycling initiatives; and determining the future capital needs of the Washington Metropolitan Area Transit Authority (Metro). Working closely with agencies within District government to gather information on the District's assets, the OCFO was able to estimate the total potential capital infrastructure needs of the District (both capital maintenance and

new projects) to be approximately \$14 billion over the next decade. A significant portion of this amount, approximately \$2.2 billion, represented the District's share of additional projected funding needed for Metro, which has subsequently been addressed through new dedicated revenues that were approved by the District in 2018. Therefore, the remaining capital needs of the District, after removing amounts for Metro, were estimated at approximately \$11.8 billion over that same tenyear period. Although the amounts needed to properly address all the infrastructure needs of the District are substantial, in general, for the District the issue is less one of affordability, but more the period of time over which these capital needs will be funded.

The District's Approach to Asset Management (CARSS)

In the attempt to develop a better understanding of the costs of maintaining the District's critical capital infrastructure, a comprehensive asset management planning system had to be developed for all of the District's assets. This was accomplished through the development of the District's Capital Asset Replacement Scheduling System, or CARSS. In developing CARSS, the District applied many of the key concepts and fundamentals of ISO 55000, which is the international standard covering asset management, as well as concepts outlined out in a 2015 report from the Institute of Asset Management (IAM) titled, <u>Asset Management – an Anatomy (version 3)</u>. While the District is not seeking, at this time, to have CARSS certified as ISO 55000 compliant, the various personnel involved with CARSS, including importantly the CARSS project manager, have been formally trained, tested and certified as ISO 55000 and IAM concepts and principles as guidelines as we further refine, and continue to improve, the management of the District's assets.

In determining how to go about structuring its asset management system and understand how to identify, and ultimately fund, its infrastructure funding gap, the District set out to answer four fundamental questions:

- 1. What assets does the District own?
- 2. What is the condition of those assets?
- 3. How should the District prioritize its capital needs?
- 4. How much funding is available to address those needs?

CARSS addresses the first three questions and identifies the capital funding gap during the six-year CIP period. A separate long-range financial modeling tool is used to address the 4th question and identify a solution to fund the identified funding gap over the shortest amount of time possible.

Step 1: What Assets Does the District Own?

The first, and possibly most critical, step the District took in beginning this process was to establish a centralized database, or asset registry, of all District-owned assets. Given the extremely large number of assets the District owns, inventorying them all at once would have been impossible. Therefore, a decision was made to proceed with a more methodical approach, and to first develop a proof of concept model involving a few discreet asset types to test the validity of building a centralized, enterprise-wide asset database. After the successful completion of the proof of concept, the District began building out a comprehensive asset registry by adding the assets of all District agencies, as well as those of related component units of the District that manage their assets separately. This process took several years, but as of the publication of this report, the District has 100% of its assets inventoried in CARSS. In fact, enhancements have been made to the asset registry in CARSS since the 2018 report, whereby existing assets have been "broken down" into more granular component units and sub-systems which can now be tracked separately, thereby

substantially increasing the overall asset count in CARSS. These enhancements will be discussed in greater detail later in this report, as well as in *Appendix A* of the report.

Step 2: What are the Conditions of the District's Assets?

The next phase in developing a comprehensive asset management system was a thorough understanding of the condition of all the District's assets. Initially, certain assets, such as new school facilities recently built, certain road segments and fleet assets, had current condition and maintenance data available. However, many of the District's assets did not have that detailed level of condition assessment data. Therefore, the OCFO, has been working with the District's Department of General Services (DGS) and other relevant agencies to complete detailed facility condition assessments on all municipal buildings, as well as condition assessments for other assets. These condition assessments have been ongoing for the past 12 months and are expected to be completed during fiscal year 2020. In the intervening time, certain assumptions were made on the condition of assets based on industry standards on the useful life of assets, as well as any relevant maintenance data that existed. The combination of a detailed asset inventory and condition assessments of those assets has allowed the District to have a much more precise idea on the costs to maintain or replace its critical capital infrastructure. For more detailed information about the development of the asset registry and condition assessments, please see the discussion on the Approach to Developing CARSS in *Appendix A* of this report.

Step 3: Prioritization of Capital Needs

The OCFO worked closely with the Executive Office of the Mayor (EOM) to build a methodology to score, rank and prioritize all capital projects, to build a more data-driven approach to asset maintenance. Capital projects were classified into one of four asset types: 1) horizontal infrastructure, 2) vertical infrastructure, 3) fleet, and 4) information technology and equipment. Projects were then further grouped as either capital maintenance projects (deferred maintenance) or new capital projects. A scoring methodology was then established within CARSS based on several different elements and criteria that coincided with policy priorities of the EOM. Those scoring criteria were then weighted to ensure that all capital projects could be fairly and objectively compared, scored and ranked across all different asset types. Using these scoring criteria, the District's Capital Budget Team (CBT) and relevant subject matter experts spent several weeks individually scoring each capital project. The scores were reviewed several times to assess consistency, a genuine sense of logic and to ensure the process was done as objectively as possible. The final criteria and scores were then applied to the CARSS model, which in turn created a project ranking, which largely determined the capital projects that were included in the six-year CIP. For more information on the classification and scoring of capital projects please see Appendix B, and for more discussion of the prioritization of capital projects, please see Appendix C of this report.

Step 4: Funding Solution

Finally, the OCFO created a separate long-term capital financial plan model that incorporated the District's outstanding debt, along with anticipated future borrowings, all while remaining compliant with the District's federal and local statutory debt limitations. The model further incorporated certain levels of paygo funding based on legislation enacted as part of the FY 2018 Budget Support Act, as well as all other potential sources of funding including grants and other federal funding. This model determined the amount of available funding during the current CIP period that was available to address the capital funding priorities identified in CARSS. In addition, the model also identified available funding outside of the current CIP. More information is provided

on the development of the long-range capital financial plan model later in this report, as well as in *Appendix D* of this report.

Enhancements to CARSS

Substantial progress has been made in further enhancing and refining CARSS since the 2018 report, both in the number of assets included in the system, as well as in the quality of data on the individual assets inventoried. As per the publication of the 2018 report, the District had already captured 100% of all District-owned assets in CARSS, which represented roughly 100,000 assets. As CARSS was further refined over the past year, and the quality of data was improved due to ongoing condition assessments, the asset count in CARSS has increased to over 300,000 assets. This can largely be explained by two major enhancements to the system. First, the ongoing efforts to obtain facility condition assessments on all District-owned buildings now provides much greater information on sub-structures and components of all buildings, which are now individually inventoried and tracked in CARSS at this more granular level. Second, DDOT has switched to a more precise (sub-block) methodology for tracking the conditions of horizontal infrastructure. This more granular method of tracking these assets has not only increased the number of data points on all streets, alleys, ramps, service roads, and sidewalks, but also the quality of the information on all the District's horizontal infrastructure overall. For a more detailed discussion of enhancements that have been made to CARSS since the 2018 report please refer to *Appendix A* of this report.

Capital Funding Gap During the CIP Period

The CARSS model determined that the total capital infrastructure needs of the District, as identified as part of the FY 2020-2025 CIP budget formulation, is approximately \$11.8 billion. The District has identified approximately \$8.5 billion of funding, from a mix of debt, paygo capital, federal loans and grants, and other funds, over the next six years, in its FY 2020-2025 capital budget for the highest-priority capital projects. This results in a remaining total capital infrastructure funding shortfall of approximately \$3.3 billion over the six-year CIP period, which includes both unfunded new capital projects needed to support the growing population of the District, as well as unfunded capital maintenance projects for existing assets

The following chart shows the annual estimated funding needed, beyond what the District can afford during the current six-year CIP, broken into the two categories of capital projects: capital maintenance projects (deferred maintenance) and new capital projects. The six-year funding gap for capital maintenance projects is slightly more than \$1 billion, or roughly \$169 million annually, and the six-year funding gap for new capital projects is approximately \$2.3 billion, or approximately \$380 million annually. Combined, the annual funding gap is approximately \$550 million, which is equivalent to roughly 6.4% of total local funds revenues.

| Fiscal Year | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 | 6 year Total |
|--|-----------|-----------|-----------|-----------|-----------|-------------|--------------|
| Unfunded Capital Maintenance Projects | \$ 96.09 | \$ 162.45 | \$ 202.13 | \$ 154.86 | \$ 203.93 | \$ 193.58 | \$ 1,013.04 |
| Unfunded New Capital Projects | \$ 185.97 | \$ 169.86 | \$ 199.34 | \$ 216.95 | \$ 527.59 | \$ 984.83 | \$ 2,284.53 |
| Total Unfunded Capital Needs | \$ 282.06 | \$ 332.30 | \$ 401.47 | \$ 371.81 | \$ 731.53 | \$ 1,178.41 | \$ 3,297.57 |

(in \$ millions)

As seen in the following chart, the total capital funding gap represents projects across key sectors of the District's capital infrastructure program. These amounts represent actual capital projects that cannot be delivered during the current six-year CIP with current funding levels and sources. For example, the approximately \$2 billion in unfunded new facilities projects includes two very significant capital projects for the District: a replacement of the Henry J. Daly building, which houses the headquarters of the Metropolitan Police Department, as well as a replacement for the District's correctional facility. The estimated costs of just those two large capital projects alone is likely to exceed \$1.1 billion. Similarly, roughly \$113 million of the nearly \$369 million shortfall in unfunded horizontal infrastructure relates to necessary improvements to the H Street bridge.

| Asset Classifications | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Total |
|------------------------------|----------|----------|----------|----------|----------|------------|------------|
| IT Projects & Systems: | | | | | | | |
| Capital Maintenance Projects | 8.35 | 11.54 | 16.04 | 20.65 | 13.61 | 4.54 | 74.72 |
| New Capital Projects | 21.61 | 23.19 | 22.70 | 17.63 | 13.83 | 5.65 | 104.61 |
| Total | 29.96 | 34.73 | 38.74 | 38.27 | 27.44 | 10.19 | 179.33 |
| Equipment & Regulatory: | | | | | | | |
| Capital Maintenance Projects | 3.00 | 10.28 | 10.50 | 10.74 | 5.54 | 14.65 | 54.71 |
| New Capital Projects | 1.35 | - | 3.42 | 3.42 | 3.42 | 3.42 | 15.03 |
| Total | 4.36 | 10.28 | 13.92 | 14.16 | 8.95 | 18.07 | 69.73 |
| Fleet: | | | | | | | |
| Capital Maintenance Projects | 13.46 | 2.53 | 7.98 | 10.84 | 35.54 | 38.83 | 109.19 |
| New Capital Projects | - | - | - | - | - | - | - |
| Total | 13.46 | 2.53 | 7.98 | 10.84 | 35.54 | 38.83 | 109.19 |
| Horizontal Infrastructure: | | | | | | | |
| Capital Maintenance Projects | 7.16 | 27.94 | 75.78 | 36.39 | 58.41 | 27.12 | 232.80 |
| New Capital Projects | 63.38 | 56.88 | 16.21 | - | - | - | 136.47 |
| Total | 70.55 | 84.82 | 91.98 | 36.39 | 58.41 | 27.12 | 369.27 |
| Facilities: | | | | | | | |
| Capital Maintenance Projects | 64.12 | 110.16 | 91.83 | 76.24 | 90.84 | 108.44 | 541.63 |
| New Capital Projects | 99.62 | 89.79 | 157.01 | 195.90 | 510.35 | 975.75 | 2,028.42 |
| Total | 163.74 | 199.95 | 248.84 | 272.14 | 601.18 | 1,084.19 | 2,570.04 |
| Grand Total | \$282.06 | \$332.30 | \$401.47 | \$371.81 | \$731.53 | \$1,178.41 | \$3,297.57 |

