District of Columbia

LONG-RANGE CAPITAL FINANCIAL PLAN REPORT

PRODUCED BY THE OFFICE OF THE CHIEF FINANCIAL OFFICER

GOVERNMENT OF THE DISTRICT OF COLUMBIA

ISSUED OCTOBER 2024

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PART I: 2024 UPDATES

1. Key Highlights

The Office of the Chief Financial Officer's 2024 Long-Range Capital Financial Plan Report assesses the condition of the District of Columbia's (the "District") current assets, future capital needs, and funding availability. The plan then optimizes resources to address all identified capital needs in the shortest possible time.

The District's asset management system, the Capital Asset Replacement Scheduling System (CARSS), contains a detailed inventory of all District-owned assets, including land, buildings, roads and streets, vehicles, and equipment. This system provides the basis for developing the District's capital improvements plan (CIP) as part of the annual budget process and determines the cost of deferred maintenance for current assets.

Key highlights of this year's report include:

- $15.03 billion of total capital needs identified; approximately $12.04 billion of those needs are funded in the FY 2025 - 2030 CIP.
- $2.99 billion of unfunded capital needs remain during the 6-year CIP period, down from $3.57 billion last year, of which approximately $1.34 billion is deferred maintenance.
- The decrease in unmet capital needs is attributable to a net increase in the size of the capital budget due to improved revenue estimates compared to previous projections.
- Analysis shows that unmet capital needs can be funded as early as FY 2033, if the District commits 16.5% of its general fund budget to capital projects (12% to support debt service on borrowings and an average of approximately 4.5% on pay-as-you-go cash funding) and no additional capital projects are added before addressing currently identified unmet needs. If additional capital projects are added, the timeline to catch up with unmet needs could be extended significantly.
- The District has a comparatively lower cost of borrowing compared to other cities and states due to strong bond ratings. The District's General Obligation bonds are currently rated: Aaa/AA+/AA+ by Moody's, S&P and Fitch, respectively.
- Challenges to executing this plan include a potential US recession triggered by lagging effects of tight monetary policy indicated by cooling labor market conditions, geopolitical factors, a federal government shutdown with disruptions to the local economy and policy uncertainty related to U.S. national elections. District-specific risks include an increase of remote work, especially amongst the federal workforce, an accelerated decline in federal employment, stalled population recovery, and additional funding requirements from the District to address WMATA's potential budget shortfall.
- The nation's capital remains in an enviable position compared to its peers to navigate these challenges and address its infrastructure needs due to prudent financial management policies (including strong reserves and highly funded pension and OPEB liabilities), a state-of-the-art asset management system, and a resilient local economy.

2. Executive Summary

Introduction

Like most other state and local governments throughout the country, the District of Columbia, the nation's capital, faces significant challenges in maintaining its critical infrastructure. Investing in existing, and building new infrastructure are crucial to the quality of life and economic prosperity of any jurisdiction. To that end, the District plans to fund approximately $12.04 billion of its highest-priority capital projects over the FY 2025-2030 capital planning period, with approximately $8.15 billion funded by the sale of municipal bonds (debt financing). However, the overall need for new facilities or asset maintenance in the District far exceeds this funding level. The District has limits on its borrowing capacity and other available resources and must strike an appropriate balance between funding its on-going operations and investing in capital assets.

Funding of Unmet Needs

This Long-Range Capital Financial Plan report shows that the District can address all deferred maintenance and unmet capital needs as early as 2033. To achieve this ambitious goal, the District must commit to borrowing up to its statutory maximum level of debt service, which is 12% of general fund expenditures and to increase pay-as-you-go (or cash) funding for capital to an amount averaging roughly 4.5% or more of general fund expenditures. Additionally, to meet this timeline, the District must commit to prioritizing funding of existing unmet capital needs over any additional new capital projects.

CARSS

The District is unique in its role as a city, state, county, and school district and has the responsibility to fund infrastructure for all these functions. A team of subject matter experts throughout the District developed a comprehensive asset management planning system to better understand the costs to maintain its assets in a state of good repair. The Capital Asset Replacement Scheduling System (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?*

CARSS is now generally recognized as the most comprehensive and detailed capital asset management system of any city or state government in the country.

Total Capital Funding Gap

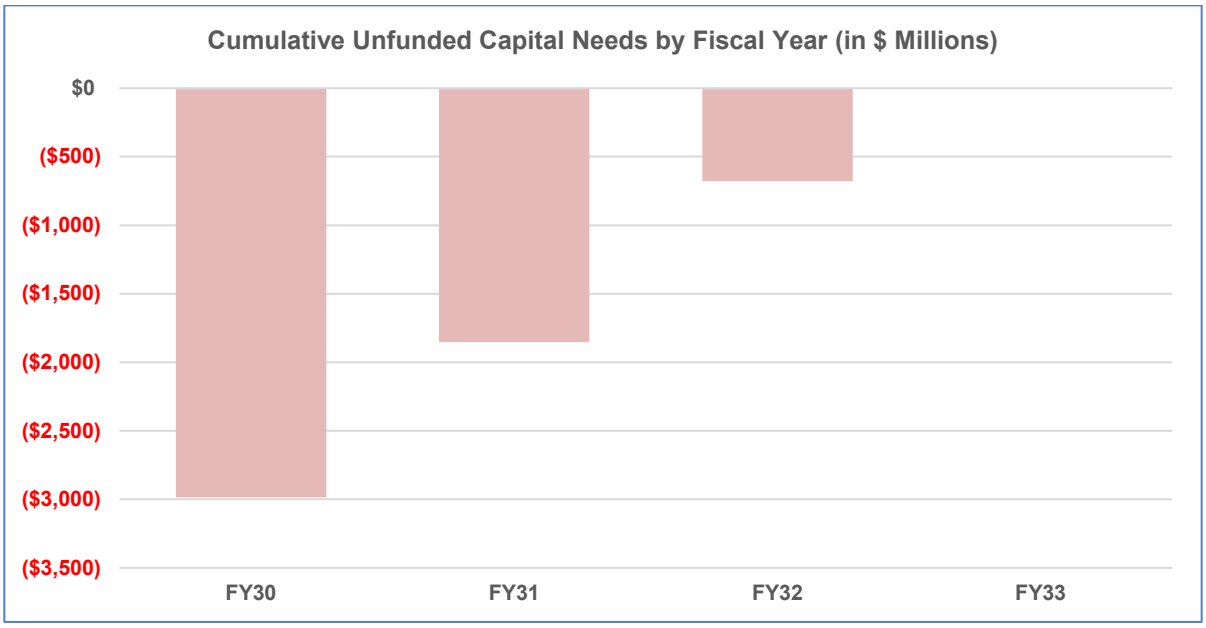
In addition to CARSS, the District developed a long-range financial forecasting model. This model can determine the optimal capital funding mix, within certain financial constraints, including debt capacity, pay-as-you-go (paygo) or cash funding, as well as federal or other grant funding. The model determines the amount of available funding for the 6-year Capital Improvements Plan (CIP) and helps to determine which capital projects the District cannot afford during that timeframe. In addition to analyzing traditional methods of funding, capital projects were also analyzed to determine where the private sector may assist in addressing future infrastructure challenges through non-traditional funding, such as public-private partnerships.

The District can fund roughly $12.04 billion of its highest-priority capital needs in its FY 2025-2030 CIP. However, the CARSS analysis identified approximately $2.99 billion of unmet capital needs during that same period, which is lower than outlined in the 2023 report. The $2.99 billion equates to approximately $498 million per year on average, or roughly 4.3% of the District's FY 2025 Local Fund revenues.

Over the last several years, the District has made significant progress in addressing its unmet capital needs and deferred maintenance for several reasons, including increased capital budgets that focus on unfunded needs, as well as the District's recovery from the economic contraction caused by the Covid-19 pandemic. Additionally, the District received significant funding from federal COVID relief programs, a large portion of which has and will be used to fund capital projects. As an example, among the capital needs that were addressed in the last budget cycle, the District's new Correctional Facility received full funding after the project scope was adjusted and an additional $463 million was granted. Another large decrease of $219 million of unmet needs was realized in the horizontal infrastructure category for roads and bridges. The category includes two fully funded bridge rehabilitation projects, namely the Theodore Roosevelt Bridge ($151 million) and Benning Road ($110 million).

Long-Term Funding Solutions

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. Under this law, the amount of additional paygo funding for capital increases annually from a base year in 2020, until it eventually reaches a level equal to annual additions to total accumulated depreciation as reported in the District's Annual Comprehensive Financial Report. Over the 15-year period studied in this report, paygo transfers for capital, including those amounts dedicated to WMATA, would average approximately $525 million annually. Total funding received from the Infrastructure Investment and Jobs Act (IIJA) amounts to $1.38 billion in aggregate in FY2025 and FY2026, an average of $693 million per year. Given the substantially higher projected paygo funding and the full utilization of its borrowing capacity, coupled with significant federal funding, the District could fund all existing unmet capital needs and address all its deferred maintenance as early as 2033.



Challenges and Risks

There is currently a great deal of uncertainty in both the national and local economic outlooks that could affect the District's ability to address its unmet capital needs within the timeline outlined in this plan. Although the Federal Reserve has recently eased its monetary policy with a reduction in interest rates, the prospect of an economic recession still exists. Additional risks include a cooling labor market, volatile levels or the resurfacing of inflation, slower than expected decrease in interest rates by the Federal Reserve, a potential federal government shutdown, and policy uncertainty related to the US national elections that could disrupt the local economy. District-specific risks affecting especially the office real estate market and property values include continued high or increased levels of remote work, an accelerated decline in federal employment, and stalled population recovery. Additionally, as WMATA

faces a potential budgetary shortfall, possible service reductions could negatively affect ridership, and further decrease revenues, which could result in negative repercussions for the local economy. These challenges could also create the need to provide additional programs and services to impacted residents. As budgets become more constrained due to slower growth in revenues, the District will have to carefully balance its commitment to increase paygo funding levels annually with increasing needs for funding operational requirements to support residents.

Conclusion
This report outlines a plan, that if executed, would allow the District to meet all its unmet capital needs and deferred maintenance within a decade. Simply stated, if the District commits approximately 16.5% of its general fund revenues to its capital needs (12% for debt service and 4.5% for paygo), and the remaining 83.5% to operations and programs, its infrastructure will be amongst the best maintained of any city or state in America.

3. Capital Funding Gap during the CIP Period

The CARSS model determined that the total capital infrastructure needs of the District, as identified in the FY 2025-2030 CIP budget formulation, is approximately $15.03 billion. The District has identified approximately $12.04 billion of funding over the next six years, a mix of debt, paygo capital, federal loans and grants, and other resources, in its capital budget for the highest-priority capital projects. The remaining capital infrastructure funding shortfall of approximately $2.99 billion over the 6-year CIP period includes both capital projects as well as capital maintenance projects for existing assets.

The chart below shows the annual estimated funding needed, beyond what the District can afford during the current 6-year CIP, broken into the two categories of capital projects: capital maintenance projects (deferred maintenance) and new capital projects. The 6-year funding gap for capital maintenance projects averages $224 million annually and the funding gap for new capital projects is on average $274 million annually. Combined, the annual funding gap is approximately $498 million, equivalent to roughly 4.3% of total FY 2025 local fund revenues.

Table 1

Total Unfunded Capital Needs During the 6-Year CIP Period

(in $ Millions)

Fiscal Year	FY25	FY26	FY27	FY28	FY29	FY30	6-Year Total
Unfunded Capital Maintenance Projects	$121.8	$213.0	$203.3	$275.6	$275.6	$255.0	**$1,344.3**
Unfunded New Capital Projects	$174.2	$348.2	$373.6	$309.7	$145.4	$290.8	**$1,642.0**
Total Unfunded Capital Needs	**$296.0**	**$561.2**	**$576.9**	**$585.3**	**$421.0**	**$545.9**	**$2,986.3**

As shown 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 6-year CIP with current funding levels and sources. For example, the approximately $2.14 billion in unfunded facilities projects includes two very significant capital projects for the District: replacement of the Henry J. Daly building, which serves as the headquarters of the Metropolitan Police Department, and which received funding of $187 million with a current unmet need amount of $363 million; and secondly, a physical safety and security improvement initiative for the District's Public School System (DCPS) of approximately $146 million. In terms of the District's modernization efforts, the Fire and Emergency Medical Services Department (FEMS) reported a funding gap for the electrification of vehicles of around $115 million, mainly for medium and heavy-duty vehicles to form an EV fleet.

Table 2

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

Fiscal Year	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total
IT Projects & Systems							
Capital Maintenance Projects	2.9	23.2	25.6	21.3	15.1	17.1	**105.3**
New Capital Projects	22.9	20.8	14.7	4.3	1.2	1.6	**65.5**
Total	**25.8**	**44.0**	**40.2**	**25.6**	**16.3**	**18.7**	**170.7**
Equipment & Regulatory							
Capital Maintenance Projects	6.8	7.4	7.6	4.6	4.6	4.7	**35.8**
New Capital Projects	3.4	-	3.4	-	-	-	**6.8**
Total	**10.2**	**7.4**	**11.0**	**4.6**	**4.6**	**4.7**	**42.6**
Fleet							
Capital Maintenance Projects	8.5	51.8	54.5	59.9	110.0	116.3	**400.9**
New Capital Projects	-	-	-	-	-	-	**-**
Total	**8.5**	**51.8**	**54.5**	**59.9**	**110.0**	**116.3**	**400.9**
Horizontal Infrastructure							
Capital Maintenance Projects	4.0	16.4	17.0	84.1	52.5	57.7	**231.7**
New Capital Projects	0.4	-	-	-	-	-	**0.4**
Total	**4.4**	**16.4**	**17.0**	**84.1**	**52.5**	**57.7**	**232.1**
Facilities							
Capital Maintenance Projects	99.6	114.2	98.7	105.7	93.3	59.2	**570.7**
New Capital Projects	147.4	327.4	355.5	305.4	144.3	289.2	**1,569.3**
Total	**247.0**	**441.6**	**454.2**	**411.1**	**237.6**	**348.4**	**2,140.0**
Grand Total	**296.0**	**561.2**	**576.9**	**585.3**	**421.0**	**545.9**	**2,986.3**

It is important to note that the Long-Range Capital Financial Plan analysis incorporates inflation assumptions in line with market expectations, especially in the short- and medium-terms. The costs of deferred capital projects beyond the 6-year CIP period continue to grow in the long-run at 3% annually until those projects are funded. In addition, CARSS incorporates cost curves for various assets in the database to measure the cost of repair or replacement more accurately 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 established metrics of useful life of those assets, CARSS inflates the purchase price of those vehicles to reflect the likely higher cost of purchasing those assets later than the time recommended in the model. Finally, operating costs are also incorporated into CARSS as part of the overall outlook of asset health. Hence, if capital maintenance or asset replacement is delayed beyond what is prescribed in CARSS, annual operating and maintenance costs for that asset are escalated in subsequent years until the repair or replacement is completed.

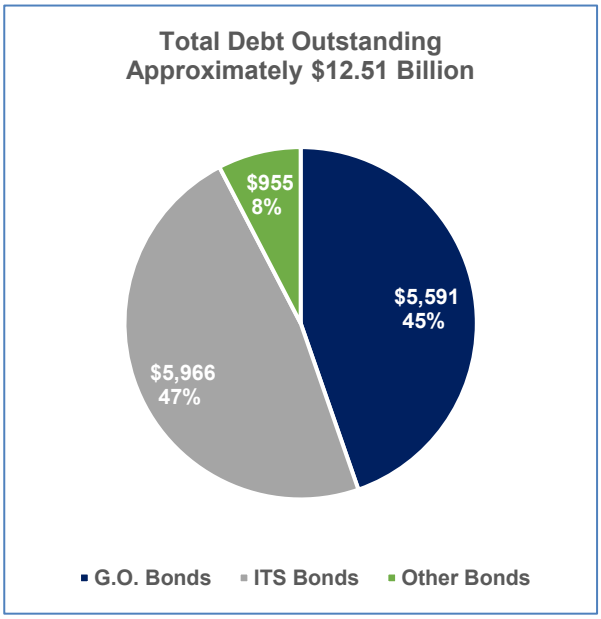
4. Funding Sources and Solutions

The District has traditionally relied on debt financing as the primary source of funding of capital infrastructure investments consistent with most other state and local governments throughout the nation. The District additionally incorporates a variety of other 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, and the sale of assets as well as other municipal sources of revenue.

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, 2024, the District has approximately $12.51 billion of total outstanding debt, of which roughly $11.56 billion (or approximately 92%) are either G.O. bonds or ITS bonds.

Figure 1



While G.O. and ITS bonds will remain a key source of funds for infrastructure investments into the future, the District will need to continue to ensure that the total debt burden remains at a sustainable level. The District's debt must be structured in such a way as to maintain its strong credit ratings, which for the ITS bonds recently received an upgrade to Aaa from Moody's, thereby keeping the overall cost of borrowing as low as possible. The District's revenues have rebounded from the Covid-19 pandemic and revenue growth is projected to grow slightly above the rate of inflation. At the same time, the District anticipates increasing its outstanding debt by approximately 65%, or an additional $8.15 billion in additional G.O. or ITS bonds over the next six years, to support its capital improvements plan.

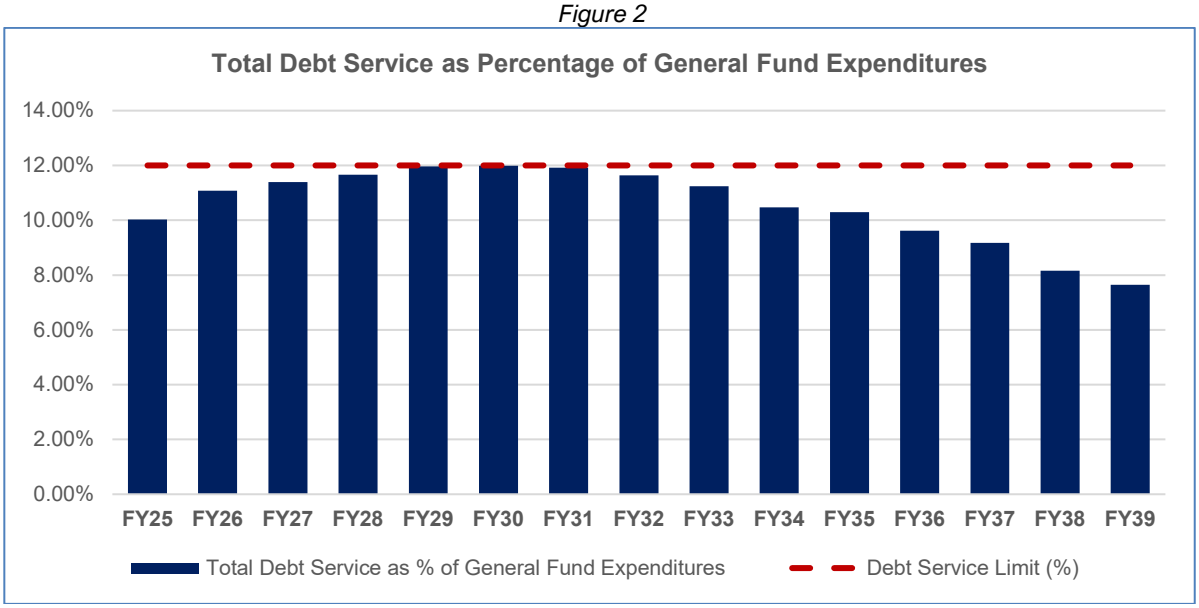
Debt Capacity Limitations

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, S&P, and Fitch Ratings, respectively), as well as on its Income Tax Secured Revenue bonds (Aaa/AAA/AA+ from Moody's, S&P, and Fitch Ratings, respectively). **The District's credit ratings are amongst the highest of any state or local government in the country.**

The OCFO calculates annual debt service as a percentage of projected general fund expenditures during the current CIP period, in 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 2025-2030 CIP. It is important to note that the chart does not reflect the impact of future debt refinancings or restructurings, which are likely to lower the debt service reflected in the graph below and increase future borrowing capacity for the District.

While the 12% statutory debt limit is on the higher end as compared to other state and local governments across the country, it 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.

Figure 2



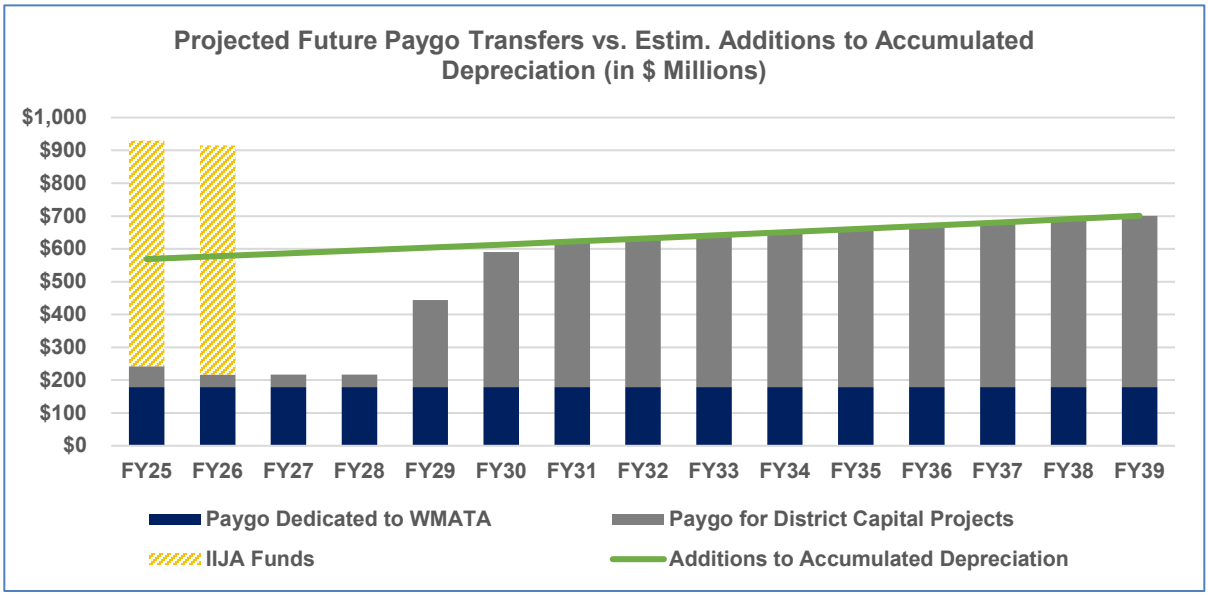
Paygo Funding Mechanism Through Legislative Action

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 cash 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 a 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. 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 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, to not exceed annual additions to total accumulated depreciation as reported in the District's most recent Annual Comprehensive Financial Report (ACFR). The District receives funding from the Infrastructure Investment and Jobs Act (IIJA), enacted into law in 2021, of $687 million and $698 million in FY 2025 and FY 2026 respectively, or a total of $1.38 billion. This substantial amount of additional federal funding for infrastructure is planned to be used to supplement local funds to further address the District's unmet capital needs. As an example of how significantly paygo funding for capital has grown, the adopted FY 2025 budget includes total paygo funding for capital, including amounts dedicated to WMATA, of roughly $242 million plus IIJA Funds of $687 million, for a total of $929 million in FY 2025 alone. This is approximately $723 million more than legislatively required. Additionally, over the 6-year CIP period, projected paygo transfers to the capital budget total $1.93 billion excluding IIJA Funds. The total aggregate amount of paygo funding over the entire 6-year CIP period exceeds the legislative minimum by roughly $130 million, when including IIJA Funds.

As shown in the following graph, under the approved legislation, future local funds transfers to the CIP for paygo, including both the amounts dedicated to WMATA and the amounts for the District's capital projects, would be almost equivalent to additions to total accumulated depreciation in FY2030 and reach that number by FY2031. At this point the calculation to determine future local funds transfers would be capped at the amount reported for additions to total accumulated depreciation of capital assets.

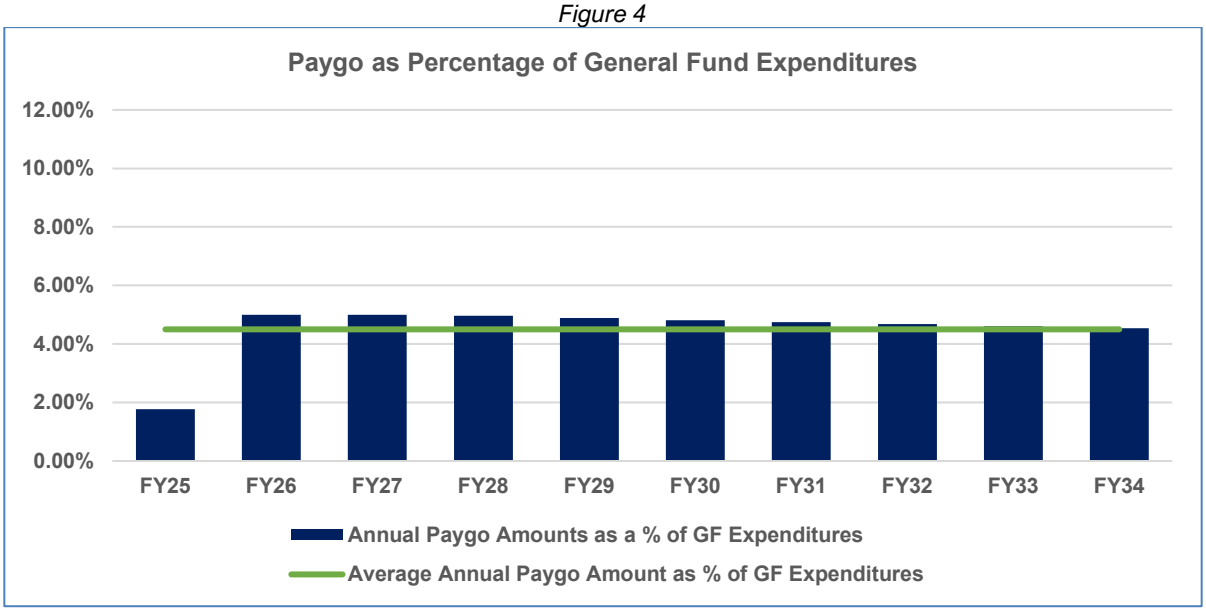
Figure 3[1]



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 represents a relatively small part of the local funds portion of the District's general fund budget. As seen in the following graph, the annual amount of local funds transfers of paygo for capital averages 4.5% of the local funds portion of total general fund expenditures between fiscal year 2025 and fiscal year 2033, which is the earliest time by which all unmet capital needs could be funded.

[1] Estimates based on additions to total accumulated depreciation of capital assets as per the ACFR: $552M in FY2023. While GASB 87 includes amortization of capital leases in the calculation of total depreciation & amortization, District legislation only includes depreciation. Therefore, amortization of capital leases is excluded from the calculation of total depreciation for this purpose.

Figure 4



Allocating this level of additional paygo funding is not without challenges, as the growth of local revenues is not projected to grow at the pace of other programmatic needs. Capital projects compete for funding with programmatic priorities such as affordable housing, homeless services, and the general growth and expansion of services for residents. However, properly maintained equipment and facilities will, in the long term, result in lower life-cycle costs and increased resources for other District programs. Federal funding from the IIJA should help to offset the slowing of local revenue growth and to address the District's unfunded capital needs. As stated previously, the District expects to receive approximately $687 million and $698 million per year in FY2025 and FY2026, respectively from the Infrastructure Investment and Job Act. The additional fundings will help to maintain and expand the existing asset base and cope with the increasing strains on the District's infrastructure.

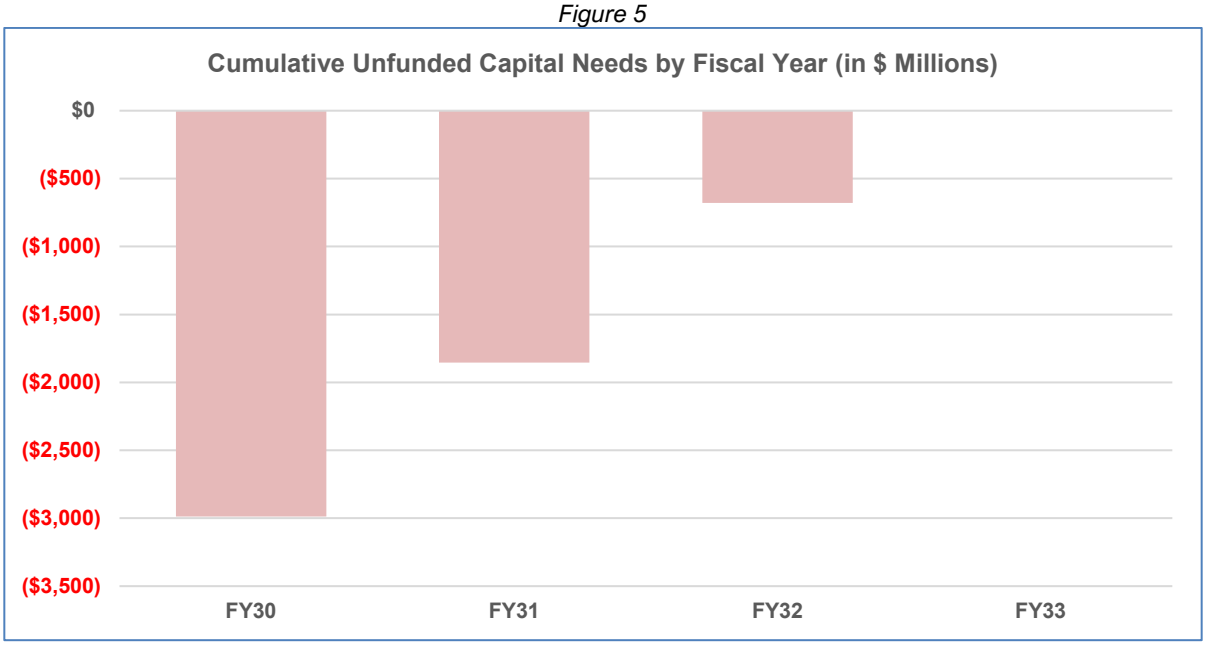
Also, District legislation requires that once the Emergency, Contingency, Fiscal Stabilization, and Cash Flow Reserves are fully funded, 50% of all surpluses in a given fiscal year are to be committed to paygo funding. This additional funding, if not reallocate, should further assist the District in achieving paygo levels that support ongoing capital asset maintenance.