Annual Capital Funding Gap by Asset Type (in \$ millions)

It is important to note that the long-range capital financial plan analysis assumes that the costs of deferred capital projects beyond the six-year CIP period grow at three percent (3%) annually until those projects are funded. In addition, CARSS incorporates cost curves for various assets in the database to more accurately measure the cost of repair or replacement as these assets deteriorate. For example, if potholes are not filled on a particular street segment in a timely manner, the asset deterioration curve for street and roads may cause CARSS to accelerate the timing of a more expensive repair event, such as a complete street scraping. Similarly, if vehicles are not replaced pursuant to the schedule established in CARSS based on the various metrics used to determine the useful life of those assets, CARSS also inflates the purchase price of those vehicles to reflect the likely higher cost of purchasing those assets at a later date than what is recommended in the model. Finally, operating costs are also incorporated into CARSS as part of the overall outlook of asset health, so if capital maintenance, or asset replacement, is delayed beyond what is prescribed in CARSS, then annual operating and maintenance costs for that asset are escalated the following year and subsequent years until the repair or replacement is completed.

Developing Long-Term Funding Solutions

In order to properly maintain the value and functionality of existing capital assets, and to minimize life-cycle costs, the establishment of a time frame for 'catching up' on deferred maintenance is a best practice of any long-range capital financial plan. To address this complex financing challenge over the shortest period of time, while remaining within the various constraints imposed by the District's borrowing limits, a financial planning model was developed. This model assists the District in identifying financial strategies to fund the identified capital needs gap in the earliest year possible given various constraints.

The long-range capital financial model is actually a combination of three discreet models that work

in conjunction to identify the optimal financial result. The long-range capital financial model is comprised of CARSS, and a long-range financial planning model that utilizes a linear optimization tool to generate the optimal financial solution for a given time period. A diagram of how the long-range capital financial model works is shown at right. A more detailed description of the model, and its various components and assumptions can be found in *Appendix D*.

CARSS was used to prioritize, score and rank all of the District's various



capital projects. Then, under certain capital budget constraints and with a specific priority ranking assigned to each project, CARSS determines which projects can be funded in the CIP each year, and which projects will not receive funding (due to their lower priority ranking). The unfunded capital projects are then analyzed in the financial planning model utilizing linear optimization that funds the highest priority projects first, along with certain debt and resource assumptions, to solve for the optimal solution to finance the unfunded capital gap as soon as possible.

The model also allows the District to optimize and project the maximum amount of debt that can be issued in each fiscal year (under the 12% cap), while simultaneously determining the earliest possible fully funded year of all unfunded capital projects. The District will also be able to quantify the amount of paygo, federal funding, or other revenues needed to address the entire backlog of unfunded capital needs over various time periods. This information is then used to present a complete long-term capital financing plan for the District over the forecasted 15-year period.

A detailed description of the methodology used to classify and score the various capital projects, along with the scoring criteria, can be found in *Appendix B*. In addition, a detailed description of how projects were prioritized in CARSS can be found in *Appendix C*.

Funding Sources

Although the District relies on a variety of sources to finance its capital infrastructure program, including paygo financing, federal grants, local highway trust fund monies, local transportation funds, Grant Anticipation Revenue Vehicles (GARVEE bonds) from the Federal Highway Administration, sale of assets and other typical municipal sources of revenue, like most other state

and local governments in the United States, the District has traditionally relied on debt financing as the primary source of funding for capital infrastructure investments.

Outstanding Debt

The District has utilized debt financing, primarily General Obligation (G.O.) bonds and Income Tax Secured Revenue (ITS) bonds, as the primary sources of funds for capital infrastructure investments. As of September 30, 2019, the District has nearly \$10.8 billion of total outstanding debt, of which roughly \$9.6 billion (or approximately 89%) are either G.O. bonds or ITS bonds.

While G.O. and ITS bonds will remain a key source of funds for infrastructure investments into the future, the key challenges for the District will be to ensure that the total debt burden remains at a sustainable level and does not overburden the city's budget. The District's debt must be structured in such a way as to maintain our strong credit ratings,



thereby keeping the overall cost of borrowing as low as possible. This is particularly important given the fact that the District's current capital improvement plan anticipates increasing outstanding debt by nearly fifty percent (50%), or approximately \$5 billion in additional G.O. or Income Tax Secured bonds over the next six years.

Debt Capacity Limitations

The District must operate within both federal and local statutory debt limits. Under the federal Home Rule Act, annual debt service on the District's General Obligation bonds must be no more than 17% of General Fund revenues. In 2009, the Council passed local legislation to further restrict the amount of debt outstanding. The local Debt Ceiling Act limits the annual debt service on all tax and fee supported debt to no more than 12% of the District's General Fund expenditures. This locally imposed limit is the true constraint under which the District's borrowing must operate. Compared to other state and local governments, the District has a relatively high debt per capita ratio. Staying below the 12% debt limit allows the District to maintain its very strong credit ratings on its General Obligation bonds (Aaa/AA+/AA+ from Moody's Investors Service, Standard and Poor's and Fitch Ratings, respectively), as well as on its Income Tax Secured Revenue bonds (AAA/Aa1/AA+ from S&P, Moody's and Fitch, respectively). *The District is now one of the highest-rated state or local governments in the country*.

The OCFO measures the projected annual debt service as a percentage of anticipated general fund expenditures during the current CIP period, in order to confirm compliance with the 12% locally mandated debt limit. The following graph illustrates the District's projected annual debt service percentages given the amount of debt projected to be issued to support the FY 2020-2025 CIP. It is important to note that the chart does not reflect the impact of future debt refinancings or restructurings, which is likely to lower the debt service reflected in the graph below and increase future borrowing capacity for the District.



The 12% statutory debt limit is on the higher end as compared to other state and local governments across the country, but reflects our unique requirement to fund state, county, city and school district infrastructure needs. This debt limit has been extensively discussed with the credit rating agencies, and coupled with our strong reserve policies, provides the maximum borrowing capacity to fund infrastructure at the lowest possible cost.

Paygo Funding Mechanism Through Legislative Action

The other key source of funding for the District's CIP is paygo funding, which is a transfer of cash from the operating to the capital budget. Given the statutory limits on the amount of debt that can be issued, these transfers from the General Fund to the CIP program are the most flexible source of funding for addressing the identified, unfunded capital needs.

The Budget Support Act of FY 2018 included an amended provision for the use of paygo as part of the Capital Infrastructure Preservation and Improvement Fund. The provision specifies that for FY 2020, the financial plan shall include a minimum local funds total transfer of paygo to the CIP of \$58,950,000, plus any associated special purpose revenues dedicated to capital. For fiscal year 2020 the total amount of paygo is projected to be roughly \$95 million. Then, beginning in FY 2021, and for each subsequent fiscal year thereafter, the financial plan shall include a minimum local fund transfer for paygo of the \$58,950,000 (and any special purpose revenues dedicated to capital) plus twenty five percent (25%) of the increase in local fund revenues over the FY 2020 base year. The amount of local fund revenues transferred to the CIP is capped, so as to not exceed annual depreciation as reported in the District's most recent Comprehensive Annual Financial Report (CAFR).

As shown in the following graph, under the new approved legislation future local funds transfers to the CIP for paygo would be roughly equivalent to total annual depreciation by 2028, at which point the calculation to determine future local funds transfers would be capped at the amount of annual depreciation, which is currently forecast to grow at 2% annually.



It is important to note that while the estimated increases in paygo from local funds represent significant portions of the projected local funds revenue growth of the District, and a substantial increase in funding for the capital program over prior year's amounts, it actually represents a relatively small part of the local funds portion of the District's general fund budget. As can be seen in the following graph, the annual amount of local funds portion of total general fund expenditures between fiscal year 2020 and fiscal year 2028, by which time all unmet capital needs are projected to be funded.



Allocating this level of additional paygo funding is not without challenges, since capital projects compete with programmatic priorities such as affordable housing, homeless services, and the general growth and expansion of services for residents, for funding. However, properly maintained equipment and facilities will, over the long-term, result in lower life-cycle costs and increased resources for other District programs. Other options to increase paygo, such as additional federal funding or a new dedicated funding source, might also assist in addressing the District's unfunded

capital needs. A large portion of the growth in paygo funding represents dedicated taxes committed to Metro under legislation passed by the District in 2018. The addition of these new revenues should allow the District to meet its increased commitment to funding capital, while also supporting reasonable growth in operating programs.

Additionally, District legislation requires that once the 60-day operating reserve level is reached for the federally and locally mandated cash reserves, 50% of all surpluses in a given fiscal year go to paygo funding. This additional funding will further assist the District in achieving paygo levels that approach ongoing capital asset maintenance needs.

Funding Solution for the District's Unmet Capital Needs

The District's long-range financial planning model incorporated both the projected amounts of additional paygo funding, as discussed earlier, as well as maximized the amount of borrowing for capital, all while staying below the District's statutory debt limits, as shown in the graph below.



Given these projected amounts of paygo funding for capital, as shown on page 10 of this report, as well as utilizing the District's bonding capacity, the long-range capital financial model estimates that the District will be able to "catch up" and fund all existing unfunded capital projects identified in CARSS, while continuing to maintain current assets, by FY 2028. This would allow all District assets in the general fund to reach a state of good repair, while also addressing new unfunded capital projects. *In other words, the \$3.3 billion of capital needs not funded in the six-year CIP could be funded by 2028 with paygo levels increasing on average to three percent (3%) of the general fund budget and borrowing up to the twelve percent (12%) statutory debt capacity limit.* Funding of the gap could be further accelerated through additional paygo resources or other monies, such

as federal funds, that might become available, as well as using non-traditional funding structures, such as P3s or asset recycling initiatives.

The following graph illustrates that the unfunded capital needs, which remain nearly \$3.3 billion through FY 2025, since enough funding is not available in the current CIP, begin to be rapidly paid down starting in FY 2026, assuming no new additional capital projects are added to the CIP before addressing these identified unmet needs.