Funding Solutions

The District's long-range financial planning model incorporated both the projected amounts of additional paygo funding, as discussed earlier, and maximized the amount of borrowing for capital, all while staying below the District's statutory debt limits. Given these projected amounts of paygo funding for capital, and maximizing 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 as early as FY 2033. 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 $2.99 billion of capital needs not funded in the 6-year CIP could be funded as early as 2033 with paygo levels increasing to 4.5% of the general fund budget and borrowing up to the 12% statutory debt capacity limit if no additional capital projects are added before addressing currently identified unmet needs. Funding of the gap could be further accelerated through additional resources, such as increased federal funding or greater use of non-traditional funding structures, such as public-private partnerships.

The following graph illustrates the unfunded capital needs, meaning those capital needs not funded as part of the FY 2025-2030 CIP, identified in this 2024 report. Those unmet capital needs, which grow to slightly more than $2.99 billion through FY 2030, begin to be paid down starting in FY 2030, assuming no new additional capital projects are added to the CIP before addressing these identified unmet needs. The analysis that supports unmet needs being funded as early as 2033 relies on two important assumptions: 1) unmet capital needs identified in this report are prioritized in the years beyond the current CIP period over the addition of new capital projects, and 2) that most of the bonding capacity available outside of the current CIP is targeted at funding these unmet capital needs. In FY2024, the District's capital budget was split roughly 49% to address existing capital needs, or deferred maintenance, and 51% to new capital projects to support growth. If the District were to maintain such a split in its future capital budgets outside of the current CIP, it would extend the time frame to "catch up" with all the identified unmet capital needs by several years. In addition, if revenues were to fall, or grow at a slower pace than currently anticipated, the time that it would take to fund all the District's unmet capital needs would likely be extended by several years as well.

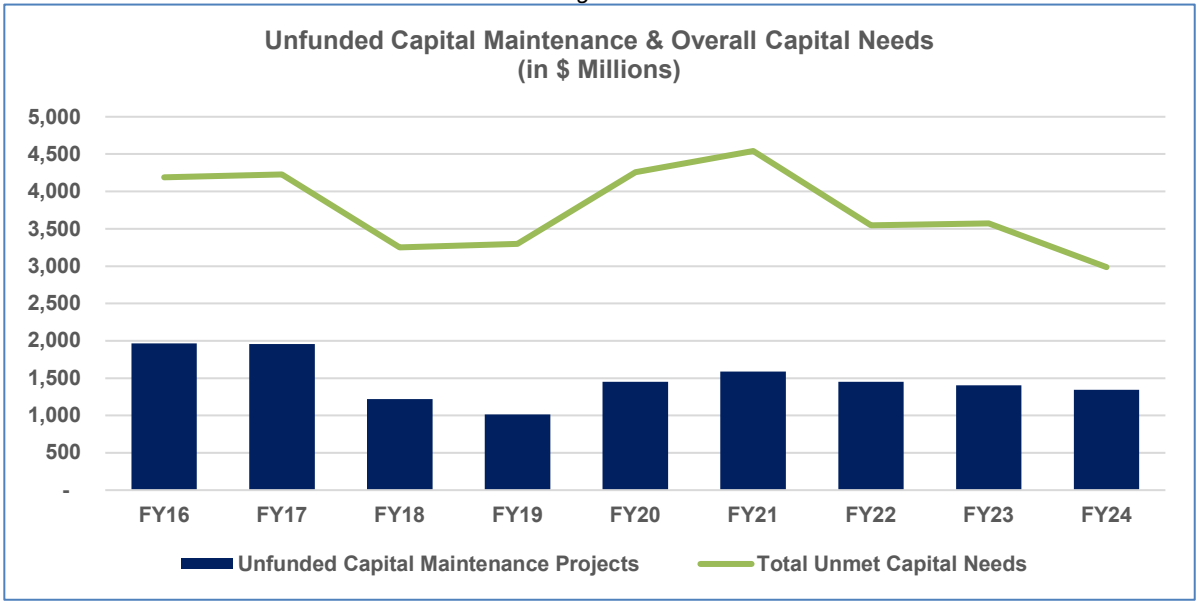
Figure 5



Progress in Addressing Unfunded Capital Needs

Since the first Long-Range Capital Financial Plan report was produced, the District's capital budgets have grown from approximately $6.30 billion in 2016 to roughly $12.04 billion in 2024, with an increasing focus on addressing unmet capital needs, especially deferred maintenance of existing assets. As can be seen in the following graph, the amount of identified unfunded capital needs steadily decreased until the onset of the recession in 2020 brought about by the coronavirus pandemic. This year's report identified total unmet capital funding needs of approximately $2.99 billion, an amount below the $3.57 billion identified in last year's report. The District can address these unfunded needs in a reasonable amount of time due in large part to the strength and resilience of the District's economy, comparatively low borrowing costs due to strong credit ratings, refinancing existing debt whenever possible, and utilizing the debt service savings for additional borrowing capacity to support the capital budget. These factors will allow the District to address its unmet capital needs in less than a decade.

Figure 6



As illustrated in the chart above, unfunded capital maintenance needs, which serve as a proxy for deferred maintenance, had decreased 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 was a much greater emphasis on addressing those unmet capital maintenance needs beginning with the 2018 CIP, and those amounts declined significantly to just slightly more than $1 billion in 2019. Unmet capital maintenance needs began to rise in 2020 and 2021 due to capital maintenance project delays caused by the coronavirus pandemic. Capital funding increased in 2022, which brought down the level of both unfunded capital maintenance needs and total unmet needs from levels seen during the period of the Covid-19 pandemic. Even though the District faces several economic headwinds, the funding gap decreased in 2024, which demonstrates the District's continued commitment to addressing its capital needs.

Challenges to Achieving Timeline of Meeting Unfunded Capital Needs

While the analysis described in this report indicates that the District could fund all its unmet capital needs as early as 2033, it is important to note that there are several challenges that may impact the viability of that timeline. The OCFO released its most recent quarterly revenue estimate on September 30, 2024, and the outlook for FY 2025 and beyond remains cautious due to a variety of risks that could affect the national and local economies including a softening labor market, a weakening commercial property market, and an anticipated decline in consumer spending as excess savings accumulated during the pandemic are exhausted.

While overall, the District's economy has proved more resilient than previously forecasted, revenue is projected to end the fiscal year largely flat. In the out-years, slower economic growth and a weakening real estate market offset the impact of near-term strength. Finally, an uncertain economic outlook, and the resulting slowing of revenue growth, will likely increase the inherent competition between programmatic and capital spending. Future decisions regarding these allocations could have a material impact on the District's ability to meet the timeline outlined in this report to fund all its deferred maintenance and unmet capital needs.

Non-Traditional Funding Approaches (Public-Private Partnerships or P3s)

The District continues to explore alternative funding methods, where appropriate, such as public-private partnerships (P3s). P3s potentially unlock additional private sources of funding that could supplement the District's more traditional tools for funding infrastructure. While P3s have their benefits and drawbacks, the fact that the District has a detailed asset registry and a thorough knowledge of all its assets,

makes it possible to better assess which assets might be good candidates for utilizing a P3 structure. 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), as well as with the Office of the Deputy Mayor for Planning and Economic Development (DMPED), over the past several years to identify projects better suited for this source of funding.

5. Summary and Conclusions

The District has made significant progress in addressing its deferred maintenance needs although there is still work to be done. Through an increased focus on funding maintenance of existing assets, such as roads and sidewalks in the capital budgets, the amount of identified deferred maintenance has been reduced by roughly 32% from the amount identified in the initial Long-Range Capital Financial Plan report in 2016.

The credit rating agencies have taken note of the District's aggressive approach to identifying and addressing its deferred maintenance and critical infrastructure needs and cited it as one of the key factors in the ratings upgrades earned by the District in 2018. It is, therefore, important to continue to make demonstrable progress in addressing the city's critical infrastructure needs. Potential use of non-traditional funding and project delivery approaches, such as public-private partnerships and asset re-cycling initiatives, should be prudently pursued to provide additional sources of funding for other critical capital projects that might be outside the scope of available funding in the District's CIP.

This report outlines that if the District commits to borrowing up to its statutory maximum level of 12% of general fund expenditures, as well as commits to increase pay-as-you-go (or cash) funding for capital to an amount averaging 4.5% of the general fund budget, it can fund all deferred maintenance and new capital needs by as early as 2033. In other words, if 16.5% of the District's budget is committed to capital, with the remaining 83.5% spent on operations and programs, the District can have amongst the best funded and maintained infrastructure of any state or local government in the nation.

PART II: HISTORY AND BACKGROUND

1. Purpose of the Report

As part of the Fiscal Year 2015 Budget Support Act, the Council of the District of Columbia 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 that includes capital asset replacement needs. This report also satisfies an initiative included in the OCFO's strategic plan 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 includes an asset registry of all District-owned assets and detailed information on the condition of those assets.

This report is intended to assist the Mayor, Council, other policymakers, and the public in understanding the size and scope of the District's capital infrastructure funding gap during the current Capital Improvement Plan (CIP) period and beyond, as well as to provide a funding solution through the development of a long-range capital financial plan. The development of CARSS allows the District to have a truly data-driven and transparent CIP process that informs policymakers of the true costs of maintaining the District's current assets and the costs of deferring maintenance, and thus, supports better decision making. The Long-Range Capital Financial Plan provides a roadmap to address all identified capital needs that the District cannot afford during the CIP period within a reasonable timeframe.

This update to the Long-Range Capital Financial Plan report assumes that the District commits to borrowing up to its statutory maximum level of 12% of general fund expenses, as well as commits to increasing pay-as-you-go (or cash) funding for capital to a level averaging 4.5% of general fund expenses, to fund all identified deferred maintenance and currently identified, new capital needs.

2. CARSS: The District's Approach to Asset Management

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 the District's assets. This was accomplished through the development of the 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 for asset management, as well as concepts outlined in a 2015 report from the Institute of Asset Management (IAM) titled, Asset Management – an Anatomy (version 3). While the District is not seeking, at this time, to have CARSS certified as ISO 55000 compliant, the various personnel involved with CARSS, including the CARSS project manager, have been formally trained, tested, and certified as ISO 55000 professionals. The team involved with managing the CARSS program continues to use the ISO 55000 and IAM concepts and principles as guidelines as it further refines, and continues 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 6-year CIP period. A separate long-range financial modeling tool is used to address the fourth question and identify a solution to fund the identified 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 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 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 (FCAs) on all municipal buildings, as well as other assets. These condition assessments were expected to be completed in fiscal year 2020, however the Covid-19 pandemic, and other factors, have delayed their completion. DGS and their contractor have made significant progress in performing FCAs on District-owned facilities. As an example, during fiscal years 2022, 2023 and 2024, 191 FCAs were completed equating to almost 19 million square feet of District-owned facilities. The goal of DGS is to perform FCAs on each District-owned facility at least once every three to five years. To date, approximately 76% of District-owned facilities have been assessed at least once. The OCFO continues to engage with DGS to complete these assessments as soon as possible. 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 assets has allowed the District to have a much more precise idea of 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 and underlying 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. This ranking largely determined the capital projects that were included in the 6-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

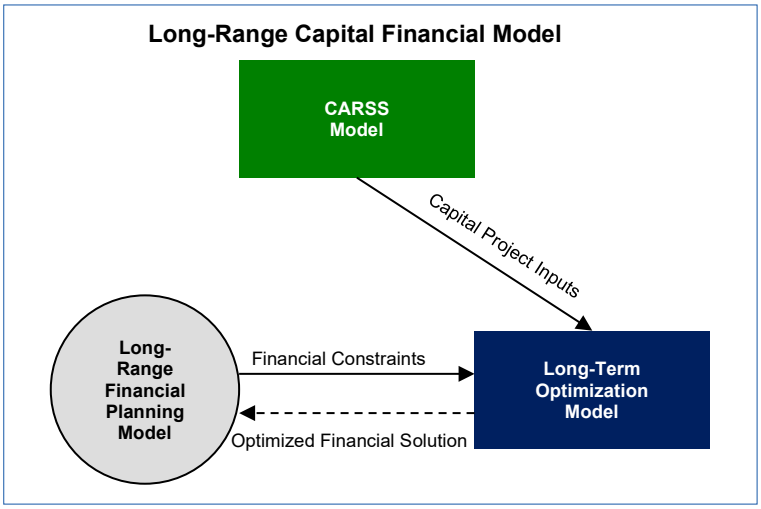
Finally, the OCFO created a separate long-term capital financial plan model that incorporated the District's outstanding debt, along with anticipated future borrowings, all while remaining compliant with the District's federal and local statutory debt limitations. The model further incorporated certain 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 identified available funding outside of the current CIP to address unmet capital needs in the shortest possible time 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.

3. Developing Long-Term Funding Solutions

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 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 a combination of three discreet models that work together to identify the optimal financial result. The long-range capital financial model is comprised of CARSS, a Long-Range Financial Planning model, and a Long-Term Optimization model. A diagram of how the long-range capital financial model works is shown on the right. A more detailed description of the model, and its various components and assumptions can be found in *Appendix D*.

Figure 7



CARSS was used to prioritize, score, and rank all 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 imported into the Long-Term Optimization model, along with certain debt and resource 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 Long-Term Optimization model is then exported back into the Long-Range Financial Planning model to present a complete long-term capital financing plan for the District over the 15-year forecast period.

The model also allows the District to optimize and project the maximum amount of debt that can be issued in each fiscal year (to stay under the 12% debt service 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 depending upon various constraints, most notably on the amount of paygo dedicated to capital.

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*.

Appendix A: Approach to Developing CARSS & Highlights of the FY25-30 Analysis

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 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 that was created by the District in conjunction with our software solutions partners at PowerPlan. In 2021, the District partnered with Arcadis Gen as the District's new software solutions provider for CARSS. The buildout of the new software system supported by Arcadis Gen was completed in the 1st quarter of FY 2023.