Progress in Addressing Unfunded Capital Needs

It is important to note that since the first long-range capital financial plan report was produced in 2016, the amount of identified unfunded capital needs has decreased substantially as the District's capital budget has grown and become more focused on addressing those unmet needs, as can be seen in the following graph. The 2016 report identified total unmet capital funding needs of approximately \$4.2 billion, which have since declined to \$3.3 billion per this report. This overall decrease in unmet capital needs is all the more noteworthy as it has occurred at the same time as the District was systematically building out its asset inventory, as well as refining, and in many cases increasing, the estimated costs of construction for certain new capital projects, such as a new correctional facility.

This reduction in unfunded capital needs was largely possible due to the continued strength of the District's economy, lower borrowing costs due to credit rating upgrades during that time period, as well as a greater focus on refinancing existing debt and utilizing the debt service savings for additional borrowing capacity to support the District's capital improvement's budget. These factors, along with greater focus on returning the District's critical infrastructure to a state of good repair, have resulted in the six-year CIP budget growth from approximately \$6.3 billion in 2016 to a little more than \$8.5 billion in 2019, or roughly a 35% increase over the last four years.



In addition, as the District's capital budgets have increasingly focused on bringing existing assets into a state of good repair, the unmet capital maintenance needs have continued to decrease quite rapidly. As can be seen in the chart above, unfunded capital maintenance needs, *which serve as a proxy for deferred maintenance*, have continued to decrease since the first long-range capital financial plan report in 2016. In the 2016 report, unfunded capital maintenance needs were nearly \$2 billion, or nearly half of total unmet capital needs. However, there has been a much greater focus on addressing unmet capital maintenance needs beginning with the 2018 CIP, which has seen those amounts decline to just slightly more than \$1 billion in this 2019 report. Unfunded capital maintenance needs. A practical example of this increased focus on addressing deferred maintenance can be seen in the increased capital budget for DDOT, which now has sufficient funding to fulfil the Mayor's initiative to repair all sidewalks by FY 2021, all alleys by FY 2024, and at least 94% of all roads rated in poor condition repaired by FY 2025, at the latest.

Non-Traditional Funding Approaches (P3s and Asset Recycling Initiatives)

As the District continually looks for ways to effectively fund its deferred maintenance backlog and fund new capital projects to support continued growth, all while remaining within its statutory debt limits, it has begun to explore alternative funding methods, where appropriate, such as publicprivate partnerships (P3s) and asset recycling (AR) initiatives. Both of these alternative funding methods potentially open up additional private sources of funding that could supplement the District's more traditional tools for funding infrastructure, which include debt financing, paygo and federal grants or loans. While both of these approaches (P3s and AR) have their own benefits and potential drawbacks, the fact that the District has a detailed asset registry and a thorough knowledge of all of its assets and their conditions, makes it possible to better assess which assets might be good candidates for one of these alternative funding methods, as well as being able to perform a more detailed comparison against more traditional public sector funding methods, along with more precise cost-benefit analyses of these various funding methods.

Public-Private Partnerships

While there is no singular definition of a public-private partnership (P3), the World Bank generally defines a P3 as, "A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance."

In attempting to assess which capital projects might be funded using P3s, the OCFO has held extensive discussions with the Mayor's Office of Public Private Partnerships (OP3) over the last several years. During that time, certain capital projects were identified as high priorities for the District, including streetlight modernization, a replacement of the Henry J. Daly building (which houses the headquarters of the Metropolitan Police Department), a new correctional facility, and several other high-cost facilities and projects. These projects, although rated high in importance, are unlikely to receive the full amount of funding needed to bring them to fruition in the normal CIP process. Both the Henry J. Daly building and a new correctional facility are conservatively estimated to cost between \$500 and \$700 million each to replace. These types of projects might provide an excellent opportunity for public-private partnerships.

Asset Recycling Pilot Program

In 2018, the District began exploring the concept of AR through our partnership with the Infrastructure Lab at the Bipartisan Policy Center (BPC). A 2017 report from BPC defines asset recycling as, "an innovative mechanism first used in Australia that allows existing, publicly-owned infrastructure to be leased or sold to a private partner with the lease or sale revenues used to fund new capital projects."

The Infrastructure Lab's knowledge of the District's extensive asset inventory and condition assessments led them to believe that the District would be the best candidate of any state or local government in the U.S. to partner with Australian state governments to explore the possibility of utilizing AR initiatives in the United States. BPC, coordinating through the Australian Embassy in Washington, DC, initiated an AR pilot program between the District and the governments of the State of New South Wales (NSW) and the Australian Capital Territory (ACT). The purpose of the pilot program was to establish a knowledge transfer of best practices and lessons learned in the AR process, as it is practiced in Australia, with the District, in order to try to determine if this type of funding mechanism could work for state and local governments in this country. Through numerous conference calls and meetings with representatives from NSW and ACT, as well as meetings with the Australian Ambassador to the United States, Joe Hockey, and his staff, the District has been able to build a base of knowledge and a rudimentary framework on how it might evaluate certain underutilized District assets to determine if they would make suitable candidates for asset recycling.

The Executive Office of the Mayor and the OCFO expect to undertake an AR analysis of several District assets as part of the FY 2021 capital budget formulation process, as well as studying what legislation might be necessary, to determine if asset recycling can play a part in the District's overall approach to funding some of its critical capital needs in the near future. A list of P3 projects currently in procurement or under consideration, and a discussion of the advantages and challenges of P3s, as well as a more detailed discussion of the asset recycling pilot program, can be found in *Appendix E* of this report.

Washington Metropolitan Area Transit Authority (Metro)

Beginning in 2016, the OCFO conducted a comprehensive financial analysis of the long-term capital and operating position of Metro based on publicly available financial information and in consultation with Metro staff. This analysis was then shared with, and thoroughly vetted by, all of the other jurisdictions in the Metro compact through the Metropolitan Washington Council of Governments (MWCOG), as well as with various other stakeholders throughout the region. This analysis identified a backlog of critical capital needs of approximately \$15.5 billion to return the system to a state of good repair (SGR) over the next decade. Given certain assumptions about the long-term level of federal funding for Metro, as well as continued growth in contributions from the compact jurisdictions, the analysis identified a remaining capital funding gap over the next decade of approximately \$6.2 billion. The District's share of this estimated shortfall would have been approximately \$2.2 billion over that time period, with no discernable way to fund that gap without likely severe cuts to the District's other infrastructure priorities.

As a result of a comprehensive analysis from the OCFO, and working through the Metropolitan Washington Council of Governments, a regional consensus was reached on the need to provide Metro with additional funding to meet their critical capital needs to help return the system to a state of good repair within a decade. After extensive consultation with Metro staff, and the jurisdictions through MWCOG, it was determined that additional funding of approximately \$500 million per year was needed by Metro in order to be able to debt finance its capital funding gap to achieve a state of good repair within a decade. While no consensus could be reached on a universal approach to providing this funding, such as a regional sales tax, it was ultimately agreed upon by the District, the State of Maryland and the Commonwealth of Virginia to provide an additional \$500 million annually to Metro beginning in FY 2020 from a variety of sources determined by each respective jurisdiction. The District, for its part, has dedicated a portion of its sales tax base as its source for this new dedicated funding for Metro. During the 2018-2019 legislative session the District of Columbia, the State of Maryland and the Commonwealth of Virginia each adopted legislation to provide their respective shares of the \$500 million of additional capital funding for Metro, with annual funding scheduled to begin in fiscal year 2020. This regional agreement on new, dedicated funding for Metro's capital program, which had been thought impossible to achieve for decades, should help to solve a looming problem for the region by allowing Metro to address its critical infrastructure needs, thereby keeping this economic growth engine for the region from falling into further disrepair.

Summary and Conclusions

The District is in an enviable financial position. Through the prudent financial decisions over the past twenty-five years, it has fully-funded pensions and retiree health care trusts, has fully-funded federally and locally-mandated reserves that provide flexibility to deal with uncertain future events and very strong bond ratings that provide low costs of borrowing to finance its infrastructure needs.

The District's approach to proper asset management included the development of CARSS, which resulted in all District-owned assets being inventoried, assessed (or in the process of being assessed), and all capital projects being ranked and prioritized in building the FY 2020-2025 CIP. The CARSS analysis highlighted a total capital funding need of approximately \$11.8 billion during the six-year CIP period. However, as is detailed in this report, not all capital projects or recommended maintenance needs can be funded in the District's six-year capital planning period. The District's highest priority capital needs are funded in the FY 2020-2025 CIP at a cost of roughly \$8.5 billion, however approximately \$3.3 billion in capital needs require funding outside of the current CIP period. A little more than \$1 billion of that unfunded amount, or roughly thirty-one

percent, are related to maintenance of existing assets. It is important to note that the District has made great progress in addressing its deferred maintenance needs. Through an increased focus on funding maintenance of existing assets in the District's capital budgets the amount of identified deferred maintenance has been nearly cut in half, from nearly \$2 billion in 2016 to just slightly over \$1 billion in 2019.

The District's growing economy, borrowing capacity and paygo legislation allow it to effectively address those unfunded capital projects in a relatively short period of time. As is detailed in this report, if the District commits to borrowing up to its statutory maximum level of twelve percent (12%) of general fund expenses, as well as commits to increase pay-as-you-go (or cash) funding for capital to an amount averaging roughly three percent (3%) of the general fund budget, it can fund all deferred maintenance and new capital needs by 2028, only three years beyond the current CIP period. In other words, if fifteen percent (15%) of the District's budget is committed to capital, with the remaining eighty-five percent (85%) spent on operations and programs, the District can have the best funded and maintained infrastructure of any state or local government in the nation.

Finally, the credit rating agencies have taken note of the District's aggressive approach to addressing its deferred maintenance and critical infrastructure needs and cited it as one of the key factors in the ratings upgrades enjoyed by the District in 2018. Any significant delays, or deviations, from the District's prescribed plan to address these critical infrastructure needs could potentially jeopardize the District's newly enjoyed status as one of the highest rated large cities in the nation. While the District has addressed its commitment to Metro through the establishment of new dedicated taxes for that purpose, aggressive outreach for non-traditional funding approaches, such as public-private partnerships and asset recycling initiatives, should be prudently pursued to potentially provide additional sources of funding for other critical capital projects that might be outside the scope of available funding in the District's CIP. Simply stated, if the District commits to this approach it would be in the enviable position of having amongst the best maintained infrastructure in the country and establish itself as the "gold standard" in asset management and infrastructure maintenance to which other state and local governments, and even the federal government, would aspire.

Appendix A

Approach to Developing the Capital Asset Replacement Scheduling System (CARSS)

Approach to Developing CARSS

In the attempt to develop a better understanding of the costs for the District of Columbia of maintaining its critical capital infrastructure, it was determined that there was a need to develop a comprehensive asset management plan for all of the District's assets. The approach that was developed to address this need led to the creation of the District's Capital Asset Replacement Scheduling System, or CARSS. CARSS is a comprehensive asset management planning tool created by the District in conjunction with our software solutions partners at PowerPlan.