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, Asset Management – an Anatomy *(version 3)*. 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 data warehouse, 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 data warehouse 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, 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 Microsoft Excel files.

[1] Government Finance Officers Association, Best Practice: Asset Maintenance and Replacement, approved by the GFOA Executive Board, March 2010, and updated October 2017. Retrieved from: https://www.gfoa.org/materials/capital-asset-management

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 existing 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.

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, along with some of the various types of attributes that are captured about each.

Figure 1

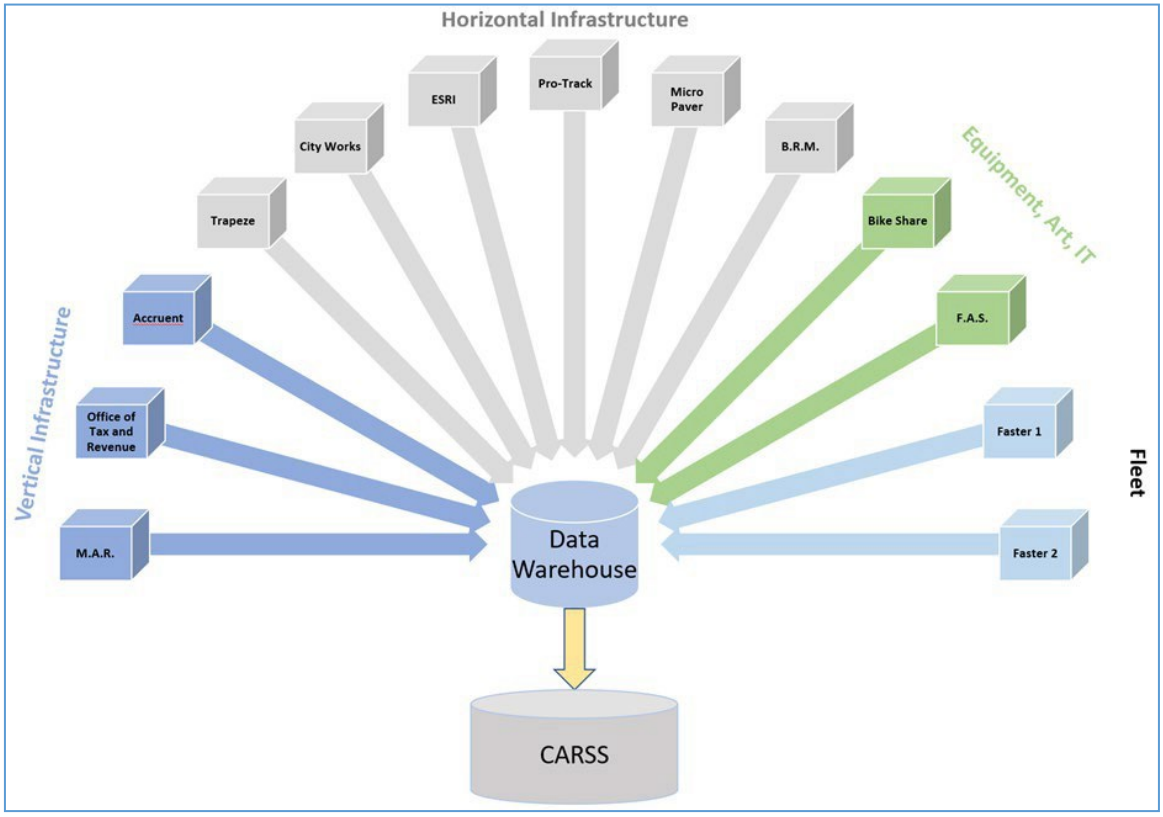
Asset Class	Asset Type	Asset Attributes
Horizontal Infrastructure	• Streets • Sidewalks • Alleys • Bridges	Length, Width, Age, Useful Life, Remaining Life, Current Condition, Name, Brick, Cement, Gravel, Asphalt.
Vertical Infrastructure	• General Support Facilities • School Facilities • Parks, Playgrounds, Athletic Fields • Public Libraries	Amenities, Substructure, Shell, Interior, Services, Equipment, Construction, SSL, Appraised Value, Assessed Value, Ward, ANC, Uniformat, Address, Lot Square Footage.
Fleet	• School Buses • Fire & EMS vehicles • Police Vehicles • Passenger Vehicles	VIN, License Plate, Make, Model, Year, Agency Owner, Useful Life, Current Age, Remaining Life, Maintenance Cost, Repair Cost, Warranty Cost, Milage, Engine Hours, Agency Owner.
Information Technology	• Computer Hardware • Software Purchase • IT Development • Communication Equipment	Communication Equipment, Audio Visual Equipment, date purchased, Purchase Amount, Replacement Cost, Location, Agency Owner.
Equipment and Art	• Bike Share • Equipment • Art • Furniture	Address, Count, Recreational Equipment, Laboratory Equipment, Fire Fighting Equipment, Communication Equipment, Machinery and Tools.

CARSS 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 using data from the already existing databases across all District agencies has been completed. Thirteen different databases from 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 Accruent that house facilities condition assessment data, amongst others. This information is refreshed on a weekly basis, and the data needed for asset planning and management are pulled into CARSS for further analysis, as is illustrated below.

Figure 2



The bottom-up approach has been used for all horizontal infrastructure and facilities, including building system components in the FY 2025-2030 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 into the impact of tradeoffs.

For the FY 2025-2030 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 its assets, except for equipment or fleet, which are not typically replaced at a component level. This approach synthesized the much greater level of detailed data now available on each of the District's assets into capital projects that correspond 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 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 represent all known capital needs of each agency. Those capital projects were then compared to the projects that actually received funding as part of the FY 2025-2030 CIP. The unfunded projects represent the extent of the District's capital infrastructure funding gap, as seen in the table below.

Figure 3: Infrastructure Funding Gap

Total Unfunded Capital Needs During the 6-Year CIP Period

(in $ Millions)

Fiscal Year	FY25	FY26	FY27	FY28	FY29	FY30	6-Year Total
Unfunded Capital Maintenance Projects	$121.8	$213.0	$203.3	$275.6	$275.6	$255.0	**$1,344.3**
Unfunded New Capital Projects	$174.2	$348.2	$373.6	$309.7	$145.4	$290.8	**$1,642.0**
Total Unfunded Capital Needs	**$296.0**	**$561.2**	**$576.9**	**$585.3**	**$421.0**	**$545.9**	**$2,986.3**

This more granular approach to asset data is only possible because of the comprehensive asset inventory that the District has built over the last several years. The table below *(Figure 4)* reflects all the District's assets, by category (horizontal infrastructure, facilities, etc.) that are captured in CARSS and their value as reflected in the 2023 Annual Comprehensive Financial Report.

Figure 4: Asset Inventory

Assets and Their Value in CARSS

	Number of Assets *	Percentage of Total Asset Classification	FY 2023 ACFR Book Value of Asset Type ($000) *	% of Assets Captured
Horizontal Infrastructure				
Ramps	564	100%	4,017,398	100.0%
Service Roads	124	100%		
Streets (blockkey)	36,262	100%		
Sidewalks (blockkey)	47,184	100%		
Trails	90	100%		
Alleys (blockkey)	9,578	100%		
Bridges	371	100%	246,489	100.0%
Bikeshare Terminals/Racks	290	100%	14,273	100.0%
Street Car Rail (Track Segments)	41	100%	228,195	100.0%
Total	**94,504**	**100.0%**	**$ 4,506,355**	**100.0%**
Facilities				
Buildings	642	100%	9,888,626	100.0%
Building Components	187,584	100%		
Amenities (Pools, courts, Playgrounds etc)	568	100%		
Total	**188,794**	**100.0%**	**$ 9,888,626**	**100.0%**
Equipment and IT				
Fleet	4,811	100%	621,321	100.0%
Boats/Ships	27	100%		
Aircraft	2	100%		
Circulator Buses	76	100%		
Street Cars	6	100%		
Street Car System Equipment	143	100%		
Equipment (>$5K)	8,963	100%		
IT and Furniture	9,569	100%		
Total	**23,597**	**100.0%**	**$ 621,321**	**100.0%**
Land				
Land (count by parcel)	**4,252**	**100%**	**$ 1,007,507**	**100.0%**
Grand Total **	**311,147**	**100.00%**	**$ 16,023,809**	**100.00%**

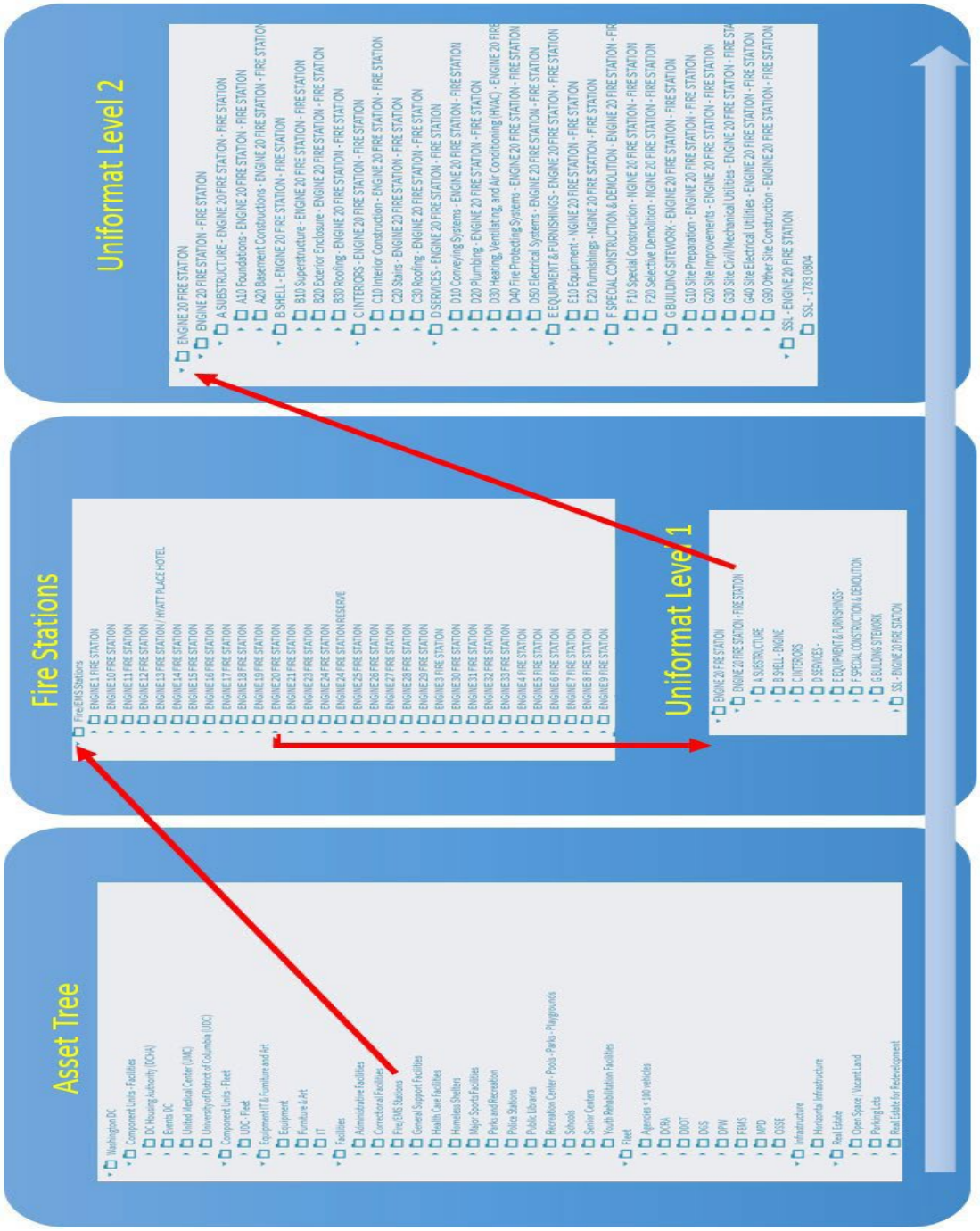
** Does not include construction in progress*

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

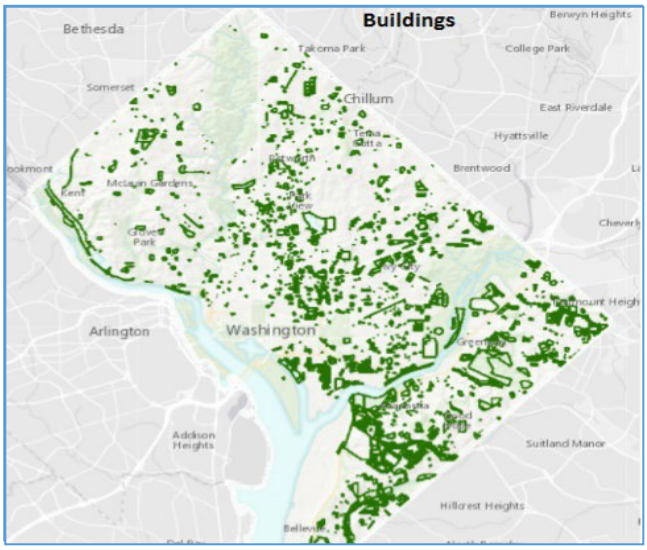
*** Streets & Sidewalks - Moved from street segments to a blockkey system

The “bottom up” 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 5)* shows a portion of the asset tree structure 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.

Figure 5: Asset Tree

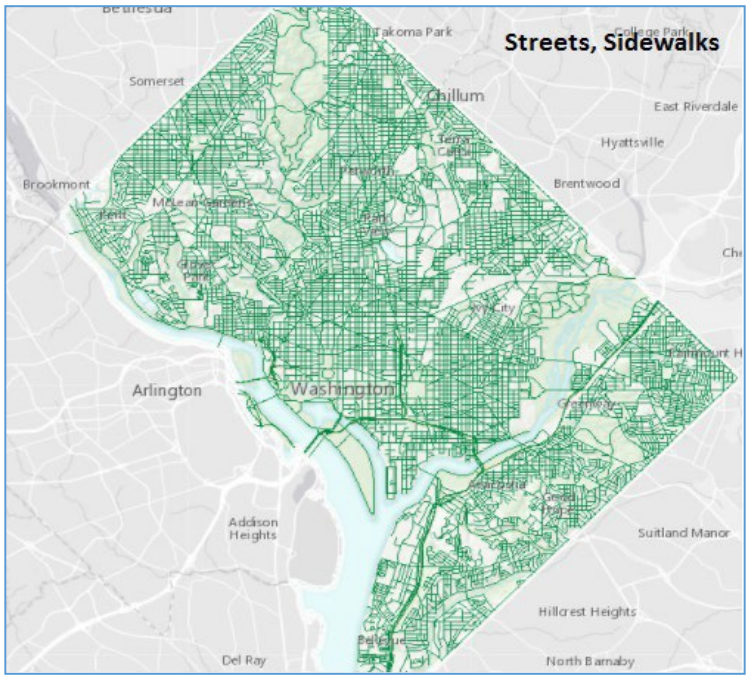


GIS Capability



Information on the more than 640 municipally owned buildings within the District has been captured in CARSS and displayed in the related GIS system (see image, left). 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 not up to date. DGS and its contractor have been performing facility condition assessments (FCAs) on all District- owned buildings, working towards a goal of assessing each of them at least once every 3 to 5 years.