In developing CARSS, the District applied many of the key concepts and fundamentals of ISO 55000, which is the recognized international standard covering asset management, as well as concepts expressed in a 2015 report from the Institute of Asset Management (IAM) titled, <u>Asset Management – an Anatomy (version 3)</u>. While the District is not seeking, at this time, to have CARSS certified as ISO 55000 compliant, the Office of the Chief Financial Officer (OCFO) has had five managers – including our CARSS Project Manager – formally trained, tested, and certified as ISO 55000 professionals. The OCFO applied the concepts and fundamentals of ISO 55000 in our asset management approach initially, and we continue to use it for guiding principles as we refine and continue to improve our management of assets.

In developing CARSS, a critical first step was to create a centralized database, or asset register, of all District-owned assets and their respective condition, so that a calculation of the costs to maintain or replace those assets can be performed. This asset register provides a detailed inventory of all District-owned assets on an enterprise-wide basis. The District must have an inventory of these assets, and an understanding of the maintenance and replacement costs, at not just an agency level, but also at an enterprise-wide level, in order to have a full understanding of the scope of the challenge in financing the District's capital infrastructure needs. It is also worth noting that maintaining an asset inventory and conducting condition assessments are best practices in asset management promulgated by the Government Finance Officers Association. A system for assessing assets is prerequisite to appropriately planning and budgeting for capital maintenance and replacement needs, in turn ensuring that assets are in conditions necessary to provide expected service levels.¹

Given the inherent complexities of this task, the process of developing CARSS, while being led by the OCFO, has been a collaboration between this office and the Executive Office of the Mayor. One of the first steps that occurred in this process was the creation of a steering committee to manage the development and implementation of CARSS. The steering committee was comprised of various members from critical agencies with expertise in capital planning, information technology and finance.

Recap of the District's Implementation of CARSS

Proof of Concept:

Development of the CARSS model initially began in June of 2015 with a Proof of Concept (POC) using three different asset types; fleet, facilities, and horizontal infrastructure. During the POC, information from three agencies that owned some of these three asset types were loaded into static

¹ Government Finance Officers Association, *Best Practice: Asset Maintenance and Replacement*, approved by the GFOA Executive Board, March, 2010. Retrieved from: <u>http://www.gfoa.org/asset-maintenance-and-replacement on 9/26/15</u>.

Microsoft Excel files. These agencies were the Office of State Superintendent of Education (OSSE) for the special education school bus fleet; District of Columbia Public Schools (DCPS) for school facilities and their construction; and the District Department of Transportation (DDOT) for their data on streets representing horizontal infrastructure assets. The POC was successfully completed in October of 2015, having confirmed that it was possible to create an asset replacement model across multiple asset types that would successfully predict asset investment needs, and develop annual budgets for an extended period of time. A status report on the successful completion of the POC was submitted to the Mayor and Council in October 2015, per a legislative requirement.

Development of a comprehensive "top down" 15-year capital financial plan:

Development of a robust asset replacement model entails calculating the needs from the "bottom up", individual asset by asset. This solution is neither quick nor easy to implement, therefore as an interim step, the process began with a focus on a capital projects' needs basis. Agencies provided their complete set of capital needs, project-by-project, for FY 2018 through FY 2023 as part of budget formulation in November 2016.

For the CARSS project data, the Capital Budget Team (CBT) carefully reviewed the submissions from agencies, along with those projects receiving budget in FY 2017, and created a file set of 508 current and proposed capital projects. These capital projects were carefully categorized into one of four different asset types; horizontal infrastructure, facilities (vertical infrastructure), fleet, and information technology and equipment.

| Asset Class | Classification Examples |
|---------------------------|---|
| Horizontal Infrastructure | • Streets |
| | Sidewalks |
| | • Alleys |
| | Bridges |
| Vertical Infrastructure | General Support Facilities |
| vertical initiastracture | School Facilities |
| | Parks Playgrounds Athletic Fields |
| | Public Libraries |
| | |
| Fleet | School Buses |
| | • Fire & EMS vehicles |
| | Police Vehicles |
| | Passenger Vehicles |
| Information Technology | Computer Herdware |
| mormation reemology | Computer Hardware Software Durchase |
| | Software Purchase |
| | • 11 Development |
| | Communication Equipment |

Below is a breakdown of the various asset classes and some of the project classifications that were used in this phase of the CARSS project.

Recap of Where the District is Now: Full Implementation

Development of a Detailed "Bottom-up" Approach to Building the Capital Budget

While the top-down, capital projects-based approach was initially used, the development of a much more granular, asset-by-asset level needs assessment approach using data from the already existing databases across all District agencies has been completed. Thirteen different databases from across various agencies that manage the District's assets feed information into a central data warehouse that is managed by the Office of the Chief Technology Officer. These data sources include the District's fixed asset system, the Master Address Repository and ESRI for GIS mapping, Office of Tax and Revenue for assessed value information, MicroPAVER for pavement management information, the Faster 1 and Faster 2 databases that house the District's fleet assets, as well as external data sources such as 4Tell/iPlan that house facilities condition assessment data, amongst others. This information is refreshed on a weekly basis, and then the data needed for asset planning and management are pulled into CARSS for further analysis, as is illustrated below.



The bottom up approach has been used for all horizontal infrastructure and facilities, including building system components in the FY 2020-FY 2025 CIP.

There are three distinct advantages of developing a "bottom-up" budget driven by individual assets in CARSS:

- 1. An alignment is created between asset and resource decisions to better meet strategic objectives,
- 2. It removes subjectivity, and improves transparency, by using evidence and a common framework for prioritization,
- 3. It enables the District to optimize constrained resources/budget with clear visibility to the impact of tradeoffs.

Enhancements to CARSS

Substantial progress has been made in further enhancing and refining CARSS over the last year, both in the number of assets included in the system, as well as in the quality of data on the individual assets inventoried. As per the publication of the 2018 report, the District had already captured 100% of all District-owned assets in CARSS, as opposed to only 14% of assets that were inventoried in the system in 2016. However, it was understood that a greater level of detail on many of the assets would be obtained as condition assessments were performed on all assets that had not yet received them. As more data points became available for many of the assets, and these components and sub-systems were captured and tracked in CARSS, the total number of assets in the system continues to increase. For example, last year's report showed a total asset count in CARSS of roughly 100,000 assets. As CARSS was further refined over the past year, and the quality of data was improved due to ongoing condition assessments, the asset count has now risen to over 300,000 assets. This can largely be explained by two major enhancements to the system. First, the ongoing efforts at obtaining facility condition assessments on all District-owned buildings now provides much greater information on sub-structures and components of all buildings, which are now individually inventoried and tracked in CARSS. Second, DDOT has switched to a more precise (sub-block) methodology for tracking the conditions of horizontal infrastructure. This subblock methodology represents the near-full extent of DDOT's centerline network, with only driveways being excluded. This methodology is the finest grained, base segments from which all other horizontal infrastructure segmentation patterns can be constructed, which would include all the District's streets, alleys, ramps, service roads and trails.

This more precise method of looking at these assets has not only increased the number of data points on all streets, roads and sidewalks, but also the quality of the information on all of the District's horizontal infrastructure overall. The ability to now breakout and inventory assets at a more granular level further increases the level of sophistication and utility of CARSS, allowing for more precise tracking of assets and planning in the capital budgeting process. The District now has the most comprehensive inventory of assets it has ever possessed, and almost assuredly the most comprehensive asset registry of any state or local government in the nation. This will allow Agency Directors, the Administration and the OCFO to perform much more detailed, and data-driven, capital asset planning for all future capital budgets.

In addition to those assets directly owned by the District, the OCFO has also added to CARSS those assets not directly owned by the District, but rather by its component units, such as the District of Columbia Housing Authority, the University of the District of Columbia, and the Washington

Convention and Sports Authority. Over the next year, the District plans to add further asset details of its last remaining major component unit, United Medical Center. While the assets of these component units are separately maintained and funded by those entities, and not from the District's general fund, their addition will allow for a more complete picture of the health of all of the District's assets. Also, as part of a more ambitious project, the OCFO continues to work with the District's Office of Planning to try to develop the capability to integrate forecasts of future population and development trends throughout the city to better anticipate the location and costs of new capital assets that will be needed to support future growth. This project will most likely be more fully integrated into CARSS sometime in 2021, after the completion of the next national census in 2020. Bond rating agencies, institutional investors and other bond market participants have noted that CARSS is the most comprehensive and detailed capital asset management system of any state or local government in the country.

During the FY 2020-2025 capital budget formulation process period covered by this report, detailed, granular-level data was compiled for all District-owned assets in CARSS. This has given the District the ability to build its capital budget using a "bottom up" approach for all of its assets, with the exception of equipment or fleet, which are not typically replaced at a component level. This represented a significant improvement in the District's ability to build more detailed and datadriven capital budgets than had been the norm until only a few years ago. This approach synthesized the much greater level of detailed data now available on each of the District's assets into capital projects that corresponded directly to the calculated need as determined in CARSS. This approach was used for all ongoing capital maintenance projects, as well as for all new capital projects for horizontal and vertical infrastructure. This approach was based on a scoring and ranking process for each new capital project in order to provide a reasonable estimate of all new capital project's needs. These estimates for new capital projects, as well as the detailed data for ongoing capital maintenance of existing assets represented all known capital needs of each agency. Those capital projects for both capital maintenance projects, as well as for new projects, were then compared to the projects that actually received funding as part of the FY 2020-2025 CIP. The unfunded projects represent the extent of the District's capital infrastructure funding gap.