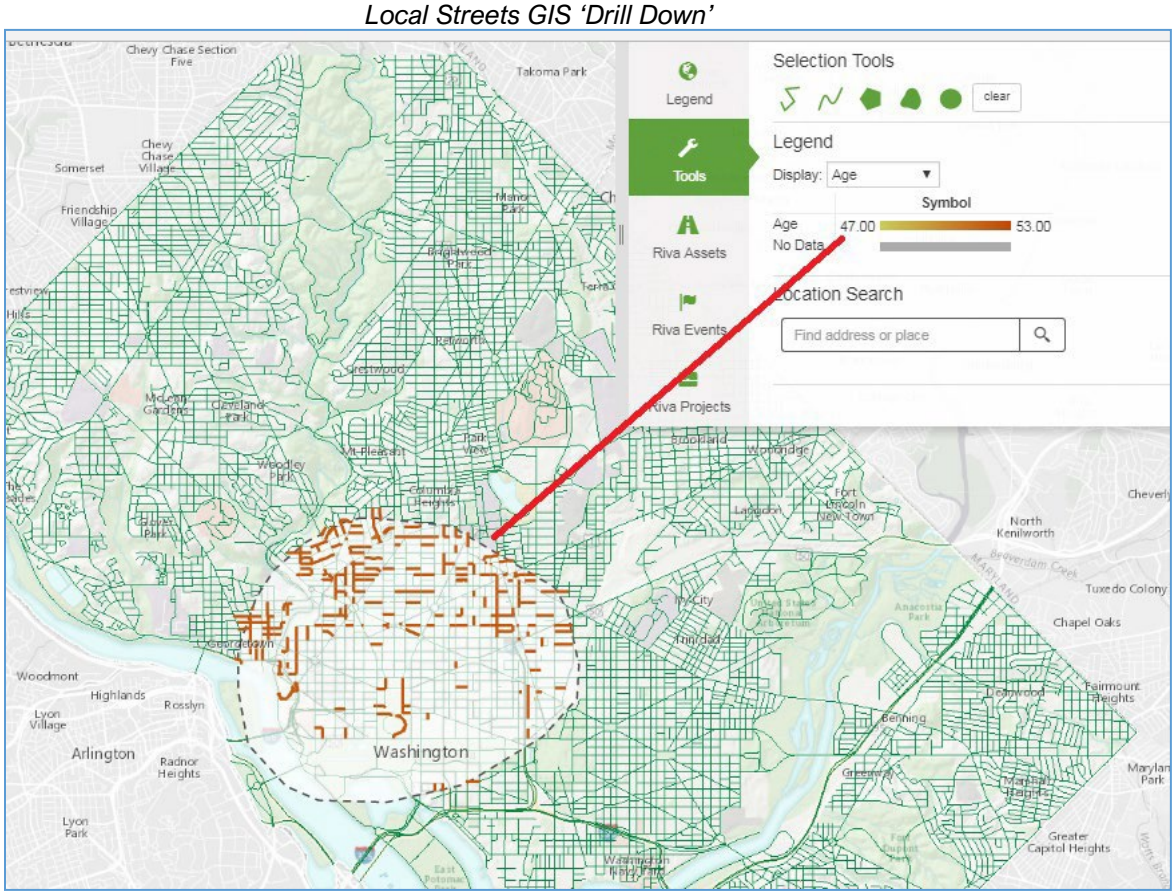
As an example, during fiscal years 2022 and 2023, DGS and its contractor completed 164 FCAs on approximately 16 million square feet of District-owned facilities. To date, approximately 75% of District facilities have been assessed at least once. The information from the FCAs is uploaded into the CARSS database, allowing for more accurate calculations of costs for repair and maintenance of 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 and the current inventory 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 a particular street and sidewalk segments. More specifically, as seen in the graphic below, there is now 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'



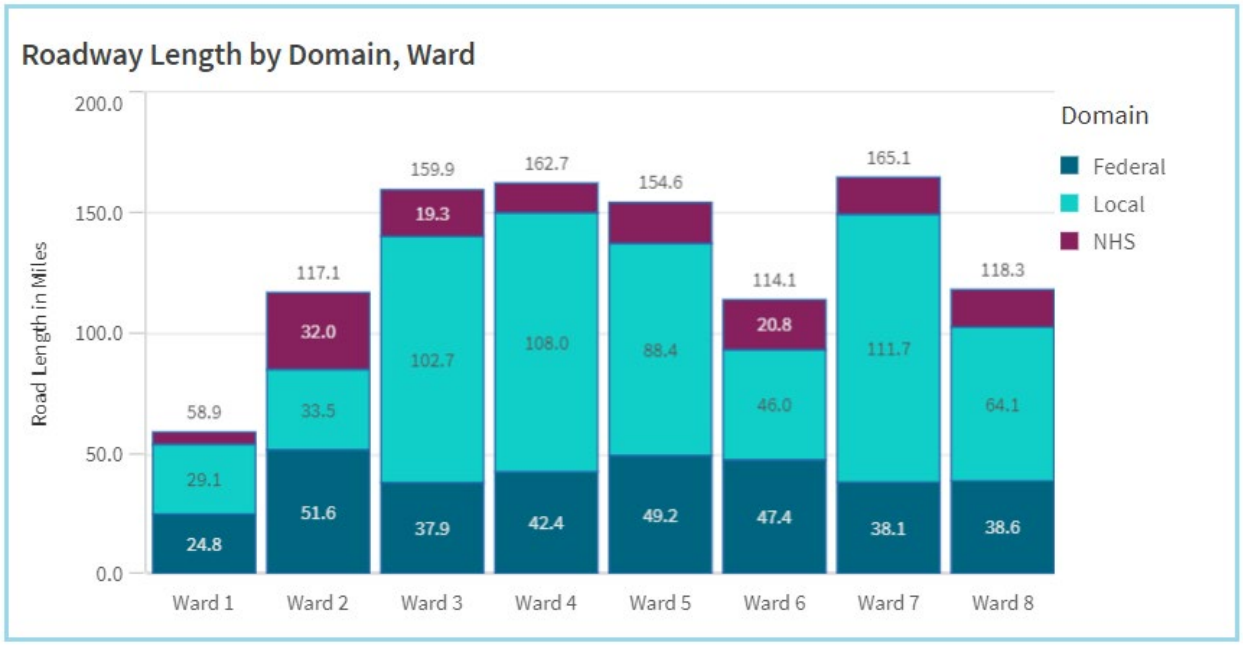
Enhanced Analytical Capabilities

CARSS data has been enhanced to allow more user-friendly analysis and the capability to "drill down" on any asset type to get 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 forecast capital needs more accurately for horizontal infrastructure. *Figure 6* on the next page reflects the current total miles of all local streets and roads in the District, by ward and *Figure 7* on the subsequent page shows the road surface details & replacement costs by ward.

Figure 6: Local Roads – Mileage per Ward



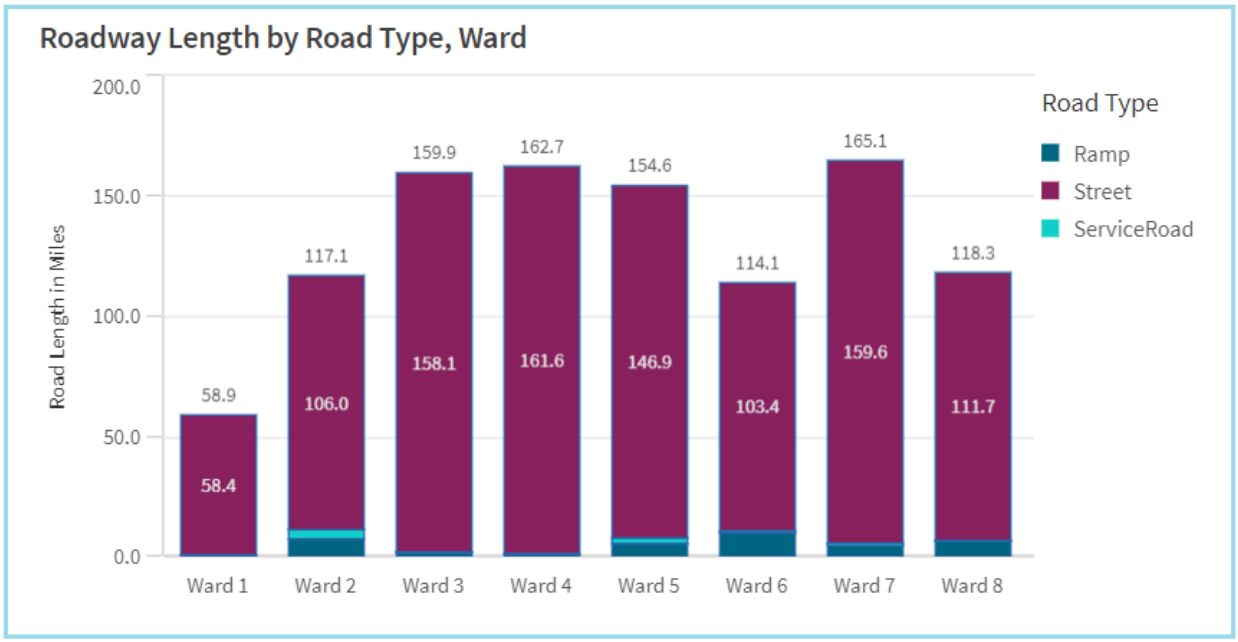


Figure 7: Road Surface Details & Replacement Costs

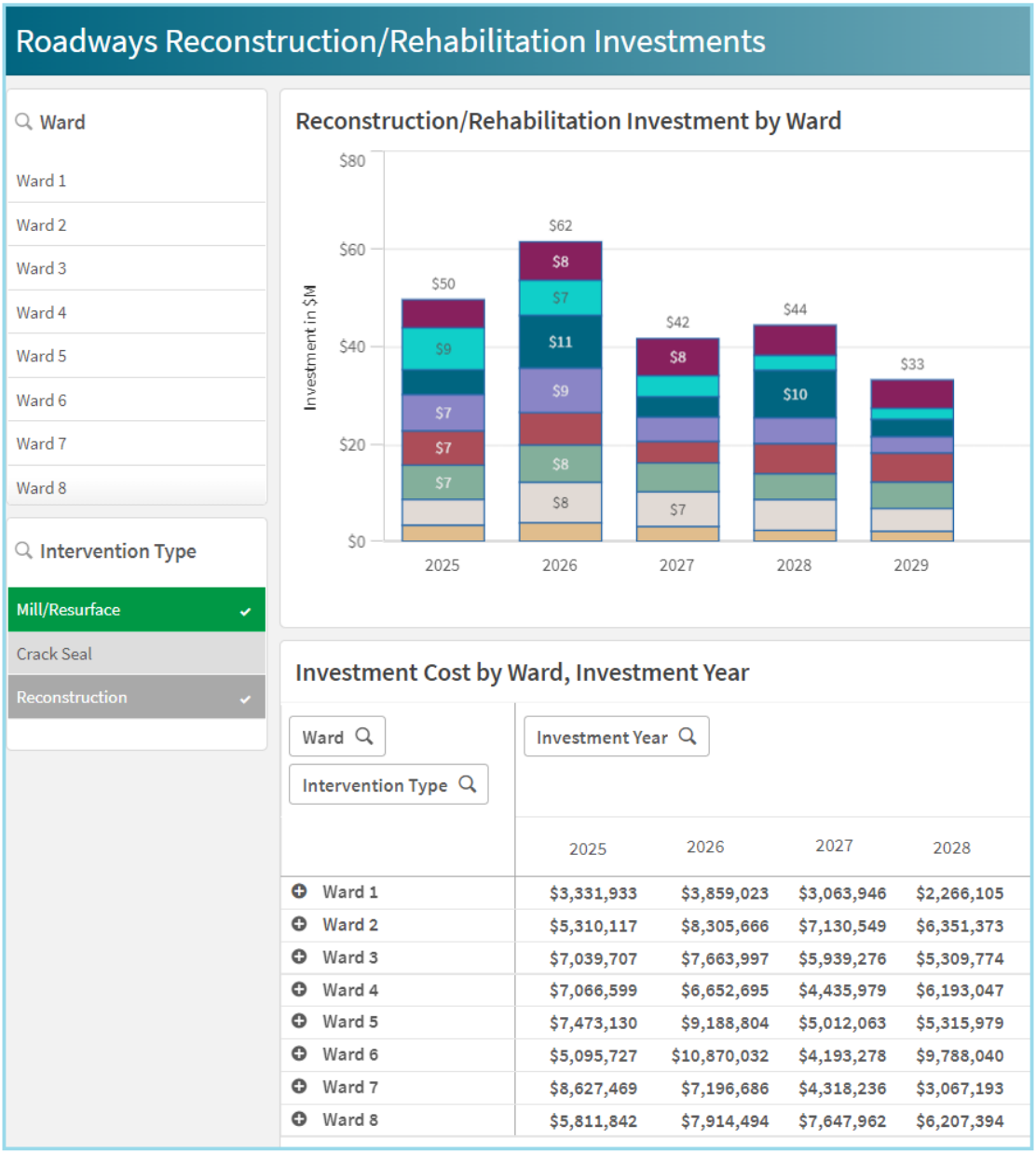
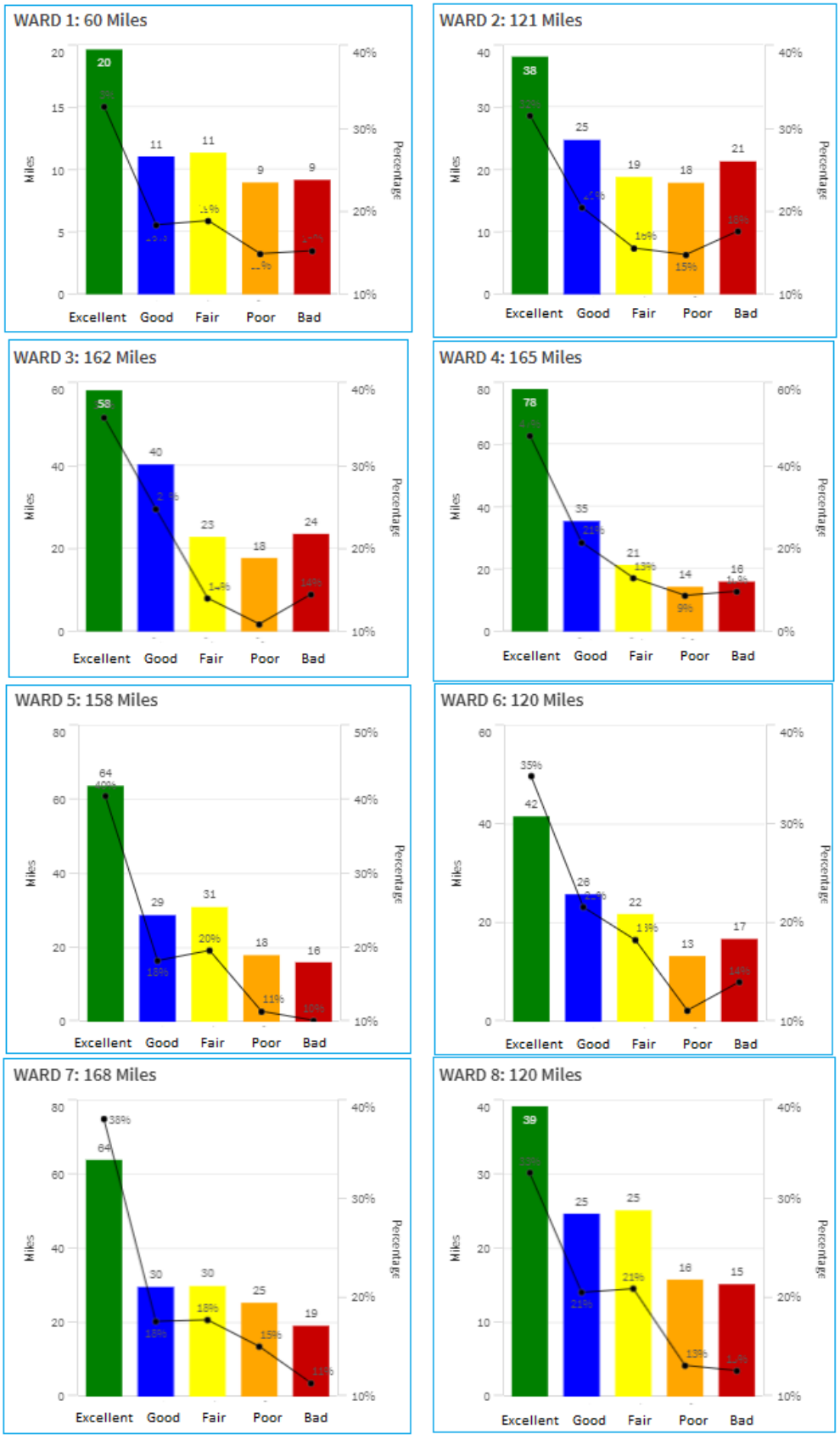


Figure 8 on the following page exhibits a further analysis by looking at the various road conditions by ward. The data is presented to show the miles of roads – by condition – for each of the 8 wards. This serves as a guideline to determine what roads need the most attention and the number of miles –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

Figure 8: Local Roads 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 is presented with a level of detail similar to the individual asset data for vehicles shown in *Figure 9* on page A-14.

Fleet "Drill Down"

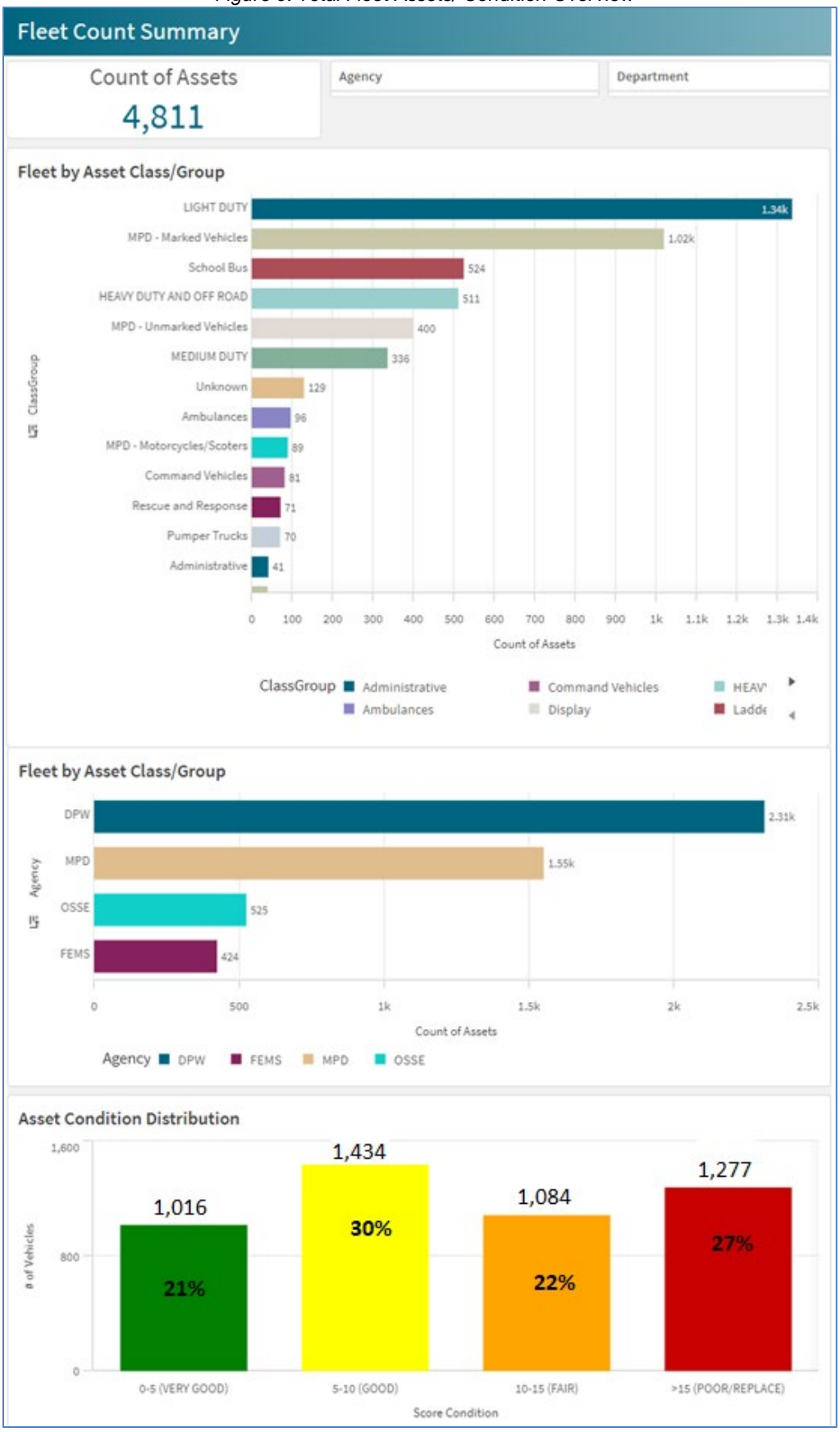
The District of Columbia maintains a fleet of 4,811 vehicles with a 6-year replacement cost of roughly $600 Million. The average maintenance costs amount to several hundred thousand dollars per year. It is advantageous to have a comprehensive, data-driven vehicle replacement strategy. A proactive lifecycle management approach for an entire fleet is achievable by tracking and analyzing the status of all vehicles. A vehicle replacement process is key to success and can be broken down into 2 essential steps:

1) Developing a feasible strategy
    a) Establishing an age or mileage criteria
    b) Defining a maintenance and repair cost threshold
    c) Defining lifecycle management
    d) Disposing of old fleet assets
2) Communicating the value effectively to stakeholders

The communication of information to decision makers is a critical part of creating a vehicle replacement plan. When viewing all 4,811 fleet assets through CARSS and our enhanced analytics tools, 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 MPD, DPW, OSSE, FEMS and DDOT. The chart on the following page *(Figure 9)* shows the current vehicle count for each of the major fleet owning agencies.

By drilling further into the data and using the tools available in CARSS, a user can graphically display not only the number of vehicles, but also the condition of the District's entire fleet of vehicles across all the owner agencies.

Figure 9: Total Fleet Assets/ Condition Overview



As the chart above shows 1,277 vehicles, or approximately 27% of the District's total fleet of vehicles, 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 focuses on Fire and Emergency Management Services (FEMS) vehicles.

In *Figure 10* below, 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 reflect not only the number of vehicles of each type, but also the average vehicle age by type, the overall maintenance costs by type of vehicle, as well as the total mileage by type of vehicle.

Figure 10: FEMS Fleet Data

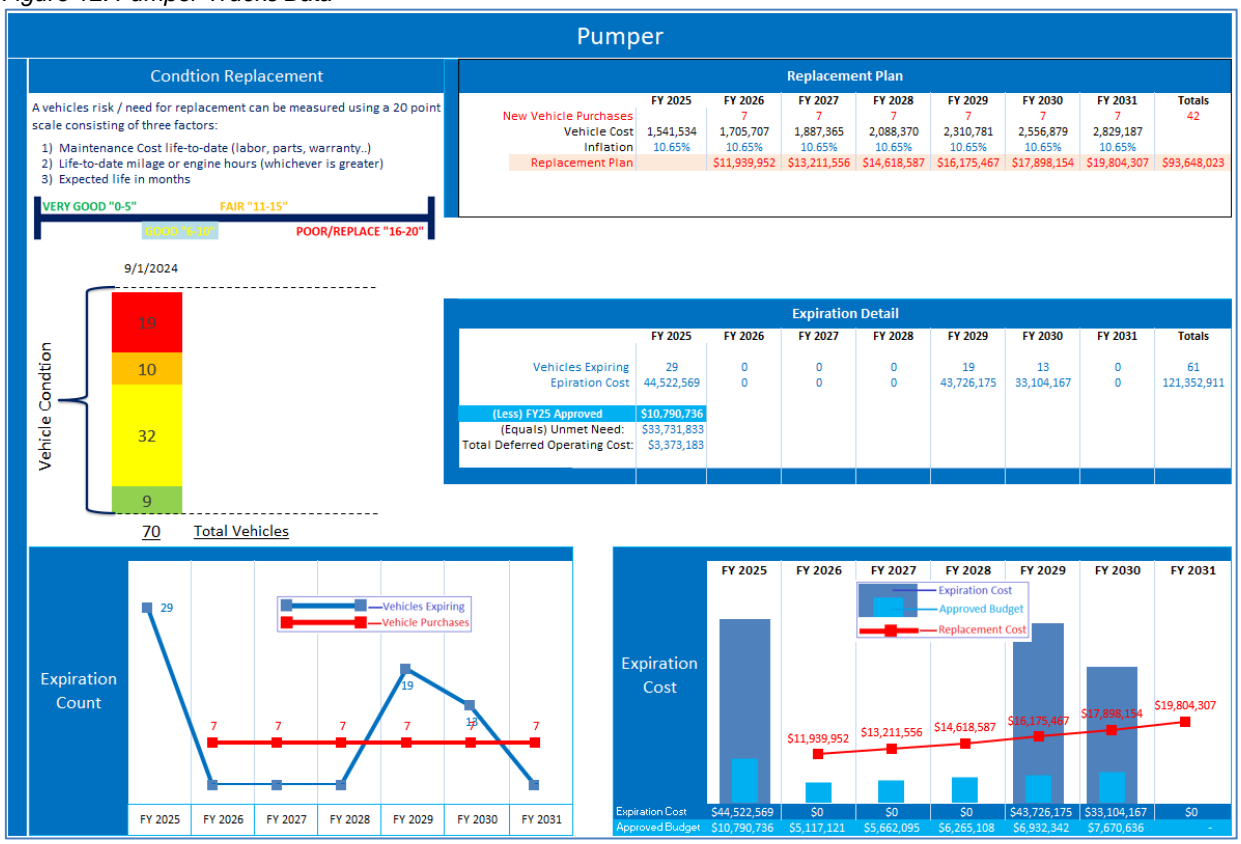
As an example of the level of granularity that has been achieved, the District now has the ability to track the condition of the entire FEMS fleet by type of vehicle, as well as that of other fleet owning agencies, in a manner that is more easily understood by all stakeholders involved in the process of formulating the District's capital budget. The chart on the following page *(Figure 11)* is the type of report that would be given to management at each of the agencies that own fleet assets, as well as to staff of the EOM, during the capital budget formulation process. This information allows the capital budget to focus more precisely on those assets that are most in need of replacement, and thereby directly addressing the District's most critical deferred capital maintenance needs.

Figure 11: FEMS Fleet Condition

The enhanced analytics tools allow users to drill down even further to review data around a specific vehicle type, such as pumper trucks (pictured to the right). A vehicle's risk / need for replacement can be measured using a 20-point scale consisting of 3 factors: 1) Maintenance Cost; 2) Life-to-Date Milage; 3) Useful Life. From the graphic below (Figure 12), the data shows that there are 70 pumper trucks with 9 in excellent condition, 32 in good condition, 10 in fair condition and 19 pumper trucks that are ranked in the poor/replace category, based upon the vehicles age, milage engine hours and maintenance costs.

This represents roughly 27% of the pumper truck fleet that needs to be replaced during the current CIP period. This more data-driven approach to analyzing which vehicles need to be replaced and when is used by FEMS in proposing their capital needs as part of the Mayor's overall proposed CIP. The chart below (Figure 12) is a representation of additional detail obtained by looking specifically at the pumper trucks fleet. Data in the table is at an individual vehicle level and reflects additional data regarding make, model and age of the vehicle, the total maintenance costs to date, and total mileage (when last serviced) as an example of the level of detail available for each vehicle.

Figure 12: Pumper Trucks Data



Finally, our enhanced analytics tools allow 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 on the following page *(Figure 13)* shows only a small sample of the data on this particular pumper truck that a user could access, including custom calculations on the estimated cost of replacement for this vehicle, when the replacement should occur and how much additional maintenance costs are needed to maintain the vehicle if replacement of the vehicle is delayed past the date recommended by CARSS.