Figure 1: Asset Inventory

| District | Assets | & Their | Value ir | n CARSS |
|----------|--------|---------|----------|---------|
| | | | | |

| | Number of Assets * | Percentage of Total Asset Classification |
|----------------------------------|-----------------------|--|
| rizontal Infrastructure | | - |
| Ramps | 564 | 100% |
| Service Roads | 124 | 100% |
| Streets (blockkey)*** | 36,262 | 100% |
| Sidewalks (blockkey)*** | 47,184 | 100% |
| Trails | 90 | 100% |
| Alleys (blockkey)*** | 9,578 | 100% |
| Bridges | 378 | 100% |
| Bikeshare Terminals/Racks | 290 | 100% |
| Street Car Rail (Track Segments) | 41 | 100% |
| Total | 94,511 | 100.0% |

Facilities

| Buildings | 642 | 100% |
|---------------------------|---------|--------|
| Building Components | 187,584 | 100% |
| Amenities (Pools, courts, | | |
| Playgrounds etc) | 569 | 100% |
| Total | 188,795 | 100.0% |

Equipment and IT

| Fleet | 5,520 | 100% |
|-----------------------------|--------|--------|
| Circulator Buses | 72 | 100% |
| Street Cars | 6 | 100% |
| Street Car System Equipment | 137 | 100% |
| Equipment (>\$5K) | 11,296 | 100% |
| IT and Furniture | 3,714 | 100% |
| Total | 20,745 | 100.0% |

Land

| Land (count by parcel) | 4,153 | 100% |
|--|---------|---------|
| | | |
| Grand Total ** | 308,204 | 100.00% |
| * Dees not include construction in anoma | | |

* Does not include construction in progress

** Does not include assets from the District's component units - UDC, DCHA, UMC, and Events DC $\,$

*** Streets, sidewalks and alleys - moved from street segments to a blockkey system

| FY 2018 CAFR Book Value of Asset Type (\$000) * | % of Assets Captured |
|--|-------------------------|
| | |
| 3,295,098 | 100% |
| 211,379 | 100% |
| 12,240 | 100% |
| 195,691 | 100% |
| \$ 3,714,408 | 100% |
| | |
| 7,280,055 | 100% |
| \$ 7,280,055 | 100% |
| | |
| 441,446 | 100% |
| \$ 410,017 | 100% |
| | |
| \$ 963,690 | 100% |
| \$ 12,368,170 | 100.0% |
| | |

This approach enables the District to have data around each asset along with its current condition and cost for repair or replacement. The screen shot below (*Figure 2*) shows a portion of the asset tree structure that is used in CARSS to organize the asset-level data - using a fire station as an example of the level of asset detail that is currently available in the system. The data breakdown is based on industry standards, called the uniformat, and the District facilities are structured to the level 2 standards, which provides data around individual building system components.





GIS Capability

Tremendous amounts of data on individual assets currently exists and was pulled into the centralized CARSS database from existing databases spread throughout various District agencies.



As seen in the image to the left, information on the more than 640 municipally owned buildings within the District has been captured in CARSS and displayed in the related GIS system. However, while data might have existed on the type, location and assessed value of a particular building, information on the current condition of the building, and its sub-systems, might have been missing or was not up to date. Subsequently, DGS and its contractor have been performing facility condition assessments (FCAs) on all Districtowned buildings with the goal of assessing each one of them no less than

once every three years. The information from the FCAs is uploaded into the CARSS database, allowing for more accurate calculations of costs for repair and maintenance of various facilities and their sub-components, such as roofs, HVAC, etc., thereby facilitating a more data-driven approach to building the capital budget for DGS. The additional building components/systems can be seen in CARSS where the current information now approaches 190,000 asset data points.



The District now has the ability to map all streets, service roads, sidewalks and alleys utilizing data in CARSS and GIS. In an example of this new ability, the image to the left illustrates all streets and sidewalks in the District.

More impressively is the ability of a user to now "drill down" on any portion of the map to look at particular street and sidewalk segments. More specifically, as seen in the graphic below, the ability to focus on just those segments that are in poor condition to help better prioritize those assets most in need of capital maintenance.

Local Streets GIS 'Drill Down'



Enhanced Analytics using Insights

CARSS was enhanced with an analytical tool called Insights. Insights allows for the creation of easily defined, and user-friendly, analysis and "drill down" capability from any asset type down to specific information on individual assets.

Local Roads Condition - Drill Down'

For asset types where high-quality data already existed, such as streets and sidewalks with DDOT, the CARSS database, working with existing DDOT databases, provides a powerful tool to more accurately forecast capital needs for horizontal infrastructure. Figure 3 below reflects the current conditions (in miles) of all local streets and roads in the District.

To further highlight the CARSS data and the value of Insights analytics, Figure 4 provides summary level details on the condition of various road types. This kind of data is critical in determining the costs and needed budget of maintaining the road conditions across the District.



Figure 3: Local Roads – Condition Ratings

Figure 4: Road Surface Details

| Road Type | Condition Average | Total Miles | Total Rehabs | Total Rehab Costs | Total Replacem ents | Tot | al Replacement Costs | Total Needs | Total needs Cost |
|-----------|----------------------|----------------|-----------------|----------------------|---------------------------|-----|-------------------------|----------------|---------------------|
| Asphalt | 68.85 | 1,077.65 | 22,299.00 | \$ 72,375,957 | 3,842 | \$ | 53,293,394 | 26,141 | \$ 125,669,351 |
| Brick | 80.19 | 0.31 | 9.00 | \$ 35,246 | 4 | \$ | 86,631 | 13 | \$ 121,877 |
| Concrete | 73.02 | 55.91 | 950.00 | \$ 3,118,111 | 154 | \$ | 1,469,016 | 1,104 | \$ 4,587,127 |
| Other | 74.97 | 22.31 | 335.00 | \$ 646,291 | 94 | \$ | 845,333 | 429 | \$ 1,491,624 |
| Unpaved | 58.1 | 0.56 | 4.00 | \$ 10,136 | 3 | \$ | 39,840 | 7 | \$ 49,976 |
| Totals | 71.026 | 1,156.74 | 23,597.00 | \$ 76,185,742 | 4,097 | \$ | 55,734,213 | 27,694 | \$ 131,919,955 |

Further analysis can be done looking at the various road conditions by ward in Figure 5 below. The data is presented to show the miles of roads – by condition – for each of the 8 wards. This serves as a guideline to determine what roads need the most attention and the number of miles – and thus cost – to perform the needed work. Combining this data with surface types enable the DDOT to provide very good estimates on the needed budget and the number of streets that can be improved, by Ward.



Figure 5: Local Streets Condition - by Ward

Drilling down further into the data will enable the user to ultimately see the specific information around any given block of roadway in the District. Individual asset information on roadway blocks are presented with a level of detail similar to the individual asset data for vehicles information shown in *Figure 9* on page A-15.

Fleet "Drill Down"

When viewing all fleet assets through CARSS and Insights, it becomes quickly apparent that the District's rolling stock, or fleet, is procured and owned across multiple agencies; of which the key agencies are OSSE, FEMS, MPD and DPW. The CARSS database, pulling information from the databases of the various owner agencies, shows 5,362 fleet assets currently owned by the District (*see Figure 6*). Further drilling down into the data using Insights the ability exists to produce user-friendly graphics showing not only the number of vehicles, but also the condition of the various fleet assets in each of the agencies, and the District as a whole.



Figure 6: Total Fleet Assets/ Condition Overview

The data further reflects that over 1,284 vehicles in the District are currently in the '*Poor/Replace*' category, as determined by the assessment of a combined set of factors including age, vehicle mileage, maintenance costs, and engine hours.

Drilling down another level, the ability exists to focus on just the fleet data of a particular agency. As an example, the data shown below will just focus on Fire and Emergency Management Services (FEMS) vehicles.

In the table below (*Figure 7*), the user can see data within FEMS at an even more granular level, by vehicle type, such as ambulances, command vehicles, ladder trucks, pumper trucks, etc. The data reflects both the number of vehicles of each type, age, maintenance costs, conditions, etc., along with the condition of the overall FEMS fleet.



Figure 7: FEMS Fleet Data

Insights allows users to drill down even further to review data around a specific vehicle type, such

as pumper trucks (pictured to the right). From the graphic above, the data shows that there are 56 pumper trucks with an average age approaching 11 years and a condition score (the higher the score, the worse the condition) of over 12.5, the poorest of all of the vehicle types. The data further shows that there are also 42 events, or needed replacements, of these vehicles within the CIP period. Thus, only 14 of the 56 vehicles would remain in service in the current fleet if replacement was done on a more rigorous, data-driven basis.



The chart below provides the additional detail obtained by looking specifically at pumper trucks. Data in the table is at an individual vehicle level and reflects additional data regarding age, actual mileage (when last serviced), the total maintenance costs to date, and the vehicle condition. For example, the data reflects that 25 of the 56 pumper trucks are in the *'Poor/Replace'* category.



Figure 8: Pumper Trucks Data

Finally, Insights allows users to drill down all the way into detailed data on a specific asset, by taking the user directly into the CARSS application, where the actual asset data is stored. The screen shot below (*Figure 9*) shows only a small sample of the data on this particular pumper truck that a user could access. The level of detailed data includes everything from the make and model of the vehicle, to the VIN number and the license plate number, as well as the remaining useful life, the estimated cost of replacement for this vehicle and when the replacement should occur.

| 130 - 2000 SEAGRAVE TB40DD | Asset | | | | | | |
|--------------------------------------|-------------------------|--------------------------------|---|--|--|--|--|
| Name | 130-20005EAGRAVE TB40DD | Rollup To | Pumpers | | | | |
| Asset Type | Pumpers | Active Date | 00:00.0 | | | | |
| Title | 130-2000SEAGRAVE TB40DD | Retirement Date | | | | | |
| Status | Active | Riva Asset Code | 87953 | | | | |
| | | - | | | | | |
| | Ass | et Detalls | | | | | |
| VIN | 1F9EU28T4YCST2098 | License Plate | GT4762 | | | | |
| Make | SEAGRAVE | Model | TB40DD | | | | |
| Year | 2,000 | Organization | FIRE & EMERGENCY MEDICAL SERVICES (FEMS) | | | | |
| Class | 7PFF | Class Description | FIRE UNIT, PUMPER | | | | |
| | Ľ | lfecycle | | | | | |
| Useful Life | 10 | Current Age | 17 | | | | |
| Life Consumed (%) | 170 | Remaining Life | -7 | | | | |
| Current Condition | | - | | | | | |
| | Inspection | | | | | | |
| Inspection Date | 10/16/2017 | Rehabilitation Count (Initial) | 0 | | | | |
| Last Rehabilitation Date | | Life Expectancy Hours | 10,000 | | | | |
| Life Expectancy Miles | 150,000 | Actual Reading Hours | 0 | | | | |
| Actual Reading Miles | 97,478 | Condition Factor | 0 | | | | |
| Inspected Condition Predictive Score | 14.8 | | | | | | |
| | | Costing | | | | | |
| Replacement Cost (\$) | 788,648 | Rehablitation Cost (\$) | | | | | |
| Inspection Cost (\$) | | Maintenance Cost | 7,421 | | | | |
| Repair Cost | 144,202 | Total Maintenance Costs | 151,623 | | | | |
| CapitilizedCost | 309,177 | | | | | | |

Figure 9: Individual Asset Data

~ Measure Values

| | | 🗖 2018 🗮 | 2019 | 2020 🗃 | 2021 🚍 | 2022 | 2023 | SUMMARY |
|-----|----------------------------|--------------|---------------|---------------|---------------|----------------|---------------|----------------|
| [s] | Age | 0 📰 | 1 📰 | 2 🛄 | 3 📰 | 4 🥅 | 5 🧱 | |
| [1] | AdjustedAge | 0 🔳 | 1 📖 | 2 🛄 | 3 🥅 | 4 🥅 | 5 🔳 | |
| [1] | Rehabilitation Count | 0 📰 | 0 📰 | 0 📰 | 0 📰 | 0 📰 | o 📰 | |
| | LIFECVILE | 12 2018 T | 2019 | 2020 🚍 | 2021 | 2022 🗮 | 2023 | SUMMARY |
| | Condition | 100 🧮 | 99.942 🧮 | 99.533 📷 | 98.407 🧮 | 96.154 🧮 | 92.252 | - |
| [1] | Replacement Value | 835,966.88 🚞 | 886,124.89 🧮 | 939,292.38 置 | 995,649.92 🚞 | 1,055,388.92 🧮 | 1,118,712.26 | 202,339,102.87 |
| [1] | Cycle Count | 1 | 2 🗐 | 3 🛅 | 4 🛅 | 5 🛅 | с 🚍 | |
| | COSTING | 10 2016 🖬 | 2019 | 2020 | 2023 🗔 | 2022 | 2023 🗟 | SUMMARY |
| [e] | CAPEX | 835,966.88 🧮 | 0 🥅 | 0 🥅 | o 🚞 | o 🧱 | 0 🧮 | 19,147,537.35 |
| | OPEX | 0 📰 | o 🧱 | o 🥅 | 0 🔳 | 0 🔤 | o 🥅 | 0 |
| [1] | Cost | 835,966.88 🧮 | 0 🔤 | o 🥅 | o 🚍 | 0 🥅 | o 🥅 | 19,147,537.35 |
| | Asset Value | 835,966.88 🧮 | 835,480.188 🧮 | 832,059.679 🧮 | 822,653.836 🧮 | 803,816.29 🧮 | 771,196.931 🧮 | |
| | CONDITION SCORE PREDICTIVE | 10 2018 - | 2019 | 2020 🖬 🛛 | 2021 | 2022 🗂 | 2023 | SUMMARY |
| 4 | Engine Hours Reading | 0 🗐 | 0 🔤 | 0 🔳 | 0 🚍 | o 🛅 | 0 🗐 | |
| 11 | Engine Mileage Reading | o 🔤 | 12,378.159 🧮 | 24,756.317 | 37,134.476 🧮 | 49,512.635 🚞 | 61,890.794 🧮 | |
| L.I | Predictive Condition Score | 0 = | 0.913 🚞 | 1.825 | 2.738 🔳 | 3.65 🛅 | 4.563 🛅 | |

Appendix B

Methodology for Classifying and Scoring Capital Projects

Methodology for Classifying and Scoring Capital Projects

Project Classification

After all agencies of the District of Columbia formally submitted their capital projects, and the Capital Budget Team (CBT) reviewed and made adjustments to them, the total number of capital projects with requested budget needs stood at 419. This set of projects went through several progressive actions to better refine and assess the total capital needs of the District.

After defining the categories and classifications of all projects within the four asset types; Horizontal infrastructure, Vertical infrastructure/buildings, Fleet, and Information Technology and Equipment, all capital project requests were then re-examined placing them into one of two groups based on their need for capital investment. The first group of projects consists of what are called "new capital projects." This group is characterized by the fact that the project is essentially a one-time investment that either expands or establishes a new service for District constituents. For example, projects to build a new swimming pool, completely modernize a school, or to invest in an extension to the streetcar line are examples of projects in this grouping. These projects receive budget a single time, perhaps over multiple years during construction, and are then placed into service without a specific continuing capital investment need.

The second group of projects are called "capital maintenance projects," and are comprised of those projects where a continued capital investment must be made in the asset. These projects can generally be thought of as the necessary investment in capital maintenance of existing assets that are already owned by the District. It is important to note that these are qualified capital expenditures, not the routine operating and maintenance costs, of capital assets. Capital projects such as public safety vehicles, sidewalks, information technology upgrades, and roof or HVAC capital repairs to buildings are examples of these types of projects. These projects require periodic investments of capital in order to maintain them in a good working condition, or otherwise replace the assets at the end of their useful lives (i.e. vehicles). Without these periodic capital investments, the assets will deteriorate, costing significantly more in annual maintenance costs, and will eventually fail completely requiring a much larger capital investment to replace the asset.

There are numerous examples in our region of this kind of asset failure due to lack of adequate investment in capital maintenance over the years. High profile examples of this inadequate capital maintenance can be found at the federal level with the Arlington Memorial bridge, at the regional level with the well-chronicled troubles of the Metro system, and at the local level in the failing state of the District's Henry J. Daly building. The most notable example of failed capital asset maintenance in the area was probably the poor state of repair of schools' facilities in the District until about FY 2008, when the District began to spend billions of dollars over several years to repair and rebuild its school facilities. It can be argued that if an adequate amount of funds had been provided to maintain school facilities in the past the facilities might have lasted for several more years, and thereby decreased the amount of funding dedicated in the CIP for the requirement of their total replacement.

Based on project types, categories and classifications, the CBT then used the established accounting standards for expected useful life of assets, and components, that make up the proposed project and thus the amount of estimated budget the project will require over any number of years. For example, we know that a typical administrative vehicle (with normal expected use) must be replaced every seven years. The CBT applied adjustments needed to the agency requested project budgets to reflect any missing needed investment over the useful life of the asset, and beyond. The budget needs are also inflated by three percent (3%) annually (compounded) to better reflect a degree of cost inflation. For schools building projects, costs are inflated at a higher rate given what we know are current construction bids, the cost increases year over year, and trends in the industry.

Capital projects were then further reviewed to identify if they should be considered as either 'pooled' projects, or potential public-private partnership (P3) opportunities. Pooled projects are used where there are known capital investments of a specific type (roofs, electrical systems, HVACs, etc.) that must take place across several agency assets, but where the specific locations and/or costs are not yet identified.

The Mayor's Office of Public Private Partnerships reviewed all projects for their potential as a P3 opportunity. They scored the opportunities on a scale of "0 to 4" where zero reflects no opportunity for the project to be structured as a P3, and "4" representing a very high probability of a P3 opportunity. The data identifying the pooled projects, as well as the P3 potential scoring was entered in CARSS. This data will enable us to better identify the characteristics of certain capital projects and will help us evaluate the potential need for funding and budget where partial funding can be obtained outside of direct District resources.

Project Scoring

To provide better insight and perspective of agency proposed facilities and IT related projects, two new review boards were established this year as part of the project budget evaluation process. The objective was to provide greater expertise around the two assets types as a part of the formal evaluation, scoring, and ultimately ranking of these proposed projects for the District. The boards were each comprised of nine individuals with subject matter expertise and were headed by a chairperson to provide coordination and communication. The boards each met multiple times and used input from the CARSS cost estimation tool set, as provided by agencies as part of their budget request, on which to evaluate and ultimately score the respective facilities or IT proposed projects. The boards then each met with the Mayor's Office of Budget and Performance Management to formally present their findings and recommendations prior to the start of the CBT review process. The scores then became formalized as a part of the overall CBT scoring for each proposed project.

The process from initial agency submission of proposed projects, the cost estimation process and the work of the review boards and CBT is shown in the following diagram.



To properly score projects as objectively as possible a mechanism was designed to assist with the process. The tool provides a set of 14 different elements against which projects are individually evaluated. Those elements were then grouped into 3 sections to evaluate the benefits, assess the potential impacts, and determine the extent to which a proposed project would meet District policy priorities.

The scoring criteria for each element was then assigned a weight to ensure that any proposed project received a fair and unbiased score when compared to other projects. In other words, the element weighting "level-sets" projects on the same scale to ensure that a well-defined, proposed new school project receives a similar score to a project to replace HVAC systems in 3 libraries, or a project to upgrade IT software. Thus, a project that maximizes benefits, provides positive impacts to the District, and aligns with priorities, would receive a score of 100 points, regardless of the nature of the project or the asset being acquired. Actual project scoring is done by the CBT and is simply a matter of assigning each element that the project impacts a score from 1-5. A score of 1 representing that the project only impacted that element minimally,

while a score of 5 means the project impacts that element significantly. We have also added a set of more objective criteria to the potential scores to ensure a more common and consistent interpretation of the criteria across projects.

The weighting factors are then automatically applied to the CBT given score in the CARSS application. There is also a set of 12 additional sub-elements that are key priorities. Any project that meets one of those receives a bonus of 5 additional points. The scores from the facility and IT boards are added, as is the 'project importance' score by the Mayor's budget team. The scores in each section are then totaled to determine the overall project score. The scoring initially performed by the Capital Budget Team members and is then reviewed several times to ensure consistency across all proposed projects and District priorities. These scores thus provide the basis for the ranking done in CARSS to determine the priority order of all projects proposed.

The detailed scoring criteria used for all capital projects can be seen on the following charts.

| | Ranking Criteria for Proposed Capital Project Budgets | | | | | | | | | |
|---------|---|--|--|--|--|----------------------------------|---|---------------------|-----|-------------------|
| | FY 2020 - FY 2025 | | | | | | | | | |
| Agency | Total Cost | | Project Alig | nment wit | th District Polic | ies | | Evaluation Score | | |
| Project | | | How supportive is the project on a scale of 1-5? | | | | | | | Priority Score |
| Me | ets District Policy Priorities | Project Examples | 1= | 2= | 3= | 4= | 5= | | | |
| | Improve Outcomes for Children and Youth | * Education * Public Safety | Improvements to existing building system (Public Safety and/or Education ONLY) | Renovatio n of existing asset | Expand Existing Asset and renovate facility | modernizing existing building | creating a new facility | 0 | 3 | 0 |
| | Expand the availability and affordability of high-quality childcare. | * Child Care | If | the project | t provides child (| care - X = bonu | S | | N/A | 0 |
| | Address the needs of communities and individuals most impacted by violence. | * Ambulances * MPD Vehicles | If the pr | oject provi | des public safet | y vehicles - X = | = bonus | | N/A | 0 |
| | Expana opportunities that will further close the K-12 achievement gap school modernization. | * Pre-K * School Modernization | If the proje | ect provide mod | s new Pre-K clas dernization - X = | sroom or is a t bonus | 'uli school | | N/A | 0 |
| | Increase Prosperity across all 8 Wards | | Improves some services offered beyond current levels | | Improves current facility - but does not create new employment | | Creates New Facility and jobs when project is complete | 0 | 3 | 0 |
| | Expand efforts to produce, preserve, and protect afforda | ble *New Communities | If the project pro | ovides dire | ect support for 'n | ew communit | ies' - X = bonus | | N/A | 0 |
| | Reduce health disparities with a focus on health equity. | *Healthy Living | If the pr | oject provi | ides improved h | ealth care - X : | = bonus | | N/A | 0 |
| | Continue efforts to make homelessness rare, brief and no recurring. | *Wellness Centers | If the proj | ect provide | es support for ho | melessness - | X = bonus | | N/A | 0 |
| | Put more DC residents on a pathway to the middle class. | *Libraries *Recreation Centers | If the project pro | vides some | e form of econo class- X = bonu | mic growth tov s | ward the middle | | N/A | 0 |
| | Enhance DC government services | * Transportation * Good Government * Mobility Infrastructure | Provides some Infrastructure improvement or, some customer service improvement | | Improves local horiz. infrastructure or will significantly improve customer service beyond current levels | | Creates new horizontal infrastructure asset | 0 | 3 | 0 |
| | Strengthen the DC transportation and mobility infrastruc and experience | ture *Local Road Rehab *Pedestrian, Bike or Public Transit | If the pro | ject provid | es improved tra | nsportation - > | (=bonus | | N/A | 0 |
| | Take the DC government customer service experience to t next level. | he * Smart City - DC Net, GIS | If the project pro | vides impr | oved customer bonus | service - direct | t to citizens - X = | | N/A | 0 |
| | | | | | | Subt | otal = | | | 0 |