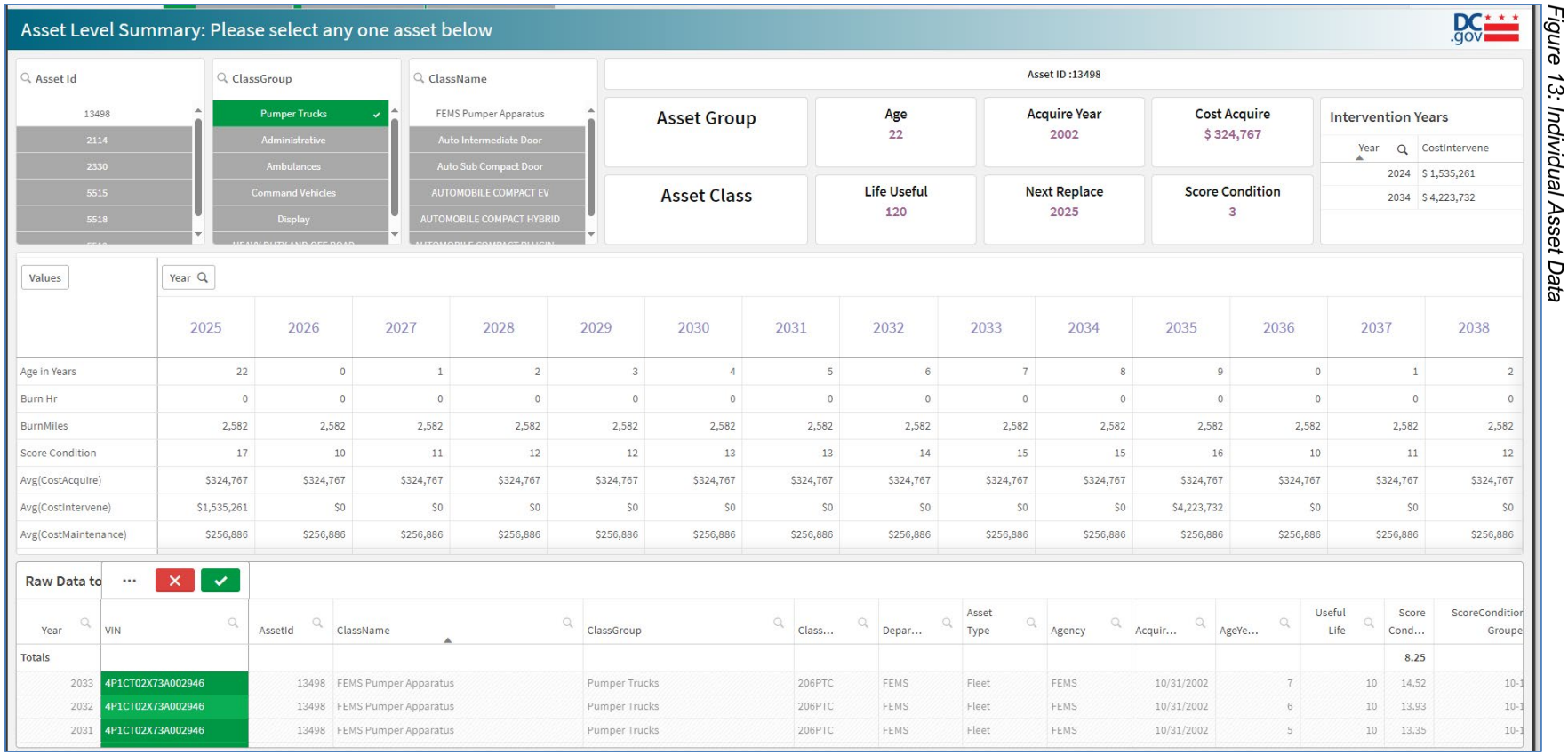


Figure 13: Individual Asset Data

Enhancements to CARSS

Substantial progress has been made in further enhancing and refining CARSS over the last several years, both in the number of assets included in the system, as well as in the quality of data on the individual assets inventoried. As was noted in last year's report, the District has already captured 100% of all District-owned assets in CARSS, as opposed to only 14% of assets that were inventoried in the system when the first report was released in 2016. At that time, it was understood that a greater level of detail on many of the assets would be obtained as condition assessments were performed. As more data points become available for many of the assets, and these components and sub-systems are captured and tracked in CARSS, the total number of assets in the system continues to increase. For example, the 2019 report showed a total asset count in CARSS of roughly 100,000 assets. As CARSS has been further refined over the past several years, and the quality of data has improved due to ongoing condition assessments, the asset count has now risen to over 311,000 assets. The asset count remained relatively flat as compared to the 2023 report due to the delay in obtaining enhanced facility condition assessments, however that is expected to change as condition assessments are received from the vendor hired by DGS to perform this work.

This more precise method of looking at these assets has not only increased the number of data points, but also the quality of the information overall. The ability to now isolate 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 certainly the most comprehensive asset registry of any state or local government in the nation. This will allow policymakers 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 assets of certain component units, such as the University of the District of Columbia, have also been added to CARSS. In addition, the OCFO completed in 2022 a large-scale project to add the assets of the District of Columbia Housing Authority (DCHA), which is a separate legal entity, to CARSS as well. This project is discussed in more detail later in this appendix. 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 overall health of all of the District's assets.

Development of New Software Platform to Support CARSS

The District's desire to continuously upgrade and evolve many of the capabilities of CARSS, along with a change in the market focus of the original software vendor, PowerPlan, led the District to search for a new software partner to support CARSS. After an extensive search and procurement process the District selected Arcadis Gen to be its new software partner in developing a further enhanced version of CARSS. The asset management platform of Arcadis Gen will allow the District to build in powerful new features into this new version of CARSS that did not exist in the previous version of the system. It will allow for greater use of the system by end-users in the various asset-owning and managing agencies, thereby facilitating even greater user acceptance of the tool. The greatly enhanced data visualization and reporting capabilities alone will prove to be invaluable to not only the core CARSS team, but to all the agencies throughout the District that manage capital assets, as well as to budget staff of the EOM and the District Council.

Expanded Use of CARSS with the District of Columbia Housing Authority (DCHA)

In 2020, the OCFO began a collaborative project with DCHA, which is a separate legal entity from the District, to embark on a large-scale effort to catalog and add all DCHA's housing stock assets to CARSS. The purpose of this project was to help DCHA better understand the true size and amount of its deferred maintenance and unmet capital needs. By utilizing CARSS, which is widely accepted throughout the District, DCHA will have a more authoritative basis for determining its true funding needs then previously existed. This will allow them to begin working on a long-range financial plan to return their housing stock to a state of good repair. The OCFO has built a separate asset tree within CARSS to house DCHA assets, not only at the level of public housing sites, but also for each building and individual housing units on that site, as well as all public areas, central HVAC plants, roofs, etc. The chart on the next page *(Figure 14)* shows a representation of the DCHA asset data as it currently exists in CARSS for the 35 public housing complexes evaluated as part of the physical needs assessment that DCHA's consultant completed, as required by the U.S. Department of Housing and Urban Development.

The chart on the following page illustrates the housing complexes that are currently in CARSS. It shows the ability to drill down into each individual building that makes up that housing complex, as well as each individual unit within those buildings. Various types of units from studios/efficiencies and 1-bedroom up to 5-bedroom units, each of which are tracked separately. CARSS can also track the annual income and operating costs for each unit, and thereby calculate the funding gaps for each unit and building in each housing complex. Furthermore, CARSS has the ability to drill down into the various sub-systems of individual buildings, such as roofs, windows, doors, HVAC, common areas, etc., that allows for more precise tracking of critical assets and more data-driven capital planning.

CARSS can assist DCHA in developing and refining their long-term capital needs analysis to bring their housing stock back to a state of good repair by building on data obtained from physical needs assessments and energy audits conducted by the Authority's consultant on each of its properties.

Figure 14: DCHA Asset Tree in CARSS

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 adjusted them, the total number of capital projects with requested budget needs stood at 358. 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 to maintain them in 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 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.

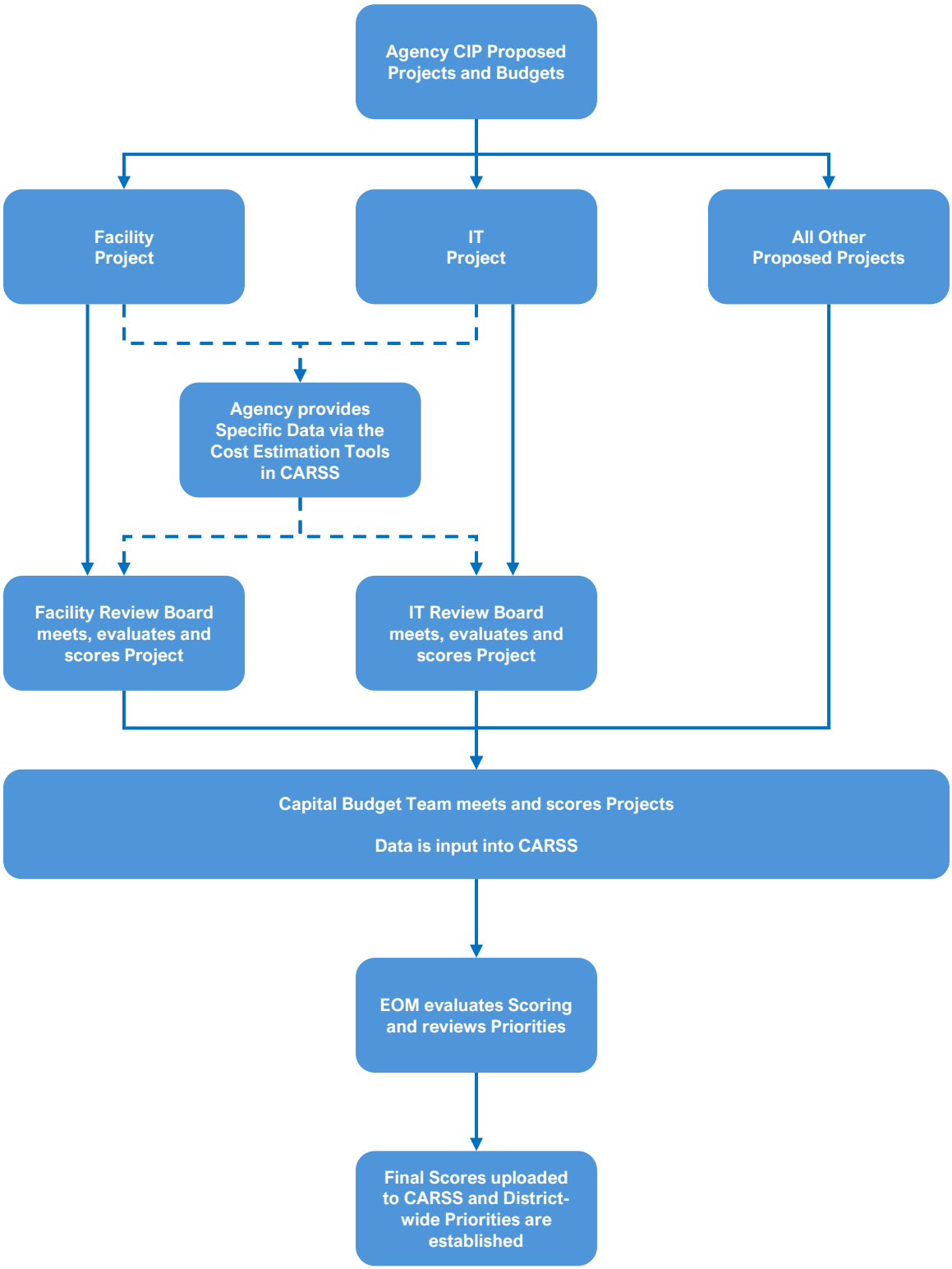
Capital projects were then further reviewed to identify if they should be considered as either 'pooled' projects, or potential public-private partnership (P3) opportunities. Pooled projects are used where there are known capital investments of a specific type (roofs, electrical systems, HVACs, etc.)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

Project Scoring

To provide better insight and perspective of agency proposed capital projects, three Internal Review Boards (IRBs) were established as part of the project budget evaluation process. The IRBs reviewed proposed capital projects in three distinct areas; 1) facilities, 2) information technology, and 3) all other capital projects, which encompassed amongst other items, horizontal infrastructure, and fleet. The objective was to provide greater expertise around these particular asset types as a part of the formal evaluation, scoring, and ultimately ranking of these proposed projects for the District. The IRBs were each comprised of nine individuals with subject matter expertise and were headed by a chairperson to provide coordination and communication. The IRBs 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, IT, or other proposed capital projects. The IRBs 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 Capital Budget Team (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 IRBs and CBT is shown in the following diagram.

Figure 1



To properly score projects as objectively as possible a mechanism was designed to assist with the process. The tool provides a set of 8 different elements against which projects are individually evaluated. Those elements help 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 an HVAC system in a library, 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 IRB and is simply a matter of assigning each element that the project impacts a score from 1 to 5. A score of 1 represents that the project only impacts 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 10 sub-elements that are key priorities. Any project that meets one of those receives bonus 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 is 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 following table *(Table 1)* presents the detailed scoring criteria used for all capital projects with an exemplary total score.

Table 1

			Investment Review Board (IRB)										Capital Budget Team (CBT)											
Rank	Project Number	Primary Category	Project Readiness	Stakeholder Support	Performance Goals and Business Case	Cost Estimates	Risks and Alternatives	Comp Plan Alignment	Score Before Multiple	Multiplier	IRB Score		Health Equity	Public Safety	Education	Equipment and Vehicles	All Roads and Transportation	Vertical Infrastructure	Parks, Playgrounds	Regulatory	Technology	Existing Project (Y/N)	CBT Score	Total Score
1	100248	Facility/Building																						100
2	100249	Real Estate/Land																						99
3	100250	Information Technology																						98
4	100251	Facility/Building																						97
5	100252	Facility/Building																						96
6	100253	Facility/Building																						95
7	100254	Facility/Building																						94
8	100255	Real Estate/Land																						93
9	100256	Information Technology																						92
10	100257	Facility/Building																						91
11	100258	Facility/Building																						90
12	100259	Facility/Building																						89
13	100260	Information Technology																						88
14	100261	Facility/Building																						87
15	100262	Real Estate/Land																						86
16	100263	Information Technology																						85
17	100264	Facility/Building																						84
18	100265	Facility/Building																						83
19	100266	Facility/Building																						82
20	100267	Fleet																						81
21	100268	Facility/Building																						80
22	100269	Real Estate/Land																						79
23	100270	Information Technology																						78
24	100271	Facility/Building																						77
25	100272	Facility/Building																						76
26	100273	Facility/Building																						75
27	100274	Facility/Building																						74
28	100275	Real Estate/Land																						73
29	100276	Information Technology																						72
30	100277	Facility/Building																						71
31	100278	Facility/Building																						70
32	100279	Facility/Building																						69
33	100280	Facility/Building																						68
34	100281	Facility/Building																						67
35	100282	Facility/Building																						66
36	100283	Real Estate/Land																						65
37	100284	Facility/Building																						64
38	100285	Real Estate/Land																						63
39	100286	Information Technology																						62
40	100287	Facility/Building																						61
41	100288	Facility/Building																						60
42	100289	Facility/Building																						59
43	100290	Facility/Building																						58
44	100291	Facility/Building																						57
45	100292	Facility/Building																						56
46	100293	Facility/Building																						55
47	100294	Facility/Building																						54
48	100295	Facility/Building																						53
49	100296	Facility/Building																						52
50	100297	Facility/Building																						51
51	100298	Facility/Building																						50
52	100299	Facility/Building																						49
53	100300	Facility/Building																						48
54	100301	Facility/Building																						47
55	100302	Facility/Building																						46
56	100303	Facility/Building																						45
57	100304	Facility/Building																						44
58	100305	Information Technology																						43
59	100306	Facility/Building																						42

Appendix C: Overview of the Prioritization of Capital Projects

Overview of the Prioritization of Capital Projects

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 358 proposed capital projects, since there was likely no possibility that all 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 358 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 358. 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 assigned scores 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.

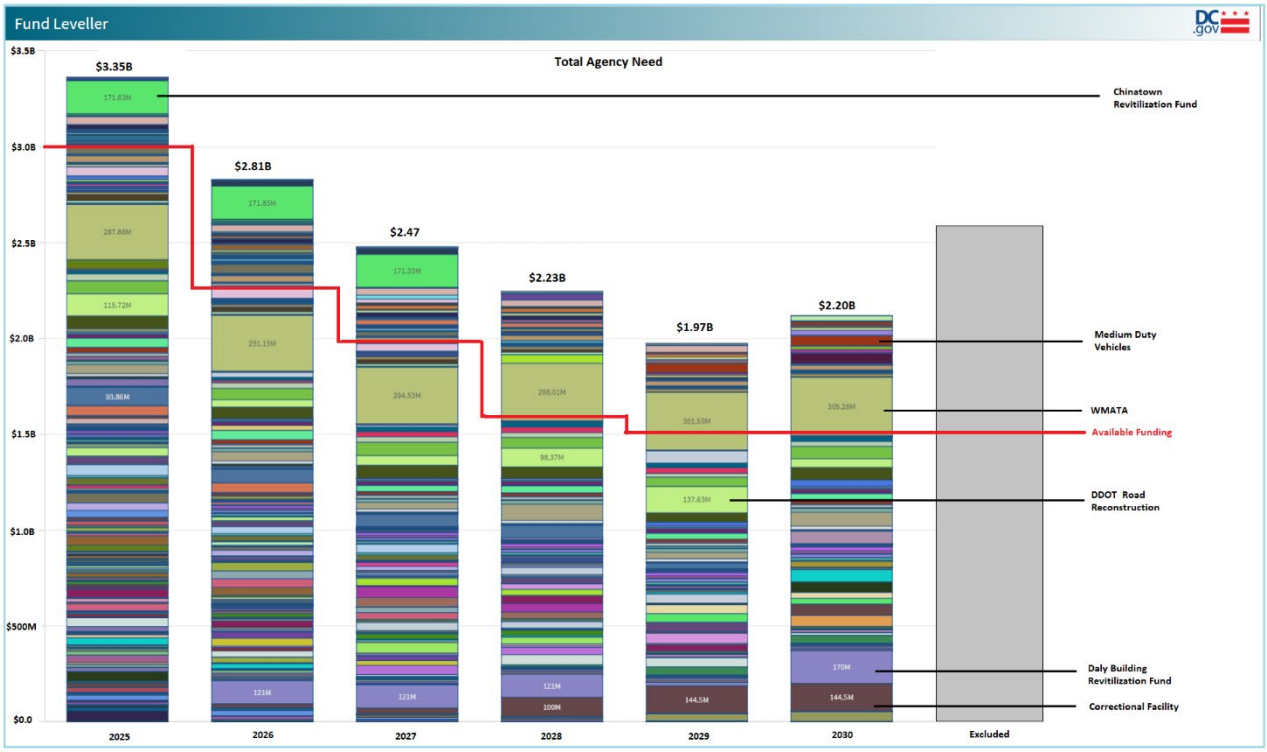
In addition to scoring by IRBs for facilities, IT and other capital projects, and the CBT, agencies also ranked each of their proposed capital projects in order of the agency's priorities. This enabled the CBT to better coordinate final decisions for capital projects which were scored similarly by the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

The data loaded 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 (Figure 1) of the visual leveler shows all the capital project requests from the various agencies as part of the FY2025–FY2030 CIP budget formulation process, relative to the amount of funding available, represented by the red lines.

Figure 1

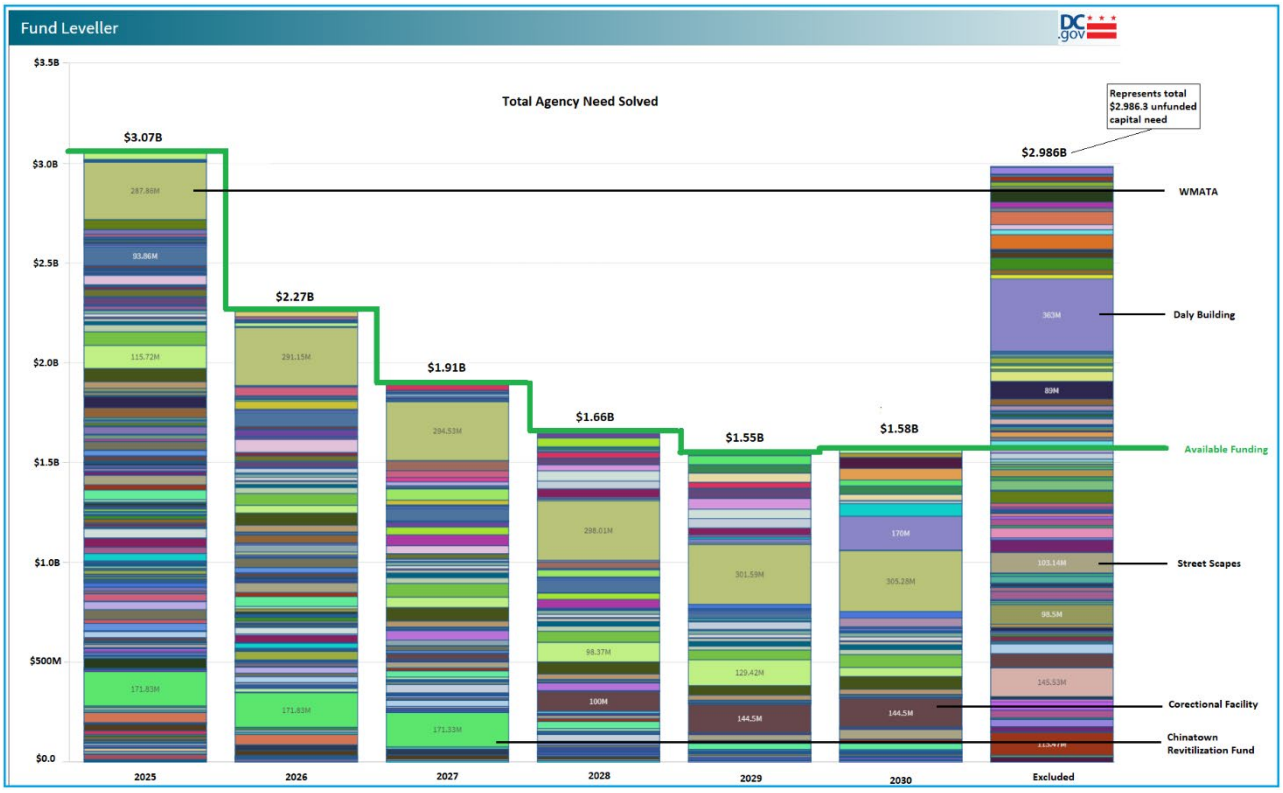


The visual leveler then enables certain administrative users to maneuver the priority of individual projects by year to determine a set of projects that can fit within the resource and budget limits for any particular year. The scenarios are captured with the results reflected in each year's set of projects, 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 projects will have to be excluded given budget limits. The optimization is captured both project- by-project, and year-by-year.

Below (Figure 2) is a screen shot of the District's capital projects budget needs after running the solver (optimization) function.

Figure 2



After utilizing CARSS to optimize project priorities for the CIP period, capital projects that did not have a sufficiently high priority, as well as those that had to be deferred were placed in the "excluded" column on the far right of the chart. 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. This resulted in a remaining total of 134 capital projects with verified budget needs that reflected true unfunded capital projects of the District. This set of projects, which spanned across all 4 areas of categorization (i.e., facilities, horizontal infrastructure, fleet, as well as IT and other), 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 outside of the current CIP period.

Appendix D: Description of Long-Range Capital Financial Plan Model

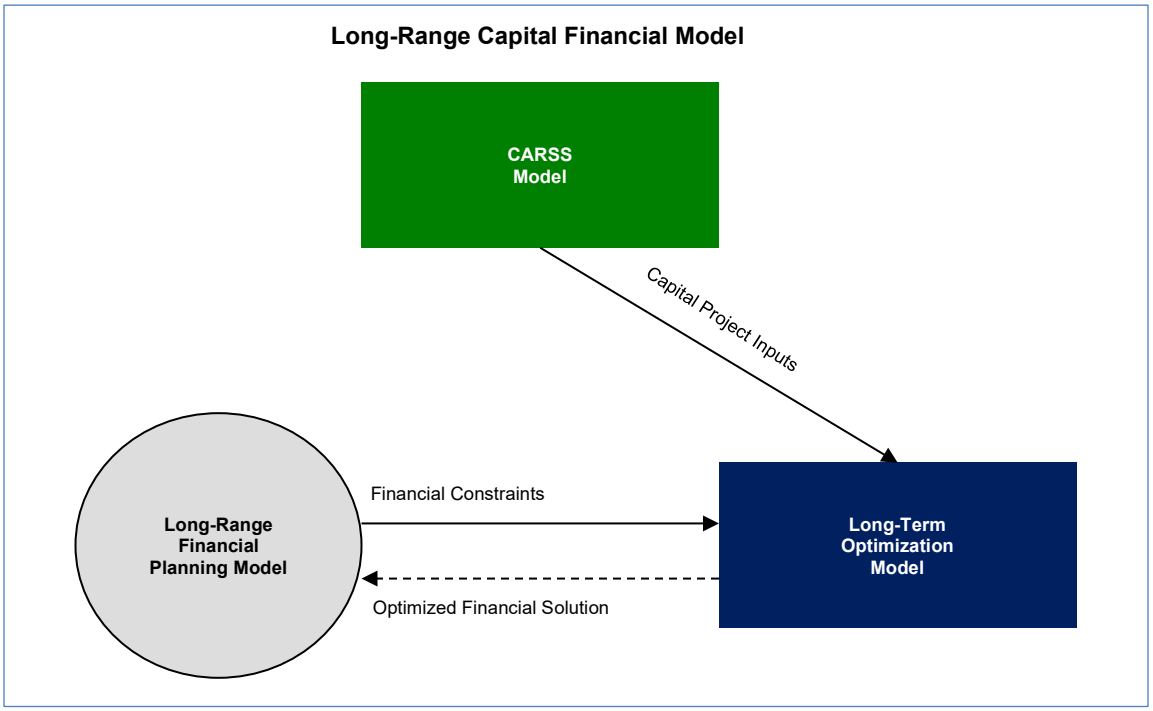
Description of the Long-Range Capital Financial Plan Model

The OCFO engaged the services of an external financial advisor, PFM Advisors LLC ("PFM") to develop a long-range financial planning model. The model is instrumental 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. 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 managed by Arcadis Gen.
- Long-Range Financial Planning Model ("LRFPM") – which is a Microsoft Excel based model developed by PFM.
- Long-Term Optimization Model ("LOM") – an Excel based model utilizing specifically tailored Visual Basic for Applications ("VBA") algorithms to solve for unfunded needs.

Figure 1



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 Long-Term 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 Long-Term Optimization model is then exported back into the Long-Range Financial Planning Model to present a complete long- term capital financing plan for the District over the forecasted 15-year period.

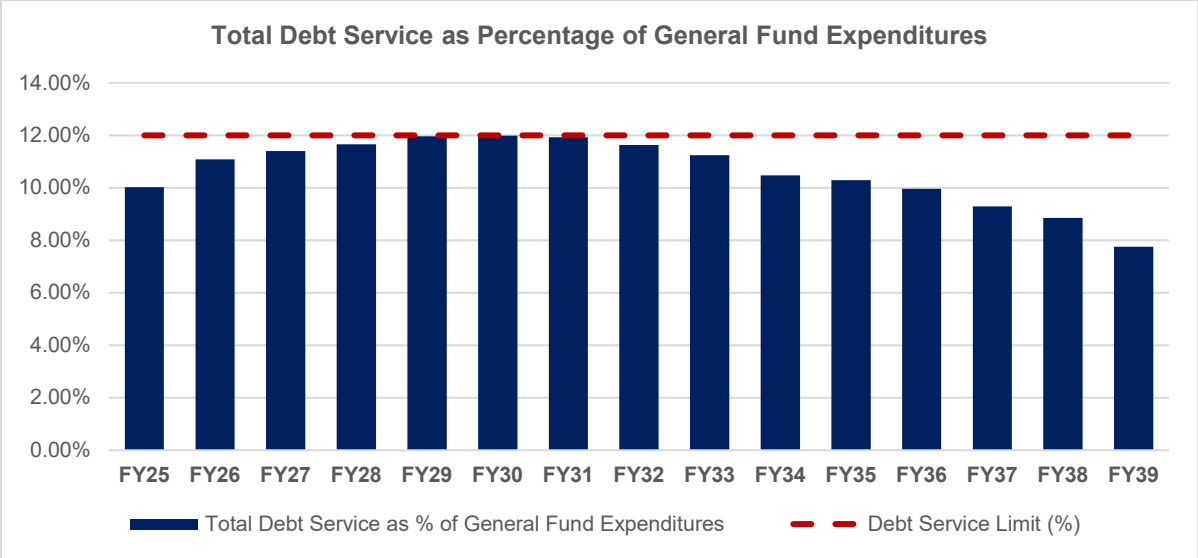
Model Assumptions

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 and the level of future funding from other non-debt sources for capital projects. It also reflects the District's projections of General Fund expenditures during the four-year financial plan period, as is reflected in the September 30, 2024, revenue forecast from the OCFO, before then being projected to grow at 3% in the out years of the CIP and into the future. 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 additional borrowing capacity after 2031 to fund future new capital projects.

Figure 2



2. Varying levels of paygo or additional federal funding drive the gap:

   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 FY2025 - FY2030 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 2039) by exporting sizing results calculated in DBC Finance, a bond modeling software program.
- Utilize VBA algorithms to maximize the amount, and optimize the structure, of future debt issuances to ensure that the District stays within its statutory debt limit.
- Summarize all projected debt and expenditure detail through FY 2039; 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 VBA algorithms. 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 FY2025 – FY 2030 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 the Long-Term Optimization model in conjunction with the District's systems greatly simplifies an iterative problem by turning it into a single discreet answer. It accomplishes this by automating the iterative steps while also ensuring that the result conforms to the necessary financial targets for the district. For this purpose, the District can 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 assume much larger, or smaller, future bond issuances in the model, and then use the model to determine the various amounts of paygo, or other funding sources, that would be required to fully fund unmet capital needs by a specific year.

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