| | | | | | | Overal | I Score | | (|) |
|----|--|------------------|---|------------|--|------------------|--|---|-----------|---|
| | | | | | | Subt | otal = | | | 0 |
| | Project Importance | | | | OBPM to Score | e | atal - | 0 | 7 | 0 |
| | IT Asset Oversight Team Evaluation Points 25 for best ranked - down to 5 for the tie for 21st) | | | | | | | 0 | 1 | 0 |
| | Equipment and Systems Improvement | | | | Improves Service | | Improvement | 0 | 7 | 0 |
| | | | If the requ | ested budg | get is for Master | Project = bor | Life Safety | | N/A | 0 |
| | - Master Project | | If the requ | ested bud | iget is a P3 Oppo | ortunity = bon | us points | | N/A | 0 |
| | Leverages External Public or Private Investments | | | | points | | | | N/A | 0 |
| | Closes Out Existing Project | | If the requested b | oudget con | npletes a projec | t started in a p | prior CIP = bonus | U | J N1/A | 0 |
| | Extends Usefull life of Asset receiving the hudget | | Extends the useful life of the asset receiving the budget > 2 years and <5 | | Extends the useful life of the asset receiving the budget > 5 years and <10 | | Extends the useful life of the asset receiving the budget > 10 years | 0 | 5 | 0 |
| | Reduces Environmental Impact | | asset in service | | | | from prior use | 0 | 5 | 0 |
| | | | Reduces energy consumption below the level used prior to placing the new | | Facility is LEED Certified | | Reduces total Environmental footprint by 30% | | | |
| | Federally Required Mandate | | Must be completed - but no time frame given | | Must be completed between 2-5 years | | Must be completed in the next 2 years | 0 | 5 | 0 |
| | Health and Safety Improvements | | Has positive impact on specific user groups/citizens | | Significant Improvement to end users/citizens | | Legally required improvement | 0 | 5 | 0 |
| Pr | oject-Specific Criteria | Project Examples | 1= | 2= | 3= | 4= | 5= | | | 0 |
| | Potential for Economic Impact through fob Creation | | | | | Subt | otal = | 0 | 5 | 0 |
| | Potential for Francis Impact through Job Crastian | | When complete, could create additional employment opportunities | | When complete, WILL generate additional employment | | will create employment - at least 50% of which will be for District | 0 | E | 0 |
| | Potential to Generate New Revenue/taxes for the District | | | | | | When complete, | 0 | 5 | 0 |
| | | | When complete, could generate some increase of revenue/taxes | | When complete, WILL generate some increase of revenue/taxes | | When complete, at least 50 % of the additional revenue generated would be reinvested in CIP | | | |
| | Impact on Operating Budget (After Completion) | | Increases operating costs | | Has no Impact on operating costs | | Lowers Operating cost after implementation | 0 | 5 | 0 |
| | Readiness (catalyst project, implements Small Area Plan, etc.) | 1 | Good project but still needs more planning around accurate budgets, spending and PM | | Well planned with appropriate budget and spending levels to be successful | | Well planned project, with designated PM, correct budget and spending plan AND, ties to District Comp/Trans plans | 0 | 5 | 0 |
| Co | st-Benefit Factors | Project Examples | 1= | 2= | 3= | 4= | 5= | | | |
| | | | | | | | | | | |

Ranking Criteria for Proposed Capital Project Budgets – Continued

Appendix C

Overview of How Capital Projects Were Prioritized

Overview of How Capital Projects Were Prioritized

Once sufficient details outlining the nature and structure of needed projects and their budgets existed, the next task was to determine an objective approach to prioritize the 419 proposed capital projects, since there was likely no possibility that all of the capital needs could be funded in the current CIP. The CARSS model will ultimately analyze this at an asset-by-asset level by evaluating the relative risks to the District of deciding whether to fund certain capital projects.

One ranking mechanism that was considered was to establish District priorities by asset type, classification, or category. However, this approach does not allow for an objective comparison of different asset types against each other. For example, given scarce funding resources, how should the decision be made to objectively compare the relative importance of an emergency vehicle versus a school facility versus I.T. equipment? It was determined that a better approach would assess each project on a stand-alone basis, and its relative importance for funding versus the other 419 projects, to ensure that a project to repair an HVAC system in a school was scored on a level playing field with a new accounting system, as an example.

Using the standard system of scoring projects that was established (see Appendix B), the Capital Budget Team (CBT) and other subject matter experts spent time over several weeks to individually score each of the capital projects. The scores of individual projects were reviewed several times to assess consistency and a genuine sense of logic, and to ensure they were as objective as possible. The criteria and the scores were then applied to the CARSS model, which created a project ranking from 1 to 419. As we complete the asset-by-asset driven model, an assignment of risk will also be created using a variety of different factors. In the interim, we are using the scoring as the proxy for risk at a project level. The logic is that the higher the score assigned (or 'level of importance'), the greater the risk to the District for not funding that capital project.

In addition to scoring by facilities and IT review boards, and the CBT agencies also ranked each of their proposed capital projects in order of the agency's priorities. This enabled the CBT to better coordinate final decisions for capital projects which were scored similarly by the CBT, serving as a tie breaker based on on their relative importance to the various agency needs.

The data load into CARSS included the proposed funding source (debt, paygo, rights-of-way fees, federal budget, etc.) of each project, for each year of the six-year CIP period. Available budget totals based on the District's borrowing capacity and the approved financial plan are also fed into CARSS by year and by funding source. Thus, the capital projects can be segregated by funding source and type to better ensure that the proposed budgets match the revenue and funding available.

The result, at this phase of the process, provides a priority scoring of all projects that can be funded within the budget constraints of the District, in any particular year. CARSS provides a mechanism (called a "visual leveler") that allows users to see a graphic representation of all capital priorities and budget constraints and determine a measure of risk to the District.

The following screen shot of the visual leveler shows all of the capital project requests from the various agencies as part of the FY 2020 - FY 2025 CIP budget formulation process, relative to the amount of funding available, represented by the red lines.



The visual leveler then enables certain administrative users to maneuver the priority of individual projects by year in an attempt to determine a set of projects that can fit within the resource and budget limits for any particular year. The scenarios are captured with the results reflected in each year's set of projects, and in summary as a change to the District's risk factor. Authorized users can propose and save different scenarios for further discussion and analysis.

In addition to allowing individual projects to be maneuvered by year, the visual leveler in CARSS will also automatically solve the funding problem using a combination of project scoring, risk, and budget limits to optimize the decision of which projects to fund in any particular year, and which ones will have to be excluded given budget limits. The optimization is captured both project-by-project, and year-by-year.

Below is a screen shot of the District's capital projects budget needs after running the solver (optimization) function.



After utilizing CARSS to optimize project priorities for the CIP period, capital projects that did not have a sufficiently high priority were placed in the "excluded" column on the far right of the chart (highlighted in red). This data was then extracted and used to determine the identified gaps in budget needs year-by-year. The Capital Budget Team then conducted another detailed review and scrubbing of the remaining, unfunded or underfunded capital projects, along with identifying which of these remaining projects had a high potential to be structured as a P3. This resulted in a remaining total of 72 capital projects with verified budget needs that reflected true unfunded capital projects of the District. This set of projects, which includes a new jail, defines, at this point in time, our best estimate of the total unfunded capital needs of the District, and the financing challenge that needs to be addressed.

The CARSS analysis does not exclude those capital projects identified as likely to be structured as P3s from the overall calculation of total unmet needs. Given the uncertainty of when, or even if, the P3 procurements might take place for certain capital projects, it was thought to be more prudent to include those projects in the overall calculation of needs for now. When greater certainty arises about individual projects being procured as P3s they can be removed from the analysis at that time. It is important to note that any capital needs that are eventually financed as a P3, either through the use of an availability payment by the District, or some other payment mechanism, which at least some portion of the payment stream will likely be considered as a long-term obligation of the District, or debt, will almost certainly be subject to the District's statutory borrowing limitations.

Appendix D

Description of Long-Range Capital Financial Plan Model

Description of Long-Range Capital Financial Plan Model

In order to address the complex challenge of financing the unfunded capital infrastructure needs identified in the capital asset replacement scheduling system (CARSS), while remaining within the various constraints imposed by the District's borrowing limits, the OCFO engaged the services of our external financial advisor, PFM Advisors LLC ("PFM") to develop a long-range financial planning model. This modeling effort will assist the District in identifying financial strategies to fund the identified capital needs gap in the earliest year possible given various constraints, such as the amount of paygo or additional federal funding available over various periods.

The Long-Range Capital Financial model is a combination of three discreet models that work in conjunction to identify the optimal financial result. The various components are:

- CARSS an asset management planning ("AMP") software solution developed by PowerPlan;
- Long-Range Financial Planning Model ("LRFPM") which is a Microsoft Excel based model developed by PFM; and
- Lindo What's Best! ("WB!") a linear optimization model, which works as an add-in to Microsoft Excel.



The CARSS model extracts the capital project inputs from various District Agency files and prioritizes, scores and, based on specific District criteria, ranks them in comparison to all other projects across the District. Then, under capital budget constraints and with a specific priority ranking assigned to each project, it determines which projects can be funded in the Capital Improvement Plan (CIP) each year, and which projects will not receive funding (due to their lower priority ranking). The detailed list of unfunded capital projects is then imported into the WB! linear optimization model, along with certain debt and source assumptions from the Long-Range Financial Planning Model, to solve for the optimal solution to finance the unfunded capital gap as

soon as possible. The financing information from the WB! linear optimization model is then exported back into the Long-Range Financial Planning Model in order to present a complete long-term capital financing plan for the District over the forecasted 15-year period.

Model Assumptions

The long-range capital financial model makes several assumptions in analyzing funding solutions for the backlog of unfunded capital needs. These include the estimated borrowing costs for future debt issuances, the level of future funding from other non-debt sources for capital projects, and that General Fund expenditures of the District continue to grow at approximately 3% into the future through the end of the current financial plan period in FY 2023, and then gradually decline to 2.5% by FY 2025 and thereafter. In addition to those assumptions, there are three key assumptions in the model, which drive how the model optimizes various funding solutions. These include:

1. Optimization of debt issuances:

The model is structured to maximize the amount of debt issued in each fiscal year immediately outside of the current CIP period, while remaining within statutory debt limits, until paygo amounts have increased significantly, and thereafter lowering the amount of debt issued annually to achieve a more balanced overall mix of funding to meet the District's capital needs. This also provides substantial borrowing capacity after 2027 to fund future new capital projects.



2. <u>Varying levels of paygo or additional federal funding drive the gap:</u>

The major variable that drives the incremental increase in the amount of unfunded capital projects is the amount of annual paygo, additional federal funding, or other additional revenues assumed.

3. No additional new capital projects:

As the model factors all of the many variables in solving for the best solution to fund the backlog of unfunded capital needs, it assumes that no new capital projects, outside of those that

were part of the FY 2020-2025 capital needs assessment, are added to the list of capital projects in future years prior to existing unfunded needs being met, unless they are completely funded from additional paygo, federal funds, or other additional resources from private sources.

Results of Modeling Efforts

This modeling effort will allow the District to accomplish several capital financial planning goals. Specifically, it will allow the District to:

- Alter individual assumptions within internal and external source categories and drive source projections, with specific focus on paygo funding levels;
- House all existing debt service (by series);
- Project the District's debt service through the end of its 15-year forecast period (FY 2034) by exporting sizing results calculated in DBC Finance, a bond modeling software program;
- Utilize linear optimization software to maximize the amount, and optimize the structure, of future debt issuances to ensure that the District stays within its statutory debt limits;
- Summarize all projected debt and expenditure detail through FY 2034; and
- Calculate the projected ratio of debt to expenditures on an individual fiscal year basis throughout the entire financial planning period.

The engine of the model lies in the macros and linear WB! linear optimization software. These tools allow the model to directly interface with other internal models to ensure the District maintains the flexibility to incorporate the most current source data and CARSS assumptions into each analysis. It also allows the District to optimize and project the maximum amount of debt that can be issued in each fiscal year (under the 12% cap), while simultaneously determining the earliest possible fully funded year of all unfunded capital projects. The District will also be able to quantify the amount of paygo needed to fund entire backlogs of unfunded capital needs over various time periods. Outputs of the Long-Range Capital Financial Model include two reports: a "*Gap Report*," which (based on the CARSS file) details and quantifies the current capital projects funding gap in each fiscal year using that year's sources of funds; and a "*Funded Report*" which lists the unfunded capital projects from the FY 2020-2025 CIP that receive funding, and in which years outside of the current CIP period, and summarizes the allocation of sources based on fiscal year projections of debt service.

This approach provides some distinct advantages for the District for their long-term planning needs over other alternatives. Primarily, this application of linear optimization in conjunction with the District's systems takes what would be an iterative process and turns it into a problem with one explicit answer. It accomplishes this by simultaneously contemplating all potential solutions when the model is run, and then only returns the absolute best solution to the user of the model (defined as the lowest cost of financing the unfunded projects). For this purpose, the District is able to maintain a high degree of confidence that the solution represents their best course of action for catching up on unfunded costs. Secondarily, since the model is built in Excel, there is a high degree of flexibility available for the District to reconfigure the model in a manner that answers other potential questions that pertain to their long-term capital planning needs. For example, the District could lock in future bond issuances in the model, and then ask the model to return what the lowest necessary amount of paygo is required in order to catch up on unfunded costs by a specific year. This is just one example of how the model could be manipulated into giving additional insight into the capital planning needs of the District.

Appendix E

Non-Traditional Funding Approaches

(Public-Private Partnerships & Asset Recycling)

Non-Traditional Funding Approaches (P3s and Asset Recycling)

As the District continually looks for ways to effectively fund its deferred maintenance backlog and fund new capital projects to support continued growth, all while remaining within its statutory debt limits, it has begun to explore alternative funding methods, where appropriate, such as publicprivate partnerships (P3s) and asset recycling (AR) initiatives. Both of these alternative funding methods potentially open up additional private sources of funding that could supplement the District's more traditional tools for funding infrastructure, such as debt financing, paygo and federal grants or loans. While both of these approaches (P3s and AR) have their own benefits and potential drawbacks, the fact that the District has a detailed asset registry and an extremely thorough knowledge of all of its assets and their conditions, makes it possible to better assess which assets might be good candidates for one of these alternative funding methods, as well as being able to perform a more detailed comparison against more traditional public sector funding methods, along with more precise cost-benefit analyses of these various funding methods.

Public-Private Partnerships (P3s)

While there is no singular definition of a public-private partnership (P3), the World Bank generally defines a P3 as, "A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance."

In attempting to assess which capital projects might be funded using P3s, the OCFO has held extensive discussions with the Mayor's Office of Public Private Partnerships (OP3) over the last several years. During that time, certain capital projects were identified as high priorities for the District, including streetlight modernization, a replacement of the Henry J. Daly building (which houses the headquarters of the Metropolitan Police Department), a new correctional facility, and several other high-cost facilities and projects. These projects, although rated high in importance, are unlikely to receive the full amount of funding needed to bring them to fruition in the normal CIP process. Both the Henry J. Daly building and a new correctional facility are conservatively estimated to cost between \$500 and \$700 million each to replace. These types of projects might provide an excellent opportunity for public-private partnerships.

List of Potential Public-Private Partnership (P3) Projects in the District

Based on available information as of FY 2020 capital budget formulation, the following table shows a list of potential projects, as identified by the Office of Public Private Partnerships (OP3), for which that office is actively seeking to structure and finance as P3 projects. The long-range capital financial plan currently assumes that the potential P3 projects listed in the following chart are funded as part of the District's regular capital budget process utilizing traditional public finance methods, such as debt or paygo. The District's overall capital funding gap may be further reduced if some, or all, of these projects are ultimately structured as P3s that prove to be a more cost-effective method of procuring those projects. More information on the projects listed in the following table can be found at http://op3.dc.gov/pipeline.

| Project | Agency(s) |
|--|----------------|
| In Procurement | |
| Digital Kiosks | DPR, MPD, OCTO |
| DC Smart Street Lighting | DDOT, OCTO |
| Henry J. Daly Building | DGS. MPD |
| Under Consideration | |
| West Virginia Avenue Public Works Campus | DPW, DGS |
| Corrections Center | DOC, DGS |
| Library Facilities | DCPL |
| Police Facilities | MPD, DGS |
| Fire and Emergency Medical Facilities | FEMS, DGS |
| Parks and Recreation Facilities | DPR, DGS |
| Educational Facilities | DCPS, DGS, DME |
| Waste Management / Recycling Center | DOEE, DPW, DGS |
| Solar and Microgrid Projects | DOEE, DGS |

All P3s involve a basic trade-off between a transfer of risk (risk of construction, risk of management, etc.) by the private party versus control (control of day-to-day operations of the facility, control of the revenue stream from the facility, etc.) by the government entity. There are several advantages and challenges related to P3s that government entities need to address when considering their use. These include, but are not limited to, the following:

| Advantages | Challenges |
|---|---|
| Accelerated project delivery compared to pay-as- you-go approach | Restricted control over day-to-day operations of the facility |
| Fixed-price contract where private partner is at risk for any cost overruns | Ongoing costs of monitoring the contract over a long period of time |
| Access to more innovative, and cost-effective methods of design and operation of the facility | More expensive cost of borrowing for private partner versus traditional public borrowing |
| Account for full life cycle costs of operating and maintaining a facility | Often less transparency and accountability in the contract with private partner versus traditional public sector approach |
| Ability to hold private partner to specific performance standards in a contract or otherwise withhold payment | A mismatch in technical expertise on the side of the private partner can lead to overpayment by the government entity |

Asset Recycling Pilot Program

In 2018, the District began exploring the concept of asset recycling through a partnership between the Office of the Chief Financial Officer (OCFO) and the Infrastructure Lab at the Bipartisan Policy Center (BPC). BPC is a non-profit organization based in Washington, DC, that was founded in 2007 by former U.S. Senate majority leaders Howard Baker, Tom Daschle, Bob Dole and George Mitchell.

In researching an innovative infrastructure financing strategy developed by the Australian government, the Infrastructure Lab was inspired to develop a pilot program to test whether the strategy could work for state and local governments in the United States. The Australians call the strategy asset recycling. In asset recycling, a municipality sells or leases surplus assets to the private sector and uses the proceeds to pay for needed infrastructure maintenance or new assets. It introduces an effective way for public finance officials to unlock value from assets that are no longer performing or needed. It is a strategy that sources new capital for infrastructure needs without raising taxes or adding public debt. Asset recycling was designed to overcome public reservations about public-private partnerships, and it succeeded in Australia because officials could show taxpayers exactly where proceeds came from and where they were re-invested.

The Infrastructure Lab's knowledge of the District's extensive asset inventory and condition assessments, along with its ability to project long-term maintenance costs for its assets, led them to believe that the District would be the best candidate of any state or local government in the U.S. to partner with to establish an Asset Recycling pilot program. With additional support from the Australian embassy in Washington, DC, the Infrastructure Lab's asset recycling pilot program brought together the governments of New South Wales (NSW) and the Australian Capital Territory (ACT), with the District of Columbia to test the feasibility of asset recycling for state and local governments in the United States. The purpose of the pilot program was to establish a knowledge transfer of best practices and lessons learned in the asset recycling process, as it is practiced in Australia, with the District, in order to determine if this type of funding mechanism might work for state and local governments in this country. Specifically, the pilot program sought to codify best practices on how to: 1) manage assets, 2) identify assets appropriate for recycling, 3) build political and community support for asset recycling, and 4) find underutilized value programmatically.

Through numerous conference calls and meetings with representatives from NSW and ACT, as well as meetings with the Australian Ambassador to the United States, Joe Hockey, and his staff, the District has been able to build a base of knowledge and a rudimentary framework on how it might evaluate certain underutilized District assets to determine if they would make suitable candidates for asset recycling. The Executive Office of the Mayor and the OCFO expect to undertake an asset recycling analysis of several District assets as part of the FY 2021 capital budget formulation process, as well as studying what legislation might be necessary, to determine if asset recycling can play a part in the District's overall approach to funding some of its critical capital needs in the near future.

The Infrastructure Lab was founded at BPC by Jill Eicher, its Director, in 2017. It is overseen by a three-member steering committee that includes Ambassador Hockey, George McCarthy, the president of the Lincoln Institute of Land Policy, and Jim Barry, the head of real estate and infrastructure investing at BlackRock, Inc., who is its chairman. In 2020, the Infrastructure Lab plans to present findings from the first phase of the asset recycling pilot program at the National Academies of Science and to launch the second phase of the asset recycling pilot program, which will invite more state and local governments to participate.





